UC DAVIS

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California Hospital Tower Project

Volume 1: Draft Environmental Impact Report

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UC DAVIS SACRAMENTO CAMPUS
CALIFORNIA HOSPITAL TOWER PROJECT
DRAFT ENVIRONMENTAL IMPACT REPORT

STATE CLEARINGHOUSE #: 2021020515

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ES.1 Introduction

This executive summary is provided in accordance with Section 15123 of the California Environmental Quality Act (CEQA) Guidelines. It contains an overview of the project-level analysis of the California Hospital Tower Project, which would be located on the University of California (UC), Davis, Sacramento Campus. As stated in the State CEQA Guidelines Section 15123(a), "[a]n EIR shall contain a brief summary of the proposed actions and its consequences. The language of the summary should be as clear and simple as reasonably practical." State CEQA Guidelines Section 15123(b) states, "[t]he summary shall identify: 1) each significant effect with proposed mitigation measures and alternatives that would reduce or avoid that effect; 2) areas of controversy known to the Lead Agency, including issues raised by agencies and the public; and 3) issues to be resolved including the choice among alternatives and whether or how to mitigate the significant effects."

Accordingly, this summary includes a brief synopsis of the California Hospital Tower Project and project alternatives, environmental impacts and mitigation measures, areas of known controversy, and issues to be resolved during environmental review. Table ES-1 presents the summary of potential environmental impacts, their level of significance without mitigation measures, the proposed mitigation measures, and the levels of significance of those impacts following the implementation of mitigation measures.

ES.2 Summary Project Description

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

Components of the California Hospital Tower Project are as follows.

- **California Tower construction**—west of 45th Street and north of X Street, at the east end of the existing UC Davis Medical Center, adjacent to the Surgery and Emergency Services Pavilion.
- **Surgery and Emergency Services Pavilion interior renovation**—west of 45th Street and north of X Street, adjacent to the proposed California Tower.
- **Parking Structure 5 (PS5) construction**—southwest of the intersection of 48th and V Streets.
- **Central Utility Plant (CUP) upgrades**—west of the convergence of 2nd Avenue with 49th and 50th Streets.
- **East Main Hospital Wing demolition**—south of Colonial Way, north of Stockton Boulevard, and west of the Surgery and Emergency Services Pavilion.
- **Make-ready projects to prepare for construction**—various locations within the Sacramento Campus, including removal of Building #35 at the southwest corner of 45th and V Streets, modifications to the Emergency Department in the Surgery and Emergency Services Pavilion, as well as site preparations and roadway improvements primarily in the northern portion of the

Sacramento Campus (although some offsite traffic improvements could occur, such as the signal upgrades at Stockton Boulevard and X Street).

Figure ES-1 provides a graphical overview of the California Hospital Tower Project.

ES.3 Objectives of the California Hospital Tower Project

UC Davis has identified the following objectives for the proposed California Hospital Tower Project.

- Provide a patient-centered hospital of the future to keep pace with community healthcare needs and to support UC Davis Health's teaching, research, and community engagement missions in the most efficient manner, with the least amount of disruption to clinical care operations.
- Construct the new California Tower with maximum operational efficiency to optimize healthcare outcomes and create a space for increased patient and staff satisfaction.
- Provide single-occupancy patient rooms with acuity-adaptable beds.
- Address seismic and other code-related deficiencies in aging buildings and replace the hospital's East Wing with a new, state-of-the-art, seismically compliant facility that meets current codes and sustainability standards.
- Demolish outdated spaces to achieve seismic safety and to remove buildings that cannot be operated efficiently or renovated.
- Ensure the California Tower stands the test of time by providing adaptability and flexibility within building systems.
- Implement sustainable site design and building design practices to support ongoing implementation of UC's Sustainable Practices Policy.
- Provide adequate healthcare helicopter landing areas and reduce helicopter idling time by providing increased helipad capacity.
- Ensure appropriate facility adjacencies, provide convenient access, and improve pedestrian connections.
- Increase parking capacity near the hospital to meet future parking demand, thereby better serving patients, and to provide construction worker parking during project construction.
- Consolidate surface parking into structured parking near the Hospital and Ambulatory Care districts to ensure easy access by patients, visitors, staff, residents, and partners, while minimizing potential conflicts among pedestrians, cyclists, and motorists.

ES.4 Summary of Environmental Impacts and Mitigation Measures

Pursuant to State CEQA Guidelines Section 15382, a significant effect on the environment is defined as "a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the plan, including land, air, water, minerals, flora, fauna, ambient noise, and objects of historic or aesthetic significance." Chapter 3 of this volume of this EIR describes in detail the significant environmental impacts that would result from implementation of the California Hospital Tower Project. Table ES-1 summarizes the environmental impacts and mitigation measures discussed in these chapters. Chapters 4 and 5 provide a discussion of cumulative impacts and other CEQA considerations, respectively.

ES.5 Significant and Unavoidable Environmental Impacts

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

Chapter 3, *Existing Environmental Setting, Impacts, and Mitigation*, describes the potential environmental impacts of the California Hospital Tower Project and recommends various mitigation measures to reduce impacts to the extent feasible. Chapter 4, *Cumulative Impacts*, determines whether the incremental effects of the project are significant when viewed in connection with the effects of past projects, other current projects, and probable future projects. After implementation of the recommended mitigation measures, most of the impacts associated with development of the California Hospital Tower Project would be reduced to a less-than-significant level. The following impacts are considered significant and unavoidable; that is, no feasible mitigation is available or the mitigation measures available were not sufficient to reduce the impact to a less-than-significant level.

- Impact AES-2: Introduction of a new source of substantial light or glare that would adversely affect daytime or nighttime views in the area.
- Impact AQ-3: Exposure of sensitive receptors to substantial pollutant concentrations.
- Impact NOI-1: Generation of increased ambient noise levels in the project vicinity in excess of applicable standards during project construction.
- Impact NOI-4: Placement of project-related activities in the vicinity of a private airstrip or an airport land use plan or within 2 miles of a public airport or public use airport, resulting in exposure of people residing or working in the project area to excessive noise levels.
- Impact TRA-1: Conflict with a program, plan, ordinance, or policy addressing the circulation system including transit, roadway, bicycle, and pedestrian facilities.

ES.6 Alternatives to the California Hospital Tower Project

State CEQA Guidelines Section 15126.6 provides that all EIRs include a comparative evaluation of the proposed project with alternatives to the project that are capable of attaining most of the project's basic objectives but would avoid or substantially lessen significant effects of the project.

CEQA requires an evaluation of a "range of reasonable" alternatives, including the "no project" alternative. The following alternatives are under consideration for the California Hospital Tower Project.

- **Alternative 1: No Project.** Under Alternative 1, the new California Tower would not be constructed, and the existing East Wing would not be demolished. Other components of the project, such as the renovation of existing building space and the construction of a parking garage, would also not occur. The existing hospital tower would continue to operate at the current number of beds and level of staffing and would not meet seismic safety standards or other code requirements and would not provide acuity-adaptable rooms with increased patient privacy. Upgrades to the CUP and utilities relocations would not be necessary and would not occur.
- **Alternative 2: Reduced Building Height but Bigger Footprint.** Under Alternative 2, the project would extend across 45th Street and connect to the Cancer Center. The building heights would be reduced to eight stories, and the building footprint would be larger. The ambulance entrance would be on the north side of the building (similar to the proposed project). Two new helipads would still be constructed.
- **Alternative 3: Alternative Site Location (West of Main Hospital).** Alternative 3 would locate the proposed new hospital tower on the west side of the existing hospital rather than the east side. This alternative site location would take place on the site of upcoming North/South Wing demolition and adjacent areas.
- **Alternative 4: Alternative Site Plan.** Alternative 4 would move the West Wing to the north/V Street side, so that the California Tower would be further away from the residences along V Street. The helipads would still be constructed on top of the California Tower and would be slightly farther away from residences compared to the proposed project.

Section 15126.6 of the State CEQA Guidelines states that an EIR should identify the "environmentally superior" alternative, and if "the environmentally superior alternative is the 'no project' alternative, the EIR shall also identify an environmentally superior alternative among the other alternatives."

As described in Chapter 6, *Alternatives*, Alternative 1, the No Project Alternative, and Alternative 4, Alternative Site Plan, both reduce impacts compared to the proposed project. Alternative 2 would result in greater impacts, particularly related to operational noise, and Alternative 3 would have impacts similar to the proposed project. Each of the alternatives considered would result in long-term significant and unavoidable environmental impacts. As described in Chapter 6, Alternative 4, Alternative Site Plan, would result in greater impact reductions from those of the proposed project compared to the other alternatives because the new tower would be farther from V Street. Therefore, Alternative 4 is considered to be the environmentally superior alternative. However, while this alternative would have lesser impacts than the proposed project, it would be less efficient than the proposed project, with the West Wing of the tower interrupting the flow between the main hospital and the new tower, as well as result in additional time to transport trauma patients from the helipad to the emergency department, surgery rooms, and ICU rooms.

ES.7 Areas of Controversy

Pursuant to State CEQA Guidelines Section 15123(b)(2), a lead agency is required to include in the EIR areas of controversy raised by agencies and the public during the public scoping process. Issues of concern and issue areas raised during the scoping process include noise (especially noise from helicopters), visual impacts, traffic, and greenhouse gases.

ES.8 Mitigation Monitoring and Reporting Program

CEQA and the State CEQA Guidelines (Public Resources Code [PRC] Section 21081.6 and State CEQA Guidelines Sections 15091[d] and 15097) require public agencies "to adopt a reporting and monitoring program for changes to the project which it has adopted or made a condition of project approval to mitigate or avoid significant effects on the environment." A Mitigation Monitoring and Reporting Program (MMRP) is required and has been prepared for California Hospital Tower Project because the EIR identifies potential significant adverse impacts related to the project implementation, and mitigation measures have been identified to reduce those impacts. The MMRP, as presented in Table ES-2, has been prepared to ensure that all required mitigation measures are implemented and completed in a satisfactory manner before and during project construction and operation as applicable. Unless otherwise specified, UC Davis is responsible for taking all actions necessary to implement the mitigation measures under its jurisdiction according to the specifications provided for each measure and for demonstrating that the action has been successfully completed. UC Davis, at its discretion, may delegate implementation responsibility or portions thereof to a licensed contractor or other designated agent. Section 21081.6 of the Public Resources Code requires the lead agency to identify the "custodian of documents and other material" that constitutes the "record of proceedings" upon which the action on the project was based. The UC Davis Office of Campus Planning and Environmental Stewardship, or designee, is the custodian of such documents for the California Hospital Tower Project.

Table ES-1. Summary of Impacts and Mitigation Measures

Impact	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
Aesthetics			
Impact AES-1: Conflict with zoning or other regulations governing scenic quality in urbanized areas (less than significant with mitigation) ***Construction*** Construction of the high-rise building and the parking structure would require the use of cranes, scaffolding, and other equipment that may be unsightly and would be visible for long distances, including from sensitive residential viewers along V Street. Views into the construction staging site would result in significant impacts on visual character and quality. Air Quality Mitigation Measure LRDP-AQ-2a and Mitigation Measure AES-1 would reduce these impacts to a less-than-significant level for residential viewers along V Street. Therefore, construction impacts would be **less than significant with mitigation.** ***Operation*** The height of the California Tower does not seem to overpower views, and it appears to blend well with the heights of the existing water tower and Davis Tower. However, if landscaping is not planted in a timely fashion, then the benefits of landscaping would not be realized, prolonging the pronounced appearance of the tower and conflicting with the 2020 LRDP Update’s goals of respecting affected residential viewers, resulting in significant impacts. Mitigation Measure LRDP AES-1 would reduce these impacts to a less-than-significant level for residential viewers along V Street by ensuring that landscaping is planted within 1 year of the development of the new projects. Therefore, impacts associated with the California Tower would **be less than significant with mitigation.**	**S**	**Mitigation Measure LRDP-AQ-2a: Reduce construction-generated fugitive dust** Refer to Mitigation Measure LRDP-AQ-2a under Impact AQ-2 in Section 3.2, *Air Quality*. **Mitigation Measure LRDP-AES-1: Install new landscaping** The University will install landscaping within the 40-foot landscape buffer adjacent to new specific projects that are approved. Installation would occur within 1 year of the development of the new projects. **Mitigation Measure AES-1: Reduce visual impacts from construction** The following measures will be taken to reduce unsightly conditions at construction sites. • Before construction begins, the contractor will install visual barriers to obstruct views into the construction staging and demolition sites. The barriers will be as aesthetically pleasing as possible and may be painted plywood or enhanced chain-link fencing with privacy slats. Fencing with windscreen fabric will not be used due to its propensity to become unattached or torn, reducing its effectiveness. Barriers will be at least 8 feet high to break the line-of-sight as much as possible. If gates are needed through the fence, they will be made of a solid material or slatted chain-link and remain closed when not being used for ingress or egress. Barriers will be maintained to prevent them from being unsightly, and weeds will be removed as necessary to maintain a well-kept appearance. • The construction sites will be kept clean and organized. Unused materials, debris, trash, and construction equipment that is no longer needed will be removed from the site on a daily basis. Unsightly materials will be stored outside of the line-of-site from	**LTS**

NI = no impact LTS = less than significant S = significant SU = significant and unavoidable

Table ES-1. Continued

Impact	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
		adjacent land uses and away from gates that will remain open for long periods of time, such as a full day or longer. • Large equipment, such as cranes and scaffolding will be removed as soon as possible when no longer needed. If scaffolding is not needed for a later stage more than 90 days away, the scaffolding will be removed and rebuilt when needed again. • During demolition, the contractor will remove debris as quickly as possible to an appropriate landfill or recycling facility to prevent large piles of debris onsite. An offsite staging area will be used in an area not adjacent to residences. Before leaving the site, the truck loads will be wetted and/or covered to prevent fugitive dust while transporting debris. A wheel washer will be set up at the truck egress point to prevent track-out dirt as much as possible. Street washing will be used daily on Colonial Way during haul out periods. • If possible, mobile construction modular units or trailers, similar to the modular units currently on the Staging Site 1, will be placed along the V Street side of the staging sites (Sites 1 and 2 only). • No tall equipment or large piles of materials will be stored on Sites 1 or 2 that would be visible from V Street residences above the barrier or construction offices. This equipment or materials will be stored at an alternative site if it would be visible from the V Street residences. • Construction crew and equipment parking will be kept clean and surfaced to reduce the chances of track-out dirt. When construction will result in high levels of track-out dirt, wheel washers will be employed to reduce these impacts. • The 40-foot-wide landscaped buffer along V Street will not be used for staging for the demolition of the East Wing. If this site must be used for staging during demolition, it will do so for the shortest period possible and will be immediately landscaped when no longer needed.	

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Table ES-1. Continued

Impact	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
Impact AES-2: Introduction of a new source of substantial light or glare that would adversely affect daytime or nighttime views in the area (significant and unavoidable) *Daytime Light and Glare* The California Tower would contain high-performance glass with low emissivity coatings that would prevent significant reflectivity and high glare. In addition, because the style of the California Tower and PS5 would be compatible with the existing buildings that are located elsewhere on the campus and adjacent to these project sites, the surfaces of these buildings are not expected to include large surfaces that would reflect sunlight onto adjacent properties. Mitigation Measure LRDP-AES-2a would ensure that the proposed project uses non-reflective exterior surfaces and non-reflective glass. Therefore, impacts from daytime light and glare would be less than significant. *Nighttime Light and Glare* The greatest potential for impact resulting from the use of BRWL LED lighting would come from overhead lighting that would be installed within 200 feet of residences along V Street as well as the parking garage's interior lighting which could disturb nearby residences due to ambient light spill coming from the upper levels of the parking garage that would not be filtered by the 40-foot landscape buffer. Mitigation Measures LRDP-AES-2a, LRDP-AES-2b, LRDP-AES-2c, and LRDP-AES-2d would ensure that the proposed project uses non-reflective exterior surfaces and non-reflective glass as well as directional lighting methods with shielded and cutoff-type light fixtures to minimize glare and upward-directed lighting. Implementation of Mitigation Measure AES-2a would ensure that BRWL LED lighting is not used near residences, that lighting coming from the interior of the parking structure does not result in nuisance light spill, and that PS5 does not result in nuisance-reflected glare.	**S**	**Mitigation Measure LRDP-AES-2a: Apply design measures to building exteriors** Design for specific projects shall provide for the use of textured non-reflective exterior surfaces and non-reflective glass. **Mitigation Measure LRDP-AES-2b: Utilize directional lighting methods** Except as provided in LRDP Mitigation Measure AES-2c, all new outdoor lighting shall utilize directional lighting methods with shielded and cutoff type light fixtures to minimize glare and upward-directed lighting. **Mitigation Measure LRDP-AES-2c: Review lighting, landscape, and architectural features prior to installation** Non-cutoff, non-shielded lighting fixtures used to enhance nighttime views of walking paths, specific landscape features, or specific architectural features shall be reviewed by the Campus Facilities Planning, Design and Construction staff prior to installation to ensure that (1) the minimum amount of required lighting is proposed to achieve the desired nighttime emphasis, and (2) the proposed illumination creates no adverse effect on nighttime views. **Mitigation Measure LRDP-AES-2d: Implement updated lighting design** The University will implement the use of the specific lighting design and equipment when older lighting fixtures and designs are replaced over time. **Mitigation Measure AES-2a: Reduce construction nighttime lighting impacts** Construction activities scheduled to occur after 6:00 p.m. or on weekends should not continue past daylight hours (which varies according to season) as much as possible. If nighttime construction is necessary, the contractor will minimize project-related light and glare using the following methods:	**SU**

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Table ES-1. Continued

Impact	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
Shade and Shadowing Some residences would be fully impacted by the solid shading caused by the California Tower compared to existing conditions. There is no feasible mitigation to offset this impact, and impacts related to shade and shadow would be **significant and unavoidable**.		• Minimize the number of nighttime lights used and illuminate only areas necessary for the nighttime work. • Avoid the use of flood lamps illuminating a large area, instead focusing light only on areas where work is occurring. • Screen individual lights and direct them downward toward specific work sites and away from offsite areas, especially residential areas. • Hang tarps or use other barriers to shield light from being visible from offsite areas, especially from construction on upper floors. • Use color-corrected halide lights where possible. • Operate portable lights at the lowest allowable wattage, with heights as low as possible. • Exterior security lighting will be hooded, with lights directed downward and toward the area to be illuminated. Use only the amount of light necessary for safety and security. Do not use security lighting on upper floors visible above the visual barriers around the construction site or construction staging site. **Mitigation Measure AES-2b: Additional light and glare minimization measures** All LED lighting will avoid the use of blue-rich white light lamps and use a correlated color temperature that is no higher than 3,000 Kelvin (International Dark-Sky Association 2010a, 2010b, 2015) within 200 feet of residences along V Street. Interior lighting within the parking structure will be allowed for safety. However, unnecessary interior nighttime lighting within the parking structure will be prevented by requiring that interior spaces within the parking structure utilize motion-sensor lighting that is programmed for early-morning and late-night use, beyond the hours of typical high-use. This would ensure that the parking structure's interior is not over-lit because lighting would be turned off or lowered during off-peak hours. It would also maintain safety during off-peak hours by ensuring that pedestrian activity triggers the lighting levels to increase when motion is sensed.	

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Table ES-1. Continued

Impact	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
		Furthermore, the walls of the parking garage will be high enough to prevent vehicle headlights from shining into nearby residences as vehicles travel through the garage. In addition, ornamental design techniques will be used on the garage façade along 45th Street, 48th Street, and V Street: this façade will have an aesthetic treatment and shield the structure's interior lighting from residents along V Street. The slatted panels of PS3 facing Stockton Boulevard and X Street represent an example of such a treatment. The exterior of PS5, however, will not be as lightly colored as PS3 in order to reduce reflective glare.	
Air Quality			
Impact AQ-1: Conflict with or obstruction of implementation of the applicable air quality plan (less than significant) The project is consistent with the growth planning and development characteristics of the 2010 LRDP, and thus the 2016 MTP/SCS. Also, neither construction nor operation of the project would exceed SMAQMD's threshold of significance with implementation of LRDP mitigation. Accordingly, the project would not conflict with SMAQMD's air quality attainment plan, and this impact is **less than significant**.	**LTS**	**Mitigation Measures** No mitigation measures are necessary.	**LTS**
Impact AQ-2: Cumulatively considerable net increase of any criteria pollutant for which the project region is a nonattainment area for an applicable federal or state ambient air quality standard (less than significant with mitigation) *Construction* NOx emissions would exceed SMAQMD's threshold in 2025 and 2026. Mitigation Measures AQ-2a, LRDP-AQ-3a, LRDP-AQ-2d, and Mitigation Measure AQ-2b will reduce NOx emissions from construction of the proposed project (those emissions remaining after implementation of onsite mitigation measures) to **less than significant with mitigation**.	**S**	**Mitigation Measure LRDP-AQ-2a: Reduce construction-generated fugitive dust** Land use development projects as part of the implementation of the 2020 LRDP Update will require all construction contractors to implement the following measures to reduce construction-generated fugitive dust. Control of fugitive dust is required per SMAQMD Rule 403 and enforced by SMAQMD staff. The list of required measures was informed by SMAQMD's basic and enhanced construction emission control practices. • Water exposed soil with adequate frequency to prevent fugitive dust and particulates from leaving the project site. However, do not	**LTS**

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Table ES-1. Continued

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

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Table ES-1. Continued

Impact	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
		not result in offsite runoff as a result of watering for dust control purposes. **Mitigation Measure LRDP-AQ-2b: Reduce construction-generated emissions from equipment and vehicle exhaust** Land use development projects as part of the implementation of the 2020 LRDP Update will require all construction contractors to implement the following measures to reduce construction-generated emissions from equipment and vehicle exhaust. The list of required measures was informed by SMAQMD's basic and enhanced construction emission control practices. • For all development except Aggie Square Phase I, use construction equipment with engines meeting EPA Tier 3 or better emission standards prior to 2025 and EPA Tier 4 Final or better emission standards beginning in 2025. For Aggie Square Phase I, all engines must be EPA certified Tier 4 Final or better, regardless of construction year. Equipment requirements may be waived by UC Davis, but only under any of the following unusual circumstances: If a particular piece of off-road equipment with Tier 4 Final standards or Tier 3 standards is technically not feasible, not commercially available, or there is a compelling emergency need to use off-road equipment that does not meet the equipment requirements above. If UC Davis grants the waiver, the contractor will use the next cleanest piece of off-road equipment available, in the following order: Tier 4 Interim, Tier 3, and then Tier 2 engines. • Use renewable diesel fuel in all heavy-duty off-road diesel-fueled equipment. Renewable diesel must meet the most recent ASTM D975 specification for Ultra Low Sulfur Diesel and have a carbon intensity no greater than 50 percent of diesel with the lowest carbon intensity among petroleum diesel fuels sold in California. • All diesel on-road trucks used to haul construction materials will use a model year 2010 or newer engine.	

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Table ES-1. Continued

Impact	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
		• Minimize idling time either by shutting equipment off when not in use or reducing the time of idling to 5 minutes (CCR, Title 13, Sections 2449[d][3] and 2485). Provide clear signage that posts this requirement for workers at the entrances to the site. • Provide current certificate(s) of compliance for CARB's In-Use Off-Road Diesel-Fueled Fleets Regulation (CCR, Title 13, Sections 2449 and 2449.1). • Maintain all construction equipment in proper working condition according to manufacturer's specifications. The equipment must be checked by a certified mechanic and determined to be running in proper condition before it is operated. **Mitigation Measure LRDP-AQ-2c: Reduce evaporative emissions during architectural coatings** Land use development projects as part of the implementation of the 2020 LRDP Update will require all construction contractors to use no- or low-solids content (i.e., no- or low-volatile organic compound [VOC]) architectural coatings with a maximum VOC content of 50 grams per liter. **Mitigation Measure LRDP-AQ-3a: Reduce receptor exposure to construction generated diesel particulate matter** Land use development projects implemented under the 2020 LRDP Update will require its prime construction contractor to implement the following measures to reduce receptor exposure to DPM concentrations and associated health risks. • Limit excess equipment idling to no more than 5 minutes (included in Mitigation Measure LRDP-AQ-2b). • Locate operation of diesel-powered construction equipment as far away from sensitive receptors as possible. • Use equipment during times when receptors are not present (e.g., when school is not in session or during non-school hours), as feasible.	

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Table ES-1. Continued

Impact	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
		• Establish staging areas for the construction equipment that are as distant as possible from offsite receptors, including existing residences. • Where feasible, use equipment with engines meeting EPA Tier 4 Final or better emission standards prior to 2025 (Mitigation Measure LRDP-AQ-2b requires Tier 4 Final engines beginning in 2025 for all development except Aggie Square Phase I, which is required to use EPA Tier 4 Final or better engines regardless of the construction year). • Where feasible, use haul trucks with on-road engines instead of off-road engines even for onsite hauling. • Use electric, compressed natural gas, or other alternatively fueled construction equipment instead of the diesel counterparts, where available. • Coordinate with existing off-campus renters and homeowners where projected cancer risks exceed 10 per million and offer financial assistance to use Minimum Efficiency Reporting Value (MERV) 15 air filters. Financial assistance will be provided for the purchase of up to two filters per year, or per manufacturer recommendations. If a resident's home is not equipped with a heating, ventilation, and air conditioning (HVAC) system that can accept a MERV 15 air filter, UC Davis will purchase a portable home air cleaning device. UC Davis will establish an online procurement system (or similar) to facilitate the purchase and distribution of the filters to residents electing to participate in the program. **Mitigation Measure AQ-2a: Electrify cranes used during construction** All construction contractors working on PS5, California Tower, make-ready projects, and demolition of the East Wing of the main hospital must use electric-powered cranes. Diesel or fossil-fuel powered cranes are prohibited.	

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Table ES-1. Continued

Impact	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
		Mitigation Measure AQ-2b: Offset construction-generated NO_X emissions in excess of SMAQMD's threshold of significance Construction-generated emissions of NO_X would exceed the SMAQMD's threshold of significance in 2025 and 2026. Because construction-generated NO_x emissions would exceed SMAQMD's threshold of significance, UC Davis will pay a mitigation fee in the amount of $147,201 and an administrative fee in the amount of $7,360 to SMAQMD to reduce the project impacts from construction NO_X emissions to a less-than-significant level. This fee will be used to fund emissions reduction projects within the SVAB. The types of projects that have been used in the past to achieve such reductions include electrification of stationary internal combustion engines (such as agricultural irrigations pumps); replacing old trucks with new, cleaner, more efficient trucks; and a host of other stationary and mobile source emissions-reducing projects. The fee amount is based on an offset cost of $30,000 per ton of NO_X and the total quantity of NO_X emissions in excess of SMAQMD's NO_X threshold (4.9 tons based on the daily exceedances in 2025 and 2026). The administrative fee is 5 percent of the fee amount. UC Davis will pay the mitigation and administrative fees in full prior to issuing a demolition or grading permit for the project. For construction occurring during 2025 and 2026, construction contractors will provide annual construction activity monitoring data to estimate actual construction emissions. UC Davis will submit the annual construction activity monitoring data and an estimate of actual annual NO_x emissions to SMAQMD for review by February 1 of each year for the prior construction year. The annual report will reconcile paid fees, if any, for the prior year relative to actual emissions. If more emissions were generated than fees paid, UC Davis will submit payment for the deficient amount based on an offset cost of $30,000 per ton of NO_X. If more fees were paid than emissions generated, SMAQMD will either issue UC Davis a refund for the surplus or a credit that can be applied to future fee payments.	

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Table ES-1. Continued

Impact	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
		An alternative payment plan may be negotiated by UC Davis based on the timing of construction phases that are expected to exceed the SMAQMD's threshold of significance. Any alternative payment plan must be acceptable to SMAQMD and agreed upon in writing prior to issuance of a demolition or grading permit by UC Davis. In coordination with SMAQMD, UC Davis, or its designee, may reanalyze construction NO_X emissions from the project prior to starting construction to update the required mitigation and administrative fees. The analysis must be conducted using SMAQMD-approved emissions model(s) and the fee rates published at the time of reanalysis. The analysis may include onsite measures to reduce construction emissions if deemed feasible by UC Davis. All onsite measures assumed in the analysis must be included in the construction contracts and be enforceable by UC Davis.	
Impact AQ-3: Exposure of sensitive receptors to substantial pollutant concentrations (significant and unavoidable) During Construction, there could be sensitive receptor exposure to construction-generated DPM. Mitigation Measure LRDP-AQ-3a would reduce health risks, but it is unlikely they would be reduced to levels below SMAQMD thresholds without air filters. Accordingly, this impact is conservatively determined to be **significant and unavoidable.**	**S**	**Mitigation Measure LRDP-AQ-2a: Reduce construction-generated fugitive dust** Refer to measure description under Impact AQ-2. **Mitigation Measure LRDP-AQ-2b: Reduce construction-generated emissions from equipment and vehicle exhaust** Refer to measure description under Impact AQ-2. **Mitigation Measure LRDP-AQ-2c: Reduce evaporative emissions during architectural coatings** Refer to measure description under Impact AQ-2. **Mitigation Measure LRDP-AQ-3a: Reduce receptor exposure to construction generated diesel particulate matter** Refer to measure description under Impact AQ-2. **Mitigation Measure AQ-2a: Electrify cranes used during construction** Refer to measure description under Impact AQ-2.	**SU**

NI = no impact LTS = less than significant S = significant SU = significant and unavoidable

Table ES-1. Continued

Impact	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
		Mitigation Measure AQ-2b: Offset construction-generated NOX emissions in excess of SMAQMD's threshold of significance Refer to measure description under Impact AQ-2.	
Impact AQ-4: Other emissions (such as those leading to odors) adversely affecting a substantial number of people (less than significant) Construction activities would require the use of diesel-fueled equipment, architectural coatings, and asphalt paving, all of which can have an associated odor. Operation of the project could likewise result in minor levels of odor emissions from diesel combustion (delivery trucks, generators). Therefore, the project would not cause odor effects nor expose receptors to adverse odors. The impact would be **less than significant**.	**LTS**	**Mitigation Measures** No mitigation measures are necessary.	**LTS**
Biological Resources			
Impact BIO-1: Disturbance of vegetation-nesting migratory birds and raptors, including Swainson's hawk and white-tailed kite (less than significant with mitigation) Loss or disturbance of actively nesting migratory birds and raptors, including Swainson's hawk and white-tailed kite, would be considered a significant impact. Implementation of Mitigation Measure LRDP-BIO-2 would reduce this impact to a **less-than-significant** level.	**S**	**Mitigation Measure BIO-2: Modify existing structures during the non-breeding season for purple martin and other structure-nesting migratory birds or implement exclusion measures to deter nesting** Prior to any construction activities that would modify or demolish any existing building structures, the following measures will be implemented to avoid and minimize impacts to purple martins and other structure-nesting migratory birds, and to avoid violation of the MBTA and CFGC Section 3503. • Conduct building demolition and modification activities during the non-breeding season for structure-nesting migratory birds (generally September 1 through January 31). If this is not possible, the University will implement the following avoidance measures. • Prior to the start of each phase of demolition/construction that is anticipated to occur during the migratory bird breeding season (generally February through August), the University will retain a qualified wildlife biologist to thoroughly inspect structures that	**LTS**

NI = no impact LTS = less than significant S = significant SU = significant and unavoidable

Table ES-1. Continued

Impact	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
		would be modified or disturbed to locate remnant bird nests or areas such as drain holes or crevices that could be used as nesting areas by migratory birds, such as purple martins. It is preferable to perform this survey in the non-breeding season (September 1 through January 31) so that if nests are found and are determined to be inactive, they may be removed. • After inactive nests are removed and prior to construction that would occur between February 1 and August 31, known or potential nesting areas on or within the building structure to be modified or demolished will be covered with a suitable exclusion material that will prevent birds from nesting (i.e., 0.5- to 0.75-inch mesh netting, plastic tarp, or other suitable material safe for wildlife). Portions of the existing structures containing drain holes or crevices that would be modified or disturbed may also will be covered or filled with suitable material to prevent nesting (i.e., fiberglass insulation, foam padding, and polyvinyl chloride [PVC]/acrylonitrile butadiene styrene [ABS] caps). The University will hire a qualified wildlife management specialist experienced with installation of bird exclusion materials to ensure that exclusion devices are properly installed and will avoid inadvertent entrapment of migratory birds. All exclusion devices will be installed before February 1 and will be monitored throughout the breeding season (typically several times a week). The exclusion material will be anchored so that birds cannot attach their nests to the structures through gaps in a net. • Exclusion devices for migratory birds will be installed consistent with bat exclusion measures and in a manner that does not entrap day-roosting bats. • If exclusion material is not installed on structures prior to February 1 and migratory birds colonize a structure, removal or modification to that portion of the structure may not occur until after August 31, or until a qualified biologist has determined that the young have fledged and the nest is no longer in use.	

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Table ES-1. Continued

Impact	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
		• If surveys determine that no active bird nests are present within existing structures to be modified or demolished and appropriate steps are taken to prevent migratory birds from constructing new nests as described in the preceding measures, work can proceed at any time of the year.	
Impact BIO-2: Disturbance of structure-nesting migratory birds, including purple martin (less than significant with mitigation) Construction activities that remove or modify existing building or parking structures could disturb an active purple martin or other structure-nesting migratory bird nest. These activities could result in the incidental loss of fertile eggs or nestlings, or otherwise lead to nest abandonment. Disturbance or loss of a purple martin nest, or that of another migratory bird, would violate the MBTA and California Fish and Game Code Section 3503. Implementation of Mitigation Measure LRDP-BIO-3 would reduce this impact to a **less-than-significant** level.	**S**	**Mitigation Measure LRDP-BIO-3: Modify existing structures during the non-breeding season for purple martin and other structure-nesting migratory birds or implement exclusion measures to deter nesting** For any projects implemented under the 2020 LRDP Update that would modify or demolish any existing building structures, the following measures will be implemented prior to initiation of construction to avoid and minimize impacts on purple martins and other structure-nesting migratory birds, and to avoid violation of the MBTA and California Fish and Game Code Section 3503. • Conduct building demolition and modification activities during the non-breeding season for structure-nesting migratory birds (generally September 1 through January 31). If this is not possible, the University will implement the following avoidance measures. • Prior to the start of each phase of demolition/construction that is anticipated to occur during the migratory bird breeding season (generally February through August), the University will retain a qualified wildlife biologist to thoroughly inspect structures that would be modified or disturbed to locate remnant bird nests or areas such as drain holes or crevices that could be used as nesting areas by migratory birds such as purple martins. It is preferable to perform this survey in the non-breeding season (September 1 through January 31) so that if nests are found and are determined to be inactive, they may be removed. • After inactive nests are removed and prior to construction that would occur between February 1 and August 31, known or potential nesting areas on or within the building structure to be	**LTS**

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Table ES-1. Continued

Impact	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
		modified or demolished will be covered with a suitable exclusion material that will prevent birds from nesting (i.e., 0.5- to 0.75-inch mesh netting, plastic tarp, or other suitable material safe for wildlife). Portions of the existing structures containing drain holes or crevices that would be modified or disturbed also will be covered or filled with suitable material to prevent nesting (i.e., fiberglass insulation, foam padding, and polyvinyl chloride [PVC]/acrylonitrile butadiene styrene [AB**Error! Bookmark not defined.**S] caps). The University will ensure that a qualified wildlife management specialist experienced with installation of bird exclusion materials will ensure that exclusion devices are properly installed and will avoid inadvertent entrapment of migratory birds. All exclusion devices will be installed before February 1 and will be monitored throughout the breeding season (typically several times a week). The exclusion material will be anchored so that birds cannot attach their nests to the structures through gaps in a net. • Exclusion devices for migratory birds will be installed consistent with bat exclusion measures and in a manner that does not entrap day-roosting bats. • If exclusion material is not installed on structures prior to February 1 and migratory birds colonize a structure, removal or modification to that portion of the structure may not occur until after August 31, or until a qualified biologist has determined that the young have fledged and the nest is no longer in use. • If surveys determine that no active bird nests are present within existing structures to be modified or demolished and appropriate steps are taken to prevent migratory birds from constructing new nests as described in the preceding measures, work can proceed at any time of the year.	
Impact BIO-3: Disturbance of structure-roosting bats (less than significant with mitigation)	**S**	**Mitigation Measure BIO-3: Conduct pre-construction surveys for roosting bats and implement protection measures**	**LTS**

NI = no impact LTS = less than significant S = significant SU = significant and unavoidable

Table ES-1. Continued

Impact	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
Construction activities that remove or modify existing building or parking structures could disturb structure-roosting bats during the maternity or hibernation period. Because structure-roosting bats often occur in large colonies, removal or disturbance of a roost site could result in the loss of a large number of bats, which could result in a substantial decrease in the local population of native bats. Implementation of Mitigation Measure BIO-3 would reduce this impact to a **less-than-significant** level.		Baseline data about how bats may use structures on the project site and in the project vicinity, their individual numbers, or how they vary seasonally are not available. Daily and seasonal variations in habitat use by bats is common. To obtain the highest likelihood of detection, the following pre-construction bat surveys will be conducted within the construction area prior to modification or demolition of existing building structures. If surveys determine that bats are roosting in the construction area, the University will implement the following protective measures. ***Conduct Pre-Construction Surveys at Structures*** • Before work begins on any building or structure, qualified bat biologists will conduct a thorough habitat assessment of the structures to evaluate their potential to support roosting bats and to look for evidence of bat use (i.e., guano, urine staining, audible vocalizations). The biologists will inspect crevices, drain holes, and other visible features that could house bats. If potential roost areas are identified within the disturbance area, then evening emergence surveys (further described below) would be conducted to determine whether the structure is occupied by bats. Surveys will occur no earlier than 30 days prior to the construction start-date. Prior to demolition of existing structures, it is recommended that a habitat assessment and emergence surveys be conducted 1-2 years before demolition during multiple seasons (i.e., summer breeding and winter hibernation) to allow for sufficient time to evaluate potential roost sites, determine occupancy status, identify species and population numbers, develop an appropriate eviction or exclusion plan, and establish appropriate offsite replacement habitat, if necessary. • Qualified biologists also will conduct evening emergence surveys at structures that contain suitable roosting areas. The surveys will consist of at least one biologist stationed near potential entry and exit points of the structure watching for emerging bats from a half hour before sunset to 1–2 hours after sunset for a minimum of 2	

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Table ES-1. Continued

Impact	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
		nights at each survey location within the season that construction would be taking place. Surveys may take place over several nights to fully cover the extent of structure work. All emergence surveys will be conducted during favorable weather conditions (calm nights with temperatures conducive to bat activity and no precipitation predicted). Survey methodology may be supplemented as new research identifies advanced survey techniques and equipment that would aid in bat detections. Acoustic detectors will be used during emergence surveys to obtain data on bat species present in the survey area at the time of detection. • If a building or structure proposed for modification or demolition is identified as supporting an active bat roost, additional surveys may be required to determine how the structure is used by bats—whether it is used as a night roost, maternity roost, migration stopover, or for hibernation. ***Identify Protective Measures for Bats Using Structures*** • If it is determined that bats are using building structures within or adjacent to the construction area as roost sites, the University will coordinate with CDFW to identify protective measures to avoid and minimize impacts on roosting bats based on the type of roost and timing of activities. These measures could include the following actions. ○ If a non-maternity roost is located within a structure that would be modified or disturbed in a manner that would expose the roost, bats will be excluded from the structure by a qualified wildlife management specialist working with a bat biologist. An exclusion plan will be developed in coordination with CDFW that identifies the type of exclusion material/devices to be used, the location and method for installing the devices, and monitoring schedule for checking the effectiveness of the devices. Exclusion devices will be installed between September 15 and October 31 to avoid affecting maternal and hibernating bat roosts and will take place during weather and temperature conditions	

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Table ES-1. Continued

Impact	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
		conducive to bat activity. Because bats are expected to tolerate temporary construction noise and vibrations, bats will not be excluded from structures if no direct impacts on the roost are anticipated. ○ An alternative to installing exclusion devices would be to make structural changes to a known roost proposed for removal to create conditions in the roost that are undesirable to roosting bats and encourage the bats to leave on their own (e.g., open additional portals so that the temperature, wind, light, and precipitation regime in the roost change). Structural changes to the roost will be authorized by CDFW and will be performed during the appropriate exclusion timing (listed above) to avoid harming bats. ○ If a maternity roost is located, whether solitary or colonial, that roost will remain undisturbed until September 15 or until a qualified biologist has determined that the roost is no longer active.	
Impact BIO-4: Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance (potentially significant) Construction of the project would not result in removal of heritage or specimen trees on the campus. This impact would be **less than significant.**	**LTS**	**Mitigation Measures** No mitigation measures are necessary.	**LTS**
Archaeological, Historical, and Tribal Cultural Resources			
Impact CUL-1: Potential to cause a substantial adverse change in the significance of a historical resource (less than significant) The California Hospital Tower Project would not result in any indirect impacts that would cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5. This impact would be **less than significant**	**NI**	**Mitigation Measures** No mitigation measures are necessary.	**NI**

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Table ES-1. Continued

Impact	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
Impact CUL-2: Potential to cause a substantial adverse change in the significance of an archaeological resource (less than significant with mitigation)	**S**	**Mitigation Measure LRDP-CUL-2a: Conduct cultural resources sensitivity training** Prior to any ground disturbance, construction crews will be required to attend a cultural resources sensitivity training. The training will focus on identifying potential archaeological resources, as well as human remains. If potential archaeological resources or human remains are encountered, construction crews will be instructed to notify the UC immediately. **Mitigation Measure LRDP-CUL-2b: Stop work in the event of discovery of an archaeological resource** If an archaeological resource is discovered during construction, all project-related ground disturbance within 100 feet of the find will cease. The UC will contact a qualified archaeologist within 24 hours to inspect the site. If a resource is determined to qualify as a unique archaeological resource (as defined by CEQA), and the UC determines, in compliance with PRC 21083.2, which requires preservation in place as a first option, that the resource cannot feasibly be avoided, the UC will retain a qualified archaeologist to conduct excavations to recover the material. Any archaeologically important artifacts recovered during monitoring will be cleaned, catalogued, and analyzed, with the results presented in an archaeological data recovery report.	**LTS**
Impact CUL-3: Disturbance of any human remains, including those interred outside of dedicated cemeteries (less than significant with mitigation) Because the project site overlaps with the identified cemetery area, it is likely that human remains would be encountered and testing and recovery would be required. Implementation of Mitigation Measures CUL-3 and LRDP-CUL-3b would ensure that impacts on human remains are avoided and accordingly, this impact would be **less than significant**.	**S**	**Mitigation Measure CUL-3: Develop and implement a testing, monitoring, and burial recovery plan** The University will retain a qualified archaeologist to develop and implement a subsurface testing, monitoring, and burial recovery plan. When project plans identifying the horizontal and vertical extent of subsurface disturbance have been developed, a testing plan to identify the extent of the cemetery area boundaries within the project footprint will be prepared. The plan will include methods and locations of testing and will provide guidance for the recovery, treatment and reburial of any human remains or associated artifacts located during testing and project construction. The plan will also include guidance for	**LTS**

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Table ES-1. Continued

Impact	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
		construction monitoring for burials, including locations that require monitoring and monitoring methods. **Mitigation Measure LRDP-CUL-3b: Stop work if human remains are encountered** In the event of a discovery on campus of human bone, suspected human bone, or a burial, all excavation within 100 feet of the find will halt immediately and the University will contact a qualified archaeologist or the County Coroner within 24 hours to determine whether the bone is human. Consistent with California Health and Safety Code Section 7050.5(b), which prohibits disturbance of human remains uncovered by excavation until the coroner has made a finding relative to PRC Section 5097.5 procedures, the University will ensure that the remains, and a reasonable buffer around the remains established in coordination with the coroner or archaeologist, are protected against further disturbance. If it is determined that the find is of Native American origin, the University will comply with the provisions of PRC Section 5097.98 regarding identification and involvement of the Native American Most Likely Descendant (MLD). If human remains cannot be left in place, the University will ensure that the qualified archaeologist and the MLD are provided opportunity to confer on archaeological treatment of human remains, and that appropriate studies, as identified through this consultation, are carried out prior to reinterment. The University will provide results of all such studies to the local Native American community and will provide an opportunity of local Native American involvement in any interpretative reporting. If the human remains are determined to be historic, and cannot be avoided and preserved in place, the project site will be excavated under the supervision of an archaeologist and all human remains and associated artifacts will be removed from the site and analyzed. After analysis, all recovered human remains and associated artifacts will be placed in caskets and buried in a single mass grave at a local cemetery.	

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Table ES-1. Continued

Impact	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
Impact TCR-1: Potential to cause a substantial adverse change in the significance of a tribal cultural resource with cultural value to a California Native American tribe and that is listed or eligible for listing in the California Register of Historical Resources or in a local register of historical resources as defined in Public Resources Code Section 5020.1(k) (no impact) UC Davis has not received requests from tribes culturally or traditionally affiliated with the project area in Sacramento County to be notified of opportunities to consult on new projects under AB 52. Therefore, UC Davis is not required to take further action under AB 52. Because there were no requests under AB 52, no consultations occurred, and no tribal cultural resources listed or eligible for listing in the CRHR or a local register were identified under the AB 52 process. Therefore, there would be **no impact**.	**NI**	**Mitigation Measures** No mitigation measures are necessary.	**NI**
Impact TCR-2: Potential to cause a substantial adverse change in the significance of a tribal cultural resource with cultural value to a California Native American tribe and that is a resource determined by the lead agency to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1 (no impact) UC Davis has not received requests from tribes culturally or traditionally affiliated with the project area in Sacramento County to be notified of opportunities to consult on new projects under AB 52. Therefore, UC Davis is not required to take further action under AB 52. Because there were no requests under AB 52, no consultations occurred and no tribal cultural resources with cultural value to a California Native American Tribe were identified under the AB 52 process. Therefore, there would be no impact.	**NI**	**Mitigation Measures** No mitigation measures are necessary. If tribal cultural resources are identified during project implementation, compliance with PRC Section 21080.3.2 and Section 21084.3(a) would reduce impacts to a less-than-significant level.	**NI**
Energy			

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Table ES-1. Continued

Impact	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
Impact EN-1: Wasteful, inefficient, or unnecessary consumption of energy resources during project construction or operation (less than significant) The project would comply with the Title 24 Building Energy Efficiency Standards and is committed to achieving LEED Silver and UC Sustainable Practice Policy Green Building targets, which are designed to reduce waste and increase building energy efficiency. Energy consumption from the project through construction, building operation, and transportation would not be considered wasteful, inefficient, or unnecessary. This impact would be **less than significant**.	**LTS**	**Mitigation Measures** No mitigation measures are necessary.	**LTS**
Impact EN-2: Conflict with or obstruction of a state or local plan for renewable energy or energy efficiency (less than significant) The project would meet Title 24 Building Energy Efficiency Standards by attainment of LEED Silver standards and continued implementation of the UC Sustainable Practices Policy and other efficiency programs and initiatives; therefore, this impact would be **less than significant**.	**LTS**	**Mitigation Measures** No mitigation measures are necessary.	**LTS**
Geology, Soils, and Seismicity			
Impact GEO-1: Potential substantial adverse effects, including the risk of loss, injury, or death involving: (1) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault; (2) strong seismic ground shaking; (3) seismic-related ground failure, including liquefaction; or (4) landslides (less than significant with mitigation) The Geologic Hazards Evaluation and Geotechnical Investigation prepared for the project concluded that based on dense to very dense granular materials encountered below the groundwater	**S**	**Mitigation Measure LRDP-GEO-1: Implement design recommendations in the geotechnical investigation** A site-specific, design-level geotechnical investigation was prepared for the project (Rutherford & Chekene 2021). The design recommendations from this investigation will be incorporated into the plans and specifications for the California Hospital Tower Project. The design recommendations cover structural design recommendations, ancillary structures, water tanks, basement walls and slabs, issues relating to the interface between the existing Surgery Emergency Services Pavilion and the new tower, supported excavations, civil	**LTS**

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Table ES-1. Continued

Impact	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
table at the site, the potential for liquefaction hazard is low. The report also noted that the potential for bearing capacity failure is low. Per the report, adherence to the 2019 California Building Code and the design recommendations in the geotechnical report (Mitigation Measure GEO-1) would result in a **less-than-significant impact with mitigation**.		design recommendations, earthwork and grading, soil cement columns, and corrosion potential and below grade construction.	
Impact GEO-2: Potential to result in substantial soil erosion or the loss of topsoil (less than significant) Topsoil at the project site has already been removed and erosion impacts would be controlled by compliance with regulations and implementation of requirements of permits. This impact would be **less than significant**.	**LTS**	**Mitigation Measures** No mitigation measures are necessary.	**LTS**
Impact GEO-3: Placement of project-related facilities on a geologic unit or soil that is unstable or that would become unstable as a result of the project and potentially result in an onsite or offsite landslide, lateral spreading, subsidence, liquefaction, or collapse (less than significant with mitigation) As discussed in Impact GEO-1 above, the potential for liquefaction at the project site is low. The project would adhere to the 2019 CBC and Mitigation Measure GEO-1, which would require adherence to the design recommendations from the geotechnical investigation. Implementation of Mitigation Measure GEO-1 would reduce this impact to a **less-than-significant level**.	**S**	**Mitigation Measure LRDP-GEO-1: Implement design recommendations in the geotechnical investigation** Refer to measure description under Impact GEO-1.	**LTS**

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Table ES-1. Continued

Impact	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
Impact GEO-4: Placement of project-related facilities on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property (less than significant) With adherence to the provisions in the California Building Code (CBC), as required by the University of California for all new construction, expansive soils would be addressed consistent with the current engineering standard of care, and the impact of the project would be **less than significant**.	**LTS**	**Mitigation Measures** No mitigation measures are necessary.	**LTS**
Impact GEO-5: Placement of project facilities on soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems in areas where sewers are not available for the disposal of wastewater (no impact) The Sacramento Campus is connected to the Sacramento wastewater system and no component of the project would require the installation of a septic system. Therefore, there would be **no impact.**	**NI**	**Mitigation Measures** No mitigation measures are necessary.	**NI**
Impact GEO-6: Direct or indirect destruction of a unique paleontological resource or site or unique geologic feature (less than significant with mitigation) Excavation associated with construction could result in the discovery of paleontological resources, which would be a significant impact. Implementation of Mitigation Measure GEO-6 to prepare and implement a monitoring plan would reduce this impact to a **less-than-significant** level.	**S**	**Mitigation Measure GEO-6: Prepare and implement a paleontological monitoring plan** Prior to construction, UC will retain a qualified paleontologist to prepare and implement a paleontological monitoring plan to address any excavation of more than 10 feet in depth. Boring and small excavations need not be monitored. The plan will include, at a minimum, criteria for sensitivity training for construction workers, criteria for monitoring, processes for stopping work for paleontological discoveries, processes for removing paleontological finds, and plans for the final disposition of those finds. The plan will also include a requirement for fossil preparation and a monitoring report.	**LTS**
Greenhouse Gas Emissions			

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Table ES-1. Continued

Impact	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
Impact GHG-1: Generation of greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment (less than significant) With implementation of the University Carbon Neutrality Initiative pursuant to the UC's Sustainable Practices Policy, the project would reduce GHG emissions by more than 59,000 metric tons CO_2e under 2030 buildout conditions and 60,000 metric tons CO_2e under 2031 buildout conditions, compared to existing conditions. As described further below the table, these reductions would be achieved through GHG offsets purchased to meet the requirement of carbon neutrality for Scope 1 and 2 emissions by 2025. Because the project would result in a net reduction of GHG emissions, implementation of the project would not contribute a significant amount of GHG emissions or contribute to existing cumulative emissions. Accordingly, this impact would be **less than significant**.	**LTS**	**Mitigation Measures** No mitigation measures are necessary.	**LTS**
Impact GHG-2: Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases (less than significant with mitigation) Considering the accelerated timeframe for offsetting emissions and ultimately achieving carbon neutrality, Mitigation Measure LRDP-GHG-2 is required. This measure identifies actions beyond the UC Sustainable Practices Policy that will achieve additional GHG reductions on the Sacramento Campus. The mitigation also expands the UC's carbon neutrality commitments, requiring the Sacramento Campus to offset GHG emissions to achieve a 40 percent reduction in 1990 emissions levels by 2030, an 80 percent reduction in 1990 emissions levels by 2040, and carbon neutrality beginning in 2045. Mitigation Measure LRDP-GHG-2 will be implemented alongside the UC Sustainable Practices Policy and University Carbon Neutrality Initiative, where any additional GHG reductions needed to meet the 2030, 2040, and 2045 performance	**S**	**Mitigation Measure LRDP-AQ-2e: Reduce operational PM10 emissions** UC Davis will implement a program that incentivizes employees, students, residents, and visitors to carpool, use electric vehicles (EVs), walk/bike, or use public transit to commute to and from the Sacramento Campus. The program will include, but is not limited to, the following features. • **Parking**: Limit parking capacity to meet onsite demand and provide preferential parking to carpool vehicles, vanpool vehicles, and EVs. The program will implement the following parking related sub-measures. a. Provide no more onsite parking spaces than necessary to accommodate the number of employees working at a project site and/or the number of residents living at a project site, as determined by the project size and design.	**LTS**

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Table ES-1. Continued

Impact	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
standards will be achieved through the strategies outlined in the mitigation measure. Because Mitigation Measure LRDP-GHG-2 will reduce campus-wide GHG emissions to 40 percent below 1990 emissions levels by 2030, 80 percent reduction below 1990 emissions levels by 2040, and carbon neutral by 2045, the project would not conflict with the GHG reduction targets of SACOG's MTP/SCS, SB 32, or EO B-55-18. Consequently, this impact is **less than significant with mitigation**.		b. Where feasible, for future residential units (on-campus and Aggie Square Phase I), lease/sell parking space separately from the unit and provide the tenant the option of not purchasing/owning a space. c. Nonresidential land uses with 20 or more onsite parking spaces will dedicate preferential parking spaces to vehicles with more than one occupant and zero emission vehicles (including battery electric vehicles and hydrogen fuel cell vehicles). The number of dedicated spaces should be no less than two spaces or 5 percent of the total parking spaces on the project site, whichever is greater. These dedicated spaces will be in preferential locations such as near the main entrances to the buildings served by the parking lot and/or under the shade of a structure or trees. These spaces will be clearly marked with signs and pavement markings. This measure will not be implemented in a way that prevents compliance with requirements in the California Vehicle Code regarding parking spaces for disabled persons or disabled veterans. d. Maintain a virtual or real "ride board" for employees and students to organize carpools and incentives for employees using public transit to commute to and from campus. • **Vendor Trips**: Implement a program that incentivizes vendors to reduce the emissions associated with vehicles and equipment serving the UC Davis Sacramento Campus. The program will implement the following sub-measures to reduce vendor-related, mobile-source emissions. a. Incentivize the use of electric vehicles or other clean fuels in their trucks and equipment. b. Work with vendors, especially those using trucks, to reduce the number of vendor trips made to the campus through trip chaining, reducing the number of shipments, or other methods.	

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Table ES-1. Continued

Impact	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
		• **Campus Shuttles**: Work with Fleet Services to convert Med-Transit (onsite) shuttles to electric or lower-emission fuels or implement emission control technologies to reduce criteria air pollutant emissions from existing conditions. • **Pedestrian and Bicycle Infrastructure**: Enhance walkability and connectivity of the Sacramento Campus to surrounding residential and commercial uses. The program will implement the following site design related sub-measures. a. Ensure all new external connections from the Sacramento Campus to existing or planned streets include bicycle/pedestrian access. b. Eliminate physical barriers such as walls, landscaping, and slopes that impede pedestrian circulation throughout the Sacramento Campus. c. Require all new sidewalks internal and adjacent to the Sacramento Campus to be at least 5 feet wide. Provide grade separation and wider sidewalks (e.g., 7 feet), wherever feasible. d. Require all new sidewalks on the Sacramento Campus to include vertical curbs or a planting strip to separate the sidewalk from the parking or travel lane. e. Construct new roads on the Sacramento Campus to include at least one traffic calming feature, such as street parking, chicanes, horizontal shifts (lane centerline that curves or shifts), bollards, rumble strips, or woonerfs. Coordinate with the City of Sacramento to encourage these features on external roads connecting to the campus. f. Construct new intersections on the Sacramento Campus to include marked crosswalks, count-down signal timers, curb extensions, channelization islands, speed tables, raised crosswalks, raised intersections, median islands, tight corner radii, traffic circles or mini-circles. Coordinate with the City of	

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Table ES-1. Continued

Impact	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
		Sacramento to encourage these features on external intersections connecting to the campus. • **Landscaping Equipment**: Reduce emissions from landscaping equipment through the following sub-measures. a. Beginning in 2030, require UC Davis landscapers and contracted landscaping companies that maintain campus greenspaces to utilize electric or alternatively fueled mowers and handheld equipment (e.g., trimmers, blowers). b. Encourage xeriscape landscaping in all new campus greenspaces. **Mitigation Measure TRA-1e: Monitor transit service performance and implement transportation demand management strategies to minimize delays to transit service** Refer to measure description under Impact TRA-1. **Mitigation Measure LRDP-GHG-2: Implement verifiable actions or activities or purchase the equivalent GHG credits from a CARB approved registry or a locally approved equivalent program to reduce GHG emissions generated by the Sacramento Campus** As part of this mitigation measure, UC Davis is making the following separate, though overlapping, GHG emission reduction commitments: (1) As a CARB-covered entity, UC Davis will ensure emissions generated by the Central Energy Plant comply with CARB's cap and trade program; (2) Per the UC Sustainable Practices Policy, Scope 1 and Scope 2 GHG emissions generated by the Sacramento Campus shall, commencing in 2025, be entirely carbon neutral; (3) Also per the UC Sustainable Practices Policy, commencing in 2050, Scope 1, Scope 2, and Scope 3 (commuting and air travel) emissions generated by the Sacramento Campus shall be offset; and (4) UC Davis shall undertake additional action to achieve the following GHG reduction performance standards for the Sacramento Campus:	

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Table ES-1. Continued

Impact	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
		• By 2030, GHG emissions generated by the Sacramento Campus shall not exceed 60 percent of emissions generated by the campus in 1990. • By 2040, GHG emissions generated by the Sacramento Campus shall not exceed 20 percent of emissions generated by the campus in 1990. • By 2045 and thereafter, the Sacramento Campus shall achieve carbon neutrality (i.e., net zero emissions). GHG emissions generated by the Sacramento Campus in 1990 were quantified as part of the 2020 LRDP Update Supplemental EIR and total 50,404 metric tons CO_2e. This yields the following GHG targets for the above performance standards. • By 2030, GHG emissions generated by the Sacramento Campus shall not exceed 30,242 metric tons CO_2e. • By 2040, GHG emissions generated by the Sacramento Campus shall not exceed 10,081 metric tons CO_2e. • By 2045 and thereafter, GHG emissions generated by the Sacramento Campus shall not exceed net 0 metric tons CO_2e. The 2030, 2040, and 2045 reduction targets are required to be achieved based on actual emission calculations as completed in the future, as discussed below under *Measure Monitoring and Reporting*, and may therefore change overtime. It is possible that some strategies implemented under the below commitments could independently achieve the performance standards of this measure. Various combinations of strategies could also be pursued to optimize total costs or community co-benefits. UC Davis will be responsible for determining the overall mix of strategies necessary to ensure the performance standards to mitigate GHG generated by the Sacramento Campus. Each of the measure commitments is described in more detail below.	

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Table ES-1. Continued

Impact	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
		Compliance with the California Air Resources Board Cap and Trade Program Any carbon credits purchased for the purpose of compliance with CARB's cap and trade program shall be purchased from an accredited carbon credit market. Such credits (or California Carbon Offsets) shall be registered with, and retired[1] by an Offset Project Registry, as defined in 17 California Code of Regulations § 95802(a), approved by CARB such as, but not limited to, Climate Action Reserve (CAR), American Carbon Registry, or Verra (formerly Verified Carbon Standard). In order to demonstrate that the carbon credits provided are real, permanent, additional, quantifiable, verifiable, and enforceable, as those terms are defined in the California Health and Safety Code Sections 38562(d)(1) and (2), UC Davis shall document in its annual report: (i) the protocol used to develop those credits, and (ii) the third-party verification report concerning those credits. As and when the credits are retired, UC Davis shall document in its annual report the unique serial numbers of those credits showing that they have been retired. ***Compliance with the University of California Sustainable Practices Policy*** Compliance with the UC Sustainable Practices Policy for carbon neutrality will be accomplished through reductions in direct emissions, the purchase of renewable electricity and possibly biomethane, and the purchase of carbon credits. UC Davis will purchase voluntary carbon credits as the final action to reach the GHG emission reduction targets outlined in the UC Sustainable Practices Policy. As part of the University Carbon Neutrality Initiative, internal guidelines have been developed to ensure that any use of credits for this purpose will result in additional, verified GHG emissions reductions from actions that align, as much as possible, with the University's research, teaching, and public service	

[1] When Climate Reserve Tonnes (CRTs) are transferred to a retirement account in the Reserve System, they are considered retired. Retirement accounts are permanent and locked to prevent a retired CRT from being transferred again. CRTs are retired when they have been used to offset an equivalent ton of emissions or have been removed from further transactions on behalf of the environment.

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Table ES-1. Continued

Impact	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
		mission. Specifically, any voluntary carbon credits used by UC Davis to comply with the UC Sustainable Practices Policy will: 1. Prioritize local (within the Sacramento region) and in-state credits over national credits. Credits shall be third-party verified by a major registry recognized by CARB such as CAR. If sufficient local and in-state credits are not available, UC Davis will purchase CARB conforming national credits registered with an approved registry. 2. Be reported publicly and tracked through the Climate Registry (TCR) as required by the UC Sustainable Practices Policy.2 TCR is a non-profit organization governed by U.S. states and Canadian provinces and territories. UC Davis TCR reports will be third-party verified and posted publicly. ***Additional Greenhouse Gas Reduction Actions*** UC Davis shall do one or more of the following options to reduce GHG emissions generated by the Sacramento Campus to achieve the measure performance standards. 1. Implement onsite GHG reduction actions on the Sacramento Campus (Option 1). 2. Implement GHG reduction actions throughout the communities surrounding the Sacramento Campus in the City of Sacramento (Option 2). 3. Purchase CARB verified GHG credits (Option 3). Each of the options is described in more detail below. *Onsite Greenhouse Gas Reduction Actions* Actions to reduce GHG emissions on the Sacramento Campus (Option 1) must exceed or not duplicate activities implemented pursuant to the UC Sustainable Practices Policy. Potential actions may include, but are not limited to the following.	

[2] Reports can be accessed at: https://cris4.org/.

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Table ES-1. Continued

Impact	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
		• **(1)-1**: All campus fleet vehicles scheduled for retirement shall be replaced with fuel efficient, LEV, ZEV, and/or alternative-fueled vehicles consistent with the needs of the campus. • **(1)-2**: New construction shall be required to employ solar roofs on at least 30 percent of roof square footage, unless mechanical equipment or other building specifications safely prohibit inclusion of solar roofs. The inclusion of solar roofs may be part of meeting LEED Silver or equivalent requirements. • **(1)-3**: Require use of natural alternatives to HFCs that are feasible and readily available for refrigeration and air conditioning. Natural refrigerants include ammonia, CO_2, or hydrocarbons. UC Davis shall require all future development to meet CARB regulations restricting HFCs, if and when adopted. If UC Davis complies with the performance standards of this measure, as specified above, through implementation of onsite GHG reduction actions (Option 1), then no further action shall be required. If additional GHG reductions are required to meet the performance standards, they may be achieved through offsite GHG reduction actions (Option 2) or procurement of GHG credits (Option 3). *Offsite GHG Reduction Actions* Actions to reduce GHG emissions throughout the surrounding community (Option 2) may include, but are not limited to the following. • **(2)-1:** Develop a residential energy retrofit package in conjunction with the SMUD to achieve reductions in natural gas and electricity usage by the surrounding community. The retrofit package may include identification and sealing of dust and air leaks, installation of programmable thermostats, replacement of interior high use incandescent lamps with compact florescent lamps or LEDs, replacement of natural gas dryers with electric clothes dryers, replacement of windows with double-pane or triple-pane solar-control low-E argon gas filled wood frame windows, or other strategies selected by UC Davis in consultation with SMUD.	

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Table ES-1. Continued

Impact	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
		• **(2)-2:** Develop a commercial energy retrocommissioning package in conjunction with SMUD to improve the energy efficiency of surrounding commercial buildings by at least 15 percent, relative to current (2019) energy consumption levels. • **(2)-3:** Develop a residential rooftop solar installation program in conjunction with SMUD. The installation program will allow surrounding homeowners to install solar photovoltaic systems at zero or minimal up-front cost. All projects installed under this measure must be designed for high performance (e.g., optimal full-sun location, solar orientation) and additive to utility RPS goals. • **(2)-4:** Develop a commercial rooftop solar installation program in conjunction with SMUD. The installation program will allow surrounding business owners to install solar photovoltaic systems at zero or minimal up-front cost. All projects installed under this measure must be designed for high performance (e.g., optimal full-sun location, solar orientation) and additive to utility RPS goals. • **(2)-5:** Partner with Sacramento Regional Transit to assess the feasibility of improving high-quality, regional transit serving the Sacramento Campus. GHG reductions achieved by all offsite projects must be real, permanent, quantifiable, verifiable, enforceable, and additional (per the definition in California Health and Safety Code Sections 38562(d)(1)), as defined further below under Option 3. If UC Davis complies with the performance standards of this measure, as specified above, through implementation of offsite GHG reduction actions (Option 2), then no further action shall be required. If additional GHG reductions are required to meet the performance standards, they may be achieved through onsite GHG reduction actions (Option 1) or procurement of GHG credits (Option 3). *GHG Credits* UC Davis may purchase GHG credits from a voluntary GHG credit provider that has an established protocol that requires projects	

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Table ES-1. Continued

Impact	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
		generating GHG credits to demonstrate that the reduction of GHG emissions are real, permanent, quantifiable, verifiable, enforceable, and additional (per the definition in California Health and Safety Code Sections 38562(d)(1) and (2)). Definitions for these terms are as follows. • **Real:** Estimated GHG reductions should not be an artifact of incomplete or inaccurate emissions accounting. Methods for quantifying emission reductions should be conservative to avoid overstating a project's effects. The effects of a project on GHG emissions must be comprehensively accounted for, including unintended effects (often referred to as "leakage")[3]. • **Additional:** GHG reductions must be additional to any that would have occurred in the absence of the Climate Action Reserve, or of a market for GHG reductions generally. "Business as usual" reductions (i.e., those that would occur in the absence of a GHG reduction market) should not be eligible for registration. • **Permanent:** To function as offsets to GHG emissions, GHG reductions must effectively be "permanent." This means, in general, that any net reversal in GHG reductions used to offset emissions must be fully accounted for and compensated through the achievement of additional reductions. • **Quantifiable:** The ability to accurately measure and calculate GHG reductions or GHG removal enhancements relative to a project baseline in a reliable and replicable manner for all GHG emission sources, GHG sinks, or GHG reservoirs included within the offset project boundary, while accounting for uncertainty and activity-shifting leakage and market-shifting leakage. • **Verified:** GHG reductions must result from activities that have been verified. Verification requires third-party review of monitoring data for a project to ensure the data are complete and accurate.	

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Table ES-1. Continued

Impact	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
		• **Enforceable**: The emission reductions from offset must be backed by a legal instrument or contract that defines exclusive ownership and the legal instrument can be enforced within the legal system in the country in which the offset project occurs or through other compulsory means. Please note that per this mitigation measure, only credits originating within the United States are allowed. GHG credits may be in the form of GHG offsets for prior reductions of GHG emissions verified through protocols or forecasted mitigation units for future committed GHG emissions meeting protocols. All credits shall be documented per protocols functionally equivalent in terms of stringency to CARB's protocol for offsets in the cap and trade program. If using credits not from CARB protocols, UC Davis must provide the protocols from the credit provider and must document why the protocols are functionally equivalent in terms of stringency to CARB protocols. UC Davis shall identify GHG credits in geographies closest to the Sacramento Campus first and only go to larger geographies (i.e., California, United States) if adequate credits cannot be found in closer geographies, or the procurement of such credits would create an undue financial burden. UC Davis shall provide the following justification for not using credits in closer geographies in terms of either availability or cost prohibition. • Lack of enough credits available in closer geographies (i.e., Sacramento County). • Prohibitively costly credits in closer geographies defined as credits costing more than 300 percent the amount of the current costs of credits in the regulated CARB offset market. • UC Davis documentation submitted supporting GHG credit proposals shall be prepared by individuals qualified in GHG credit development and verification and such individuals shall certify the following.	

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Table ES-1. Continued

Impact	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
		○ Proposed credits meet the criteria in California Health and Safety Code Section 38562(d)(1) and (d)(2). ○ Proposed credits meet the definitions for the criteria provided in this measure. ○ The protocols used for the credits meet or exceed the standards for stringency used in CARB protocols for offsets under the California cap-and-trade system. ***Measure Monitoring and Reporting*** As a CARB-covered entity, UC Davis will ensure emissions generated by the Central Energy Plant comply with CARB's cap and trade program. Likewise, UC Davis will implement the UC Sustainable Practices Policy to meet the requirement of carbon neutrality for Scope 1 and 2 emissions by 2025 and carbon neutrality for Scope 3 emissions by 2050, as described above. These commitments will be incorporated into UC Davis' annual GHG inventory, which is used to track GHG emissions and sources on the Sacramento Campus. As part of the annual GHG inventory for the Sacramento Campus, UC Davis shall submit a report to The Regents specifying the annual amount of metric ton CO_2e reduction achieved by additional GHG reduction actions implemented pursuant to this mitigation (i.e., Option 1, onsite actions, and Option 2, offsite actions). The report must include evidence that these actions are not being used to mitigate GHG for any other project or entity. GHG reductions achieved by the onsite and offsite actions should be incorporated into the Sacramento Campus' annual GHG inventory. The estimated annual emissions shall then be compared to the measure performance standards described above to determine the level of additional GHG reductions (if any). For the identified amount of exceedance of the performance standard(s), UC Davis shall purchase carbon credits according to the requirements established above under Option 3. As and when the credits are retired, UC Davis shall document	

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Table ES-1. Continued

Impact	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
		in its annual report the unique identifier of those credits showing that they have been retired and accepted by TCR.	
Hazards and Hazardous Materials			
Impact HAZ-1: Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials (less than significant) Construction and operation of the project would result in transport, use, and disposal of hazardous materials to and from the project area. Adherence to existing regulations and compliance with safety standards would result in a **less than significant** impact.	**LTS**	**Mitigation Measures** No mitigation measures are necessary.	**LTS**
Impact HAZ-2: Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment (less than significant with mitigation) Site workers, the public, and the environment could be inadvertently exposed to preexisting onsite contaminants during construction within the project footprint. Ground disturbing activities associated with construction and/or demolition may result in the release or disturbance of contaminated soil or hazardous building materials. Implementation of Mitigation Measure LRDP-HAZ-3 would reduce this impact ot a **less-than-significant** level.	**S**	**Mitigation Measure LRDP-HAZ-2: Prepare a Phase I Environmental Site Assessment** To minimize the risk of encountering unknown contamination during construction of the project under the 2020 LRDP Update, the UC Davis Sacramento Campus would retain an environmental professional to prepare a Phase I Environmental Site Assessment before all ground-disturbing construction in areas not previously investigated. A Phase I Environmental Site Assessment would conform with the American Society for Testing and Materials Standard Practice E1527-05 and include at a minimum the following site assessment requirements. An onsite visit to identify current conditions (e.g., vegetative dieback, chemical spill residue, presence of above- or underground storage tanks). • An evaluation of possible risks posed by neighboring properties. • Interviews with persons knowledgeable about the site's history (e.g., current or previous property owners, property managers). • An examination of local planning files to check prior land uses and any permits granted.	**LTS**

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Table ES-1. Continued

Impact	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
		• File searches with appropriate agencies (e.g., State Water Board, fire department, county health department) having oversight authority relative to water quality and groundwater and soil contamination. • Examination of historical aerial photography of the site and adjacent properties. • A review of current and historic topographic maps of the site to determine drainage patterns. • An examination of chain-of-title for environmental liens and/or activity and land use limitations. If the Phase I Environmental Site Assessment indicates likely site contamination, a Phase II Environmental Site Assessment would be performed (also by an environmental professional). A Phase II Environmental Site Assessment would comprise the following: • Collection of original surface and/or subsurface samples of soil, groundwater, and building materials to analyze for quantities of various contaminants. • An analysis to determine the vertical and horizontal extent of contamination (if the evidence from sampling shows contamination). If contamination is uncovered as part of Phase I or II Environmental Site Assessments, remediation per EPA's RCRA regulations in 40 CFR Parts 260–299 will be required, and materials will be properly managed and disposed of prior to construction. Any contaminated soil identified on a project site must be properly disposed of in accordance with Department of Toxic Substances Control regulations in effect at the time. If, during construction, soil or groundwater contamination is suspected, construction activities in the vicinity of the discovery will cease and appropriate health and safety procedures will be implemented, including the use of appropriate personal protective	

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Table ES-1. Continued

Impact	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
		equipment (e.g., respiratory protection, protective clothing, helmets, goggles).	
Impact HAZ-3: Result in hazardous emissions or handling of hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school (less than significant with mitigation) New generators would be added to the CUP. Mitigation Measures LRDP-AQ-2a, LRDP-AQ-2b, LRDP-AQ-3a, LRDP-AQ-2c, LRDP-AQ-2d, and Mitigation Measure AQ-2 would reduce impacts related to construction and operational emissions. With implementation of these mitigation measures, this impact would be **less than significant.**	**S**	**Mitigation Measure LRDP-AQ-2a: Reduce construction-generated fugitive dust** **Mitigation Measure LRDP-AQ-2b: Reduce construction-generated emissions from equipment and vehicle exhaust** **Mitigation Measure LRDP-AQ-2c: Reduce evaporative emissions during architectural coatings** **Mitigation Measure LRDP-AQ-3a: Reduce receptor exposure to construction generated diesel particulate matter** **Mitigation Measure AQ-2a: Electrify cranes used during construction** **Mitigation Measure AQ-2b: Offset construction-generated NO_X emissions in excess of SMAQMD's threshold of significance**	**LTS**
Impact HAZ-4: Place project-related facilities on a site that is included on a list of hazardous materials sites, and resulting creation of a significant hazard to the public or the environment (no impact) The identified sites have been remediated and closed and no longer pose a threat. There would be **no impact.**	**NI**	**Mitigation Measures** No mitigation measures are necessary.	**NI**
Impact HAZ-5: Place project-related facilities within an airport land use plan area or, where such a plan has been adopted, within 2 miles of a public airport or public use airport, resulting in a safety hazard or excessive noise for people residing or working in the project area (less than significant) Even though the number of helicopter fly-overs will increase, the noise levels will be similar to existing conditions and would not be hazardous to nearby residents. Therefore, the impact is **less than significant.**	**LTS**	**Mitigation Measures** No mitigation measures are necessary.	**LTS**

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Table ES-1. Continued

Impact	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
Impact HAZ-6: Impair implementation of or physical interference with an adopted emergency response plan or emergency evacuation plan (less than significant) The project would not result in the construction of any facilities that would interfere with emergency vehicle access to the campus. If needed, alternate routes would be established before any temporary closures and routes for evacuation, in case of an emergency, would be established and remain open. The impact is **less than significant**.	**LTS**	**Mitigation Measures** No mitigation measures are necessary.	**LTS**
Hydrology and Water Quality			
Impact WQ-1: Violation of any water quality standards or waste discharge requirements or other degradation of surface or groundwater quality (less than significant) Construction and operation activities of the project could generate pollutants that could temporarily contaminate runoff. However, BMPs and erosion and sediment control measures would be implemented to reduce pollutants in stormwater and other nonpoint-source runoff. Pollutants would be drained to the separate onsite storm drainage network and discharged to the City of Sacramento's combined sewer system infrastructure. Compliance with the National Pollution Discharge Elimination System (NPDES) Construction General Permit and the campus-wide storm water management plan (SWMP), would reduce impacts to surface and groundwater quality. Therefore, this impact would be **less than significant**.	**LTS**	**Mitigation Measures** No mitigation measures are necessary.	**LTS**
Impact WQ-2: Substantial decrease of groundwater supplies or substantial interference with groundwater recharge such that the project may impede sustainable groundwater management of the basin (less than significant) The project may require groundwater dewatering during construction. However, dewatering would be conducted on a one-	**LTS**	**Mitigation Measures** No mitigation measures are necessary.	**LTS**

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Table ES-1. Continued

Impact	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
time or temporary basis during construction and would not result in a loss of groundwater that would substantially deplete groundwater supplies. Sustainable site design features such as landscaped spaces would promote infiltration of surface runoff and allow for groundwater recharge. Therefore, this impact would be **less than significant**.			
Impact WQ-3: Substantial alteration of existing drainage patterns in a manner that would result in substantial erosion or siltation onsite or offsite; Substantial increase in the amount of surface runoff in a manner that would result in flooding onsite or offsite; Creation of or contribution to runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; Obstruction or redirection of flood flows caused by drainage modifications (less than significant) The project would implement BMPs during construction, as required by the NPDES Construction General Permit and the associated project SWPPP, to minimize the potential for erosion or siltation and temporary changes in drainage patterns during construction. This impact would be **less than significant**.	**LTS**	**Mitigation Measures** No mitigation measures are necessary.	**LTS**
Impact WQ-4: Conflict with or obstruction of implementation of a water quality control plan or sustainable groundwater management plan (no impact) The project would implement stormwater control BMPs during construction, as required by the NPDES Construction General Permit, and reduce the discharge of pollutants and adverse impacts on water quality. Incorporation of landscaped areas and sustainable site design features would also reduce stormwater runoff flows and associated pollutants. As a result, water quality standards would be achieved, including the water quality objectives that protect designated beneficial uses of surface and	**NI**	**Mitigation Measures** No mitigation measures are necessary.	**NI**

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Table ES-1. Continued

Impact	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
groundwater, as defined in a water quality control or sustainable groundwater management plan. Therefore, there would be **no impact**.			
Land Use and Planning			
Impact LU-1: Cause a significant environmental impact due to a conflict with any applicable land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect (no impact) The project is consistent with the 2020 LRDP Update, and the project would not conflict with any applicable land use plan. There would be **no impact.**	**NI**	**Mitigation Measures** No mitigation measures are necessary.	**NI**
Noise			
Impact NOI-1: Generation of increased ambient noise levels in the project vicinity in excess of applicable standards during project construction (significant and unavoidable) *Construction Noise – Daytime* Because of the potential for construction to result in noise levels more than 10 dB above the existing ambient and due to the long duration of project construction (over 10 years), temporary noise impacts associated with daytime construction would be considered significant, and mitigation would be required. *Construction Noise – Nighttime* Because proposed noise control measures may not reduce nighttime construction noise to below significance thresholds, construction noise impacts during nighttime hours would be **significant and unavoidable** with implementation of Mitigation Measures NOI-1a (described previously) and NOI-1b (described below). *Construction Haul Truck Noise*	**S**	**Mitigation Measure NOI-1a: Implementation of measures to reduce construction noise (daytime)** UC Davis will implement or incorporate the following noise reduction measures into the project construction specifications for contractor(s) implementation during project construction: 1. Construction activities will be limited to the daytime hours of 7:00 a.m. and 6:00 p.m. Monday through Saturday and between 9:00 a.m. and 6:00 p.m. on Sunday, when feasible. 2. All construction equipment will be equipped with suitable exhaust and intake silencers in good working order. All construction equipment will be properly maintained and equipped with intake silencers and exhaust mufflers and/or engine shrouds, in accordance with manufacturer recommendations. Equipment engine shrouds, if used, will be closed during equipment operation. 3. All construction equipment and equipment staging areas will be located as far as possible from nearby noise-sensitive land uses, and/or located such that existing or constructed noise attenuating features (e.g., temporary noise wall or blankets) block the line of	**SU**

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Table ES-1. Continued

Impact	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
Because noise increases from haul truck activity would be more than 10 dB below existing ambient noise levels in this area, haul truck noise along Colonial Way would not result in perceptible increases to the L_{dn} ambient noise level along V Street. In addition, as shown in Table 3.11-18, haul truck noise would not result in 3 dB (considered barely perceptible) or greater increases in noise along modeled roadway segments in the project vicinity. Impacts related to construction haul truck activity would be **less than significant**. *Temporary Flight Operations of Emergency Helicopters during Construction* During construction, the existing hospital would remain operational and emergency helicopter operations to the Davis Tower would continue to take place. Although the amount of helicopter activity would not be expected to increase during project construction, construction may result in the alternate flight operations of helicopters. Specifically, due to the use of tower cranes and due to the height of the hospital tower proposed for construction, helicopters may not be able to approach from the east (or potentially other directions) while cranes are located on the site, or as the height of the proposed project building becomes tall enough to interfere with the eastern helicopter flight path. For these reasons, even though helicopter activity is not expected to increase during project construction, individual event noise may be greater at certain residences during construction than under existing conditions, depending upon the selected approach and departure paths. Therefore, this impact would be considered significant. Further, because certain flight paths would be blocked during construction which will limit approach and departure options for emergency helicopters, there are no feasible mitigation measures to reduce this significant impact. This impact would be **significant and unavoidable**.		sight between affected noise-sensitive land uses and construction staging areas, to the extent feasible. 4. Individual operations and techniques will be replaced with quieter procedures (e.g., using welding instead of riveting, mixing concrete offsite instead of onsite) where feasible and consistent with building codes and other applicable laws and regulations. 5. Stationary noise sources such as generators or pumps will be located as far as feasible from noise-sensitive land uses. 6. Maintain all construction equipment to minimize noise emissions. 7. No less than 1 week prior to the start of construction activities, notification will be provided to academic, administrative, and residential or noise-sensitive uses (such as schools) located within 500 feet of the construction site. 8. Install temporary noise barriers as close as possible to the noise source or the receptor and located within the direct line-of-sight path between the noise source and nearby sensitive receptor(s). The barrier should be constructed of material that has a surface weight of at least 1 pound per square foot and has an acoustical rating of at least 25 STC (Sound Transmission Class). This can include a temporary barrier constructed with plywood supported on a wood frame, sound curtains supported on a frame, or other comparable material. 9. Use "quiet" gasoline-powered compressors or electrically powered compressors as well as electric rather than gasoline- or diesel-powered forklifts for small lifting, where feasible. 10. Prohibit idling of inactive construction equipment for prolonged periods (i.e., more than 2 minutes). **Mitigation Measure NOI-1b: Construction noise control plan to reduce noise during non-daytime hours** The project contractor(s) shall develop a construction noise control plan to reduce noise levels and comply with City of Sacramento	

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Table ES-1. Continued

Impact	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
		nighttime noise standards. Specifically, the plan shall demonstrate that noise from construction activities would not exceed the 55-dBA noise limit between the hours of 6:00 p.m. and 10:00 p.m. and the 50 dBA between the hours of 10:00 p.m. and 7:00 a.m. at the nearest existing sensitive land use. Measures to help reduce noise from construction activity during non-standard construction hours to these levels shall be incorporated into this plan and shall include at a minimum (but not be limited to) the following (noting that some of these will be implemented under NOI-1a): 1. Install temporary noise barriers as close as possible to the noise source or the receptor and located within the direct line-of-sight path between the noise source and nearby sensitive receptor(s). The barrier should be constructed of material that has a surface weight of at least 1 pound per square foot and has an acoustical rating of at least 25 STC (Sound Transmission Class). This can include a temporary barrier constructed with plywood support on a wood frame, sound curtains supported on a frame, or other comparable material. (Note: this is required under NOI-1a). 2. Use “quiet” gasoline-powered compressors or electrically powered compressors as well as electric rather than gasoline- or diesel-powered forklifts for small lifting, where feasible. (Note: this is required under NOI-1a). 3. Plan for the noisiest construction activities to occur during daytime hours when people are less sensitive to noise. 4. Require all construction equipment be equipped with mufflers and sound control devices (e.g., intake silencers and noise shrouds) that are in good condition (at least as effective as those originally provided by the manufacturer) and appropriate for the equipment. (Note: this is required under NOI-1a). 5. Maintain all construction equipment to minimize noise emissions. (Note: this is required under NOI-1a).	

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Table ES-1. Continued

Impact	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
		6. Locate construction equipment as far as feasible from adjacent or nearby noise-sensitive receptors. 7. Require all stationary equipment be located to maintain the greatest possible distance to the nearby existing buildings, where feasible. 8. Require stationary noise sources associated with construction (e.g., generators and compressors) in proximity to noise-sensitive land uses to be muffled and/or enclosed within temporary enclosures and shielded by barriers, which can reduce construction noise by 5 to 10 dB. 9. Prohibit the use of impact tools (e.g., jack hammers) during nighttime/non-standard daytime hours. 10. Prohibit idling of inactive construction equipment for prolonged periods during both daytime and nighttime/non-standard hours (i.e., more than 2 minutes). 11. Provide advance notification in the form of the mailings/deliveries of notices to surrounding land uses regarding the construction schedule, including the various types of activities that would be occurring throughout the duration of the construction period. 12. Provide the name and telephone number of an onsite construction liaison. If construction noise is found to be intrusive to the community (i.e., if complaints are received), the construction liaison shall take reasonable efforts to investigate the source of the noise and require that reasonable measures be implemented to correct the problem. 13. Use electric motors rather than gasoline- or diesel-powered engines to avoid noise associated with compressed air exhaust from pneumatically powered tools during nighttime hours. Where the use of pneumatic tools is unavoidable, an exhaust muffler on the compressed air exhaust could be used; this muffler can lower noise levels from the exhaust by about 10 dB. External jackets on the tools themselves could be used, which could achieve a reduction of 5 dB.	

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Table ES-1. Continued

Impact	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
		Mitigation Measure NOI-1c: Helicopter operations plan during project construction Although emergency flights for medical purposes are exempt from regulation by local agencies, UC Davis Medical Center will prepare a Helicopter Operations Plan for use during construction that will specify the following: • Where feasible, and if the University has discretion on flight timing, flights will occur during daytime hours when people are less sensitive to noise. • UC Davis will host regular meetings with helicopter operators to review recent complaints, emphasize preferred routing and collaborate on potential noise reduction strategies, within safety parameters. • UC Davis communications with air medical companies will request that all pilots be routinely trained to understand the desired noise attenuation for arrival and departure flight path procedures. Within approved flight paths and safety parameters, pilots will be instructed in the use of the approach and departure paths determined to be least disruptive to nearby residences, to the extent feasible, especially during nighttime hours. • UC Davis will provide and maintain pilot notifications and other essential fight operation details at the helipad and inside of the hospital to ensure it is accessible to pilots. The information will include, within safety parameters, details related to preferred departure and approach paths (i.e., those resulting in least disruption to nearby residences).	
Impact NOI-2: Generation of increased ambient noise levels in the project vicinity in excess of applicable standards during project operations (less than significant with mitigation) *<u>Operational Traffic Noise</u>*	**S**	**Mitigation Measure LRDP-NOI-2a: Reduce noise exposure from emergency generators** Prior to approval of a building permit for individual LRDP development projects proposing the installation of emergency generators, documentation will be submitted to the University demonstrating with reasonable certainty that noise from testing of the proposed	**LTS**

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Table ES-1. Continued

Impact	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
Since all noise increases related to project implementation were modeled to be below 0.1 dB, which is well below the barely perceptible 3 dB level, the project would not result in any significant traffic noise impacts in the project vicinity. Traffic noise impacts from project implementation would be **less than significant.** *Mechanical Equipment Noise* The addition of equipment to the CUP would not be expected to result in a perceptible increase in noise external to the building. Noise impacts from the addition of two chillers and one heat pump at the CUP and/or CUP annex building would be **less than significant**. *Emergency Generator Noise* With implementation of mitigation, emergency generator noise would comply with acceptable noise standards for sensitive receptors. This impact would be **less than significant with mitigation**. *Parking Lot Noise* Noise from PS5 activity would not exceed the City of Sacramento stationary source noise thresholds during daytime or nighttime hours, and this impact would be **less than significant**. *Rooftop Gathering Noise* The rooftop of the southwestern portion of the proposed building would be developed with a rooftop garden. Noise impacts from potential amplified music for occasional events at the rooftop garden would be **less than significant.** *Ambulance Noise* It is expected that this increase in daily ambulance activity would not result in a substantial increase in ambulance noise in the		generator(s) would not exceed 55 dBA at the nearest residential land use. Acoustical treatments to reduce noise from generator testing may include, but are not limited to, the following. • Enclosing generator(s) • Incorporating the use of exhaust mufflers or silencers to reduce exhaust noise • Selecting a relatively quiet generator model • Orienting or shielding generator(s) to protect noise-sensitive receptors to the greatest extent feasible • Increasing the distance between generator(s) and noise-sensitive receptors • Placing barriers or enclosures around generator(s) to facilitate the attenuation of noise. In addition, all project generator(s) will be tested only between the hours of 7:00 a.m. and 10:00 p.m. The University will ensure that all recommendations from the acoustical analysis necessary to ensure that generator noise would meet the above requirements will be incorporated into the building design and operations.	

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Table ES-1. Continued

Impact	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
project area. Impacts related to an increase in siren noise associated with the project would be **less than significant.** *Loading Activity Noise* The project would result in the rerouting of operational loading dock traffic. However, the rerouting of operational truck trips to Colonial Way would not be expected to increase the ambient noise level along V Street. Impacts related to loading activity noise associated with the project would **be less than significant.**			
Impact NOI-3: Generation of excessive groundborne vibration or groundborne noise levels (less than significant with mitigation) Implementation of Mitigation Measure NOI-3 would ensure that vibration from project-related construction equipment would not result in vibration-related damage to adjacent on-campus structures, noting that impacts to off-site structures would be less than significant. Vibration-related damage impacts to on-campus structures would be **less than significant with mitigation**.	**S**	**Mitigation Measure LRDP NOI-3a: Implement measures to reduce vibration-related annoyance impacts to onsite land uses** In the event that vibration-generating construction activities that do not involve pile driving are proposed within 140 feet of on-campus Category 1 buildings (noting that no pile driving is proposed for this project) the construction contractor will work with the University to identify vibration-producing activities on the construction schedule in advance. The construction contractor will coordinate the timing of the activities with hospital or research units that may be affected to reduce potential vibration-related annoyance effects on sensitive onsite hospital or research receptors. In addition, the construction contractor will appoint a project vibration coordinator who will serve as the point of contact for vibration-related complaints during project construction. Contact information for the project vibration coordinator will be posted at the project site and on a publicly available project website. The project vibration coordinator will be contacted should vibration effects become too disruptive at on-campus uses, and the project vibration coordinator will then work with the construction team to adjust activities to reduce vibration or to reschedule activities for a less sensitive time. **Mitigation Measure NOI-3: Protect adjacent structures from construction-generated vibration** The University shall incorporate into construction specifications for the proposed project a requirement that the construction contractor(s) use	**LTS**

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Table ES-1. Continued

Impact	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
		all feasible means to avoid damage to adjacent and nearby buildings. Such methods to help reduce vibration-related damage effects may include maintaining a safe distance between the construction site and the potentially affected building (e.g., at least 10 feet for most equipment, 15 feet for vibratory rollers). In the event that vibration-generating construction activity is required within 15 feet of nearby modern buildings similar to "modern industrial/commercial buildings" (e.g., the least sensitive building category shown in Table 3.11-5) the University will work with the construction contractor to implement a monitoring program to minimize damage to adjacent buildings and ensure that any such damage is documented and repaired. If required, the monitoring program will include the following components. • Prior to the start of any ground-disturbing activity, the project sponsor will engage a structural engineer or other professional with similar qualifications to document and photograph the existing conditions of potentially affected buildings within 15 feet of proposed vibratory-generating construction activities. • Based on the construction and condition of the resource(s), the consultant will also establish a standard maximum vibration level that will not be exceeded at nearby buildings, based on existing conditions, character-defining features, soil conditions, and anticipated construction practices (a common standard is a peak particle velocity of 0.5 inch per second for "modern industrial/commercial buildings," as shown in Table 3.11-5). • To ensure that vibration levels do not exceed the established standard, the project sponsor will monitor vibration levels at each structure and prohibit vibratory construction activities that generate vibration levels in excess of the standard. • Should vibration levels be observed in excess of the selected standard, construction will be halted and alternative construction techniques put in practice, to the extent feasible.	

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Table ES-1. Continued

Impact	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
		When vibration-intensive activity (e.g., auger drills, rollers) occurs within 15 to 20 feet of a building, the structural engineer will conduct an inspection of the building for damage within 7 days of that activity. If inspections determine that no damage is occurring from that activity, the 7-day period may be increased to 30 days for that activity. Should damage to adjacent buildings occur, the building(s) will be remediated to their preconstruction condition at the conclusion of ground-disturbing activity on the site.	
Impact NOI-4: Placement of project-related activities in the vicinity of a private airstrip or an airport land use plan or within 2 miles of a public airport or public use airport, resulting in exposure of people residing or working in the project area to excessive noise levels (significant and unavoidable) With implementation of Mitigation Measures NOI-4 and NOI-5, helicopter noise impacts on most qualifying residential properties would be reduced to less than significant levels with mitigation. However, it may not be feasible to reduce SEL noise levels in sleeping areas at every residential unit to below the 80 dBA criterion. Further, the University cannot compel property owners in the vicinity of the helipad to keep windows closed (resulting in louder interior noise levels), or to participate in the Residential Sound Reduction Program. For these reasons, mitigation measures NOI-4 and NOI-5 may not, in all instances and for all residential uses, reduce SEL-related helicopter noise impacts during nighttime hours to less than significant levels; this impact would remain **significant and unavoidable**.	**S**	**Mitigation Measure NOI-4a: Helicopter operations plan to reduce sleep disturbance** Prior to the use of the proposed new helipads, UC Davis Medical Center will prepare a Helicopter Operations Plan that will specify the following: • If UC Davis has discretion on flight timing, flights will occur during daytime hours when people are less sensitive to noise, where feasible. • Of the approved approach and departure flight paths, primary approach and departure paths for nighttime hours will be identified as the least disruptive flight paths for nearby residences. Once identified, and within safety parameters, the paths will be used as much as feasible during nighttime hours. Note that alternate approved flight paths or any other flight routing may used, based on wind conditions, safety considerations, or pilot judgment. • UC Davis will host regular meetings with helicopter operators to review recent complaints, emphasize preferred routing, and collaborate on potential noise reduction strategies, within safety parameters. • UC Davis communications with air medical companies will request that all pilots be routinely trained to understand the desired noise attenuation for arrival and departure flight path procedures. Within approved flight paths and safety parameters, pilots will be instructed in the use of the approach and departure paths	**SU**

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Table ES-1. Continued

Impact	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
		determined to be least disruptive to nearby residences, to the extent feasible, especially during nighttime hours. • UC Davis will provide and maintain pilot notifications and other essential fight operation details at the helipad and inside of the hospital to ensure it is accessible to pilots. The information will include, within safety parameters, details related to preferred departure and approach paths (i.e., those resulting in least disruption to nearby residences). **Mitigation Measure NOI-4b: Residential sound reduction program to reduce noise** Following helipad construction, UC Davis shall implement a Residential Sound Reduction Program to reduce interior noise from helicopter overflights at residential land uses within redrawn SEL 95 dBA contours (as described below). A description of the program is provided below. **Start-up Period** 1. During the first 8 weeks of operations at the California Tower helipads, UC Davis will address noise complaints, if any, by revising helicopter operations where feasible. 2. At the end of the start-up period, UC Davis will conduct updated acoustical flight tests. Tests will involve helicopters traveling along the new flight paths as well as to and from the new helipads. After the completion of flight tests, the SEL 95 dBA noise contours will be redrawn to reflect the noise environment in existence at that time. This redrawn contour will be used in the Qualifications stage of this program, as described below. **Qualifications** 3. Property is located within the redrawn SEL 95 dBA (single-event) noise contours, and	

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Table ES-1. Continued

Impact	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
		4. Property is a legal residential or live/work unit as of the date of approval of the helipad by the University of California, and 5. Noise levels in interior sleeping areas are at or greater than the SEL 80 dBA with windows closed, as measured by the UC Davis sound consultant. **Implementation** 6. UC Davis sends notification about the program to residential property owners within the redrawn SEL 95 dBA noise contour. 7. Property owners have 12 months after the date of notification about the program to apply for the program (UC Davis will send a reminder to those notified at least 3 months before the end of the application period). 8. UC Davis determines if property meets qualifications (per items 3 through 5 above). 9. Qualified UC Davis consultant may test façade for exterior-to-interior transmission loss, according to ASTM loudspeaker testing procedures. This testing would inform the determination of necessary treatments to reduce interior noise levels to below SEL 80 dBA (where technically and legally feasible), and by at least 5 dBA from existing conditions. 10. Qualified UC Davis consultant recommends sound reduction measures to reduce noise in sleeping areas, which may include: ○ Acoustical replacement windows, ○ Acoustical replacement doors, ○ Acoustically improved skylights, and ○ Ventilation improvements. 11. UC Davis consultant estimates cost of recommended sound reduction measure in sleeping areas, including labor and material costs, permit fees, and inspections. This measure includes a per-	

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Table ES-1. Continued

Impact	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
		residence cap (in 2021 present value) of up to $35,000 for the aforementioned costs. 12. UC Davis consultant schedules construction of improvements with qualifying property owner. ○ Replacements will be on “like-for-like” basis, with replacement materials similar in quality or appearance to existing materials. Improvements would comply with applicable codes. 13. UC Davis will seek to work with neighbors for ongoing discussions of noise and to address those concerns, where feasible. 14. Qualifying property owner, on their behalf and on behalf of tenants and future property owners, releases UC Davis from future claims for helicopter noise at the property. This release shall be in the form of a permanent easement in exchange for residential sound improvements per Item 12, above.	
Population and Housing			
Impact POP-1: Creation of substantial population growth either directly or indirectly (less than significant) The project would increase the onsite daily population through increased patients and employees. However, this addition is included in the 2020 LRDP Update overall growth scenario, and this addition to the Sacramento region would not result in a substantial increase to the population. Therefore, this impact would be **less than significant.**	**LTS**	**Mitigation Measures** No mitigation measures are necessary.	**LTS**
Impact POP-2: Directly displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere (less than significant). Because the project would result in a relatively small amount of new employees, and because it is anticipated that the majority of these employees would already reside in the Sacramento metropolitan region, there is no evidence that any indirect	**LTS**	**Mitigation Measures** No mitigation measures are necessary.	**LTS**

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Table ES-1. Continued

Impact	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
displacement/gentrification would result in a significant adverse effect on the physical environment and this impact would be **less than significant**.			
Public Services			
Impact PS-1: Creation of a need for new or physically altered governmental facilities to maintain acceptable service ratios, response times, or other performance objectives for fire protection facilities (less than significant) The project would cause increased population and development, however, the project would not modify existing service area boundaries and would not result in the need for additional fire protection services. Therefore, this impact would be **less than significant**.	**LTS**	**Mitigation Measures** No mitigation measures are necessary.	**LTS**
Impact POP-2: Directly displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere (less than significant)	**LTS**	**Mitigation Measures** No mitigation measures are necessary.	**LTS**
Impact PS-2: Creation of a need for new or physically altered governmental facilities to maintain acceptable service ratios, response times, or other performance objectives for police protection facilities (less than significant) The project would cause increased population and development, however, the project would not result in the need for additional police protection services. Therefore, this impact would be **less than significant**.	**LTS**	**Mitigation Measures** No mitigation measures are necessary.	**LTS**

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Table ES-1. Continued

Impact	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
Impact PS-3: Creation of a need for new or physically altered governmental facilities to maintain acceptable service ratios, response times, or other performance objectives for school facilities (less than significant) The project would cause increased population, however, the California Hospital Tower Project would not result in a substantial increase in enrollment in any one school district and no new facilities would be needed. Therefore, this impact would be **less than significant**.	**LTS**	**Mitigation Measure** No mitigation measures are necessary.	**LTS**
Impact PS-4: Creation of a need for new or physically altered governmental facilities to maintain acceptable service ratios, response times, or other performance objectives for other public facilities (less than significant) The California Hospital Tower Project would result in 250 new employees who would likely reside in the Sacramento metropolitan region, which is served by existing public libraries. Because the project would not substantially affect population levels in Sacramento, substantial increased demand for library services in Sacramento is not anticipated to the extent that new library facilities would be necessary, and this impact would be **less than significant.**	**LTS**	**Mitigation Measures** No mitigation measures are necessary.	**LTS**
Recreation			
Impact REC-1: Substantially increase the use of existing recreational facilities or result in substantial physical deterioration (less than significant) The California Hospital Tower Project would not substantially increase population on the Sacramento Campus and therefore is not expected to result in increased physical deterioration of existing parks and recreational facilities or require new facilities to be built. Therefore, the impact related to park demand, open space, and recreational facilities would be **less than significant.**	**LTS**	**Mitigation Measures** No mitigation measures are necessary.	**LTS**

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Table ES-1. Continued

Impact	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
Impact REC-2: No construction or expansion of recreational facilities that might have an adverse physical effect on the environment (less than significant) The California Hospital Tower Project would add new, minor recreational feautres. It would not include the construction or expansion of any recreational facilities that might have an adverse physical effect on the environment. Therefore, this impact would be **less than significant**.	**LTS**	**Mitigation Measures** No mitigation measures are necessary.	**LTS**
Transportation, Circulation, and Parking			
Impact TRA-1: Conflict with a program, plan, ordinance, or policy addressing the circulation system including transit, roadway, bicycle, and pedestrian facilities (significant and unavoidable) Implementation of Mitigation Measures TRA-1a through TRA-1g would reduce the significance of this impact. However, the improvements that are necessary to improve transit performance identified in Mitigation Measure TRA-1f would require implementation by other entities, including SacRT, the City of Sacramento, and Caltrans. Moreover, the effectiveness of the transportation demand management strategies identified in Mitigation Measure TRA-1e are not known, and subsequent vehicle trip reduction effects and, in turn, reductions to delays to transit, cannot be guaranteed. Since UC Davis cannot guarantee that these improvements would be implemented and/or effective, this impact would remain **significant and unavoidable**.	**S**	**Mitigation Measure TRA-1a: Improve the bicycle facilities on X Street between Stockton Boulevard and 48th Street** UC Davis shall improve the bicycle facilities on X Street between Stockton Boulevard and 48th Street to accommodate changes to bicycle and vehicle travel associated with the project and to reduce the potential for vehicle-bicycle conflicts. Potential improvement alternatives include the following. 1. Restripe the existing Class II bicycle lanes to a width of 5 feet or more to meet the minimum Class II bicycle lane width requirements established in the *California Highway Design Manual*. This modification could be accommodated by reducing the width of existing vehicle travel lanes on X Street. 2. Construct Class IV separated bikeways. This modification could be accommodated by reducing the number of vehicle travel lanes or by reconstructing the sidewalk zone on the outside of the roadway envelope. 3. Reconfigure X Street to accommodate bidirectional vehicle traffic on one side of X Street and convert the other side of X Street to a shared bicycle-transit facility. Additional, but optional, mitigation features that would further improve the bicycling environment include bike lane conflict markings, intersection crossing markings, reductions to crossing distances,	**SU**

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Table ES-1. Continued

Impact	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
		and/or physically separating bicyclists from vehicles (e.g., reconfiguration of intersections into protected intersections). Implementation of any one of alternatives 1 through 3 above, or an improvement of equal effectiveness, would improve the bicycle facilities on X Street between Stockton Boulevard and 48th Street and reduce the potential for vehicle-bicycle conflicts. The bicycle facility improvements described above shall be constructed and operational prior to the completion of PS5. **Mitigation Measure TRA-1b: Construct the PS5 driveways and driveway intersections with X Street to comply with applicable design standards and to reduce the potential for conflicts involving bicyclists and pedestrians** UC Davis shall design and construct the PS5 driveways and driveway intersections with X Street to comply with applicable design standards and to reduce the potential for conflicts involving bicyclists and pedestrians. These facilities shall achieve the following performance measures. • Minimize the number and severity of vehicle–pedestrian conflict points along the pedestrian promenade between the Cancer Center and PS5 (generally along the southerly PS5 frontage). This would include the crossing of the pedestrian promenade and the PS5 driveway proposed immediately east of the Cancer Center. • Minimize the number and severity of vehicle–bicycle conflict points at the intersection of X Street and the PS5 driveway proposed immediately east of the Cancer Center. • Minimize the potential for vehicle queueing entering/exiting PS5 driveways to spillback and block bicycle and/or pedestrian facilities. • Comply with applicable driveway and intersection design standards. The construction of PS5 in compliance of these performance measures would ensure that PS5 driveways and driveway intersections with X	

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Table ES-1. Continued

Impact	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
		Street would comply with applicable design standards and reduce the potential for conflicts involving bicyclists and pedestrians. These facilities and performance measures shall be accomplished prior to the completion of PS5. **Mitigation Measure TRA-1c: Improve the pedestrian crossings across X Street at the X Street intersections at the main hospital building patient loading zone driveway and at the Cancer Center driveway** UC Davis shall construct pedestrian crossing improvements across X Street at the X Street intersections at the main hospital building patient loading zone driveway and at the Cancer Center driveway to reduce the potential for vehicle–pedestrian conflicts. Potential improvement alternatives include the following. 1. Installation of traffic signals. 2. Installation of rapid rectangular flashing beacons. 3. Construction of raised pedestrian crossings. Implementation of any one of alternatives 1 through 3 above, or an improvement of equal effectiveness, would improve the pedestrian crossings across X Street at the X Street intersections at the main hospital building patient loading zone driveway and at the Cancer Center driveway and reduce the potential for vehicle-pedestrian conflicts at these locations. The installation of traffic signals would provide temporal separation between pedestrians and conflicting vehicular movements (i.e., through the provision of pedestrian crossing phases). The installation of rapid rectangular flashing beacons or the construction of raised pedestrian crossings would enhance the visibility of crossing pedestrians. The pedestrian crossing improvements described above shall be constructed and operational prior to the completion of PS5. **Mitigation Measure TRA-1d: Construct the relocated shuttle stops with sufficient capacity to accommodate campus shuttle operations**	

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Table ES-1. Continued

Impact	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
		UC Davis shall construct the relocated shuttle stops on X Street and/or 45th Street with sufficient capacity to accommodate campus shuttle operations. The stops shall be sufficiently sized to accommodate the anticipated number of shuttles that would dwell simultaneously. The relocated shuttle stops shall be completed as a component of the make ready component of the project. **Mitigation Measure TRA-1e: Monitor transit service performance and implement transportation demand management strategies to minimize delays to transit service** During the 2021–2022 academic year, UC Davis shall coordinate with SacRT and other relevant transit operators to establish baseline on-time performance metrics for routes operating on Broadway and Stockton Boulevard within the vicinity of the Sacramento Campus consistent with established standards and methods. This process should consider the effects of the current COVID-19 pandemic on transit performance. UC Davis shall additionally coordinate with SacRT and other relevant transit operators to assess on-time performance for routes operating on Broadway and Stockton Boulevard within the vicinity of the Sacramento Campus every 2 years over the 2020 LRDP Update planning horizon. During its standard project review process, UC Davis shall forecast and analyze traffic conditions on Broadway and Stockton Boulevard within the vicinity of the Sacramento Campus for individual development projects proposed under the 2020 LRDP Update that are expected to affect operations on these roadways. Relative to baseline levels, if operations on Broadway and Stockton Boulevard are found to cause transit services to fail to meet established standards or to worsen transit performance for services that already fail to meet established standards, or if a project-level analysis indicates the same, UC Davis shall institute transportation demand management (TDM) strategies to reduce peak hour vehicle trips and, in turn, delays to transit service on Broadway and Stockton Boulevard within the vicinity of the Sacramento Campus.	

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Table ES-1. Continued

Impact	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
		The implementation of TDM strategies shall offset degradations to transit on-time performance in excess of established on-time performance standards (per the most up-to-date SacRT Service Standards) that are attributable to the implementation of the 2020 LRDP Update. Implementation of TDM strategies that would reduce delays to transit service on Broadway to Stockton Boulevard include strategies to reduce vehicle travel to and from campus and to minimize the effect of campus operations on surrounding roadways. Specific potential TDM strategies include, but are not limited to, the following. • Modify campus-operated shuttles to avoid Broadway and Stockton Boulevard, to the extent practical. • Promote walking and bicycling for student and employee trips to and from the UC Davis Sacramento Campus. • Expand public transit service, including additional service connecting campus with student and employee residential areas. • Implement a fair value commuting program or other pricing of vehicle travel and parking. • Provide carpool and/or vanpool incentive programs. • Allow flexible work hours and schedule classes to reduce arrivals/departures during peak hours. • Offer remote working options. The TDM strategies implemented to reduce delays to transit service at these locations will be consistent with existing and planned TDM programs on campus. If these TDM strategies are not sufficient to reduce delays to transit service per the criteria described above, additional TDM measures or adjustments to the measures above shall be implemented, as needed to reduce peak hour intersection delay consistent with the criteria described above. **Mitigation Measure TRA-1f: Monitor transit service performance and implement transit service and/or facility improvements**	

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Table ES-1. Continued

Impact	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
		During the 2021–2022 academic year, UC Davis shall coordinate with SacRT and other relevant transit operators to establish baseline transit performance (i.e., loading, productivity, and on-time performance) and safety metrics for routes operating within the vicinity of the Sacramento Campus consistent with established standards and methods. This process should consider the effects of the current COVID-19 pandemic on transit performance. UC Davis shall additionally coordinate with SacRT and other relevant transit operators to assess transit performance and safety for routes operating within the vicinity of the Sacramento Campus every 2 years over the 2020 LRDP Update planning horizon. Relative to baseline levels, if the performance of routes operating within the vicinity of the Sacramento Campus is found to fail to meet established standards or if performance worsens for services that already fail to meet established standards, SacRT and other relevant transportation agencies shall implement transit service and/or facility improvements. The implementation of transit service and/or facility improvements shall offset degradations to transit performance in excess of established performance standards (per the most up-to-date SacRT Service Standards) that are attributable to the implementation of the 2020 LRDP Update. Currently, SacRT and other relevant transit operators regularly monitor transit service performance and adjust service levels, as feasible, according to established service standards. SacRT and other relevant transit operators would continue to implement this monitoring and service change process over the duration of the 2020 LRDP Update implementation. Moreover, UC Davis would continue to adjust campus-operated shuttle routes and schedules as warranted by passenger demand and other operating considerations. Additionally, nearby roadway owners such as the City of Sacramento and Caltrans operate and maintain their facilities consistent with their policies and standards related to multi-modal transportation operations. As requested, UC Davis shall meet with SacRT, the City of Sacramento,	

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Table ES-1. Continued

Impact	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
		Caltrans, and/or other transportation agencies to coordinate the implementation of transit service and/or facility improvements. Potential transit improvements include modifying existing transit routes or adding new routes to serve areas of the Sacramento Campus underserved by transit, adding service capacity (through increased headways and/or larger vehicles) to prevent chronic overcrowding, constructing transit priority treatments to improve service reliability (i.e., transit only lanes on Broadway and Stockton Boulevard, transit signal priority at traffic signals, etc.), improving terminal facilities to accommodate additional passengers and transit vehicles, and improving coordination between transit providers. Improvements should be selected based on existing performance data and targeted to address those areas not meeting established service standards (e.g., investing in transit priority treatments if on-time performance is the issue, or adding service capacity if vehicle loading is the issue). Transit facility and roadway improvements shall be designed and constructed in accordance with industry best practices and applicable UC Davis, City of Sacramento, and State of California standards. Improvements shall be implemented or constructed in a manner that would not physically disrupt existing transit service or facilities (e.g., additional bus service that exceeds available bus stop or transit terminal capacity) or otherwise adversely affect transit operations. **Mitigation Measure TRA-1g: Monitor transit-related collisions and implement countermeasures to reduce potential conflicts with transit service and facilities** During the 2021–2022 academic year and every 2 years thereafter, UC Davis shall record on-campus collisions involving a transit vehicle and establish a transit vehicle collision rate. The rate should be sensitive to transit provider, location context, and facility type (e.g., intersection versus segment). UC Davis shall determine the on-campus transit vehicle collision rate as part of a biennial mitigation monitoring program. In instances where the rate increases from the prior observation period, UC Davis shall develop and implement	

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Table ES-1. Continued

Impact	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
		countermeasures that address collision hot-spots and common primary collision factors. UC Davis shall also identify and develop countermeasures for locations where the change in the mix of travel patterns and behavior is determined to be incompatible with the facility as designed. Potential countermeasures include physically separating modes in shared operating environments, particularly high- versus low-speed travel modes, and increased education and enforcement. Transit facility and roadway improvements that intend to reduce conflicts between transit vehicles and other travel modes shall be designed and constructed in accordance with industry best practices and applicable UC Davis, City of Sacramento (for facilities within the City of Sacramento), and State of California standards. Improvements shall be implemented or constructed in a manner that would not physically disrupt existing transit service or facilities or otherwise adversely affect transit operations.	
Impact TRA-2: Conflict or be inconsistent with State CEQA Guidelines Section 15064.3, subdivision (b) The project would be located within a low VMT area within proximity to major transit stops. Per State CEQA Guidelines Section 15064.3, subdivision (b)(1), "generally projects within one-half mile of either an existing major transit stop or a stop along an existing high quality transit corridor should be presumed to cause a less than significant transportation impact." This impact would be **less than significant.**	**LTS**	**Mitigation Measures** No mitigation measures are necessary.	**LTS**
Impact TRA-3: Result in changes to the transportation system that would create hazardous features or incompatible traffic uses. The project could increase the potential for vehicle-bicycle conflicts at the PS5 access point to X Street immediately east of the Cancer Center and this impact would be significant.	**S**	**Mitigation Measure TRA-1a: Improve the bicycle facilities on X Street between Stockton Boulevard and 48th Street** Refer to measure description under Impact TRA-1. **Mitigation Measure TRA-1b: Construct the PS5 driveways and driveway intersections with X Street to comply with applicable**	**LTS**

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Table ES-1. Continued

Impact	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
Implementation of Mitigation Measure TRA-1b would reduce this impact and ensure that the PS5 access points would be in compliance with applicable design standards. Therefore, this impact would be **less than significant with mitigation**.		**design standards and to reduce potential conflicts involving bicyclists and pedestrians** Refer to measure description under Impact TRA-1.	
Impact TRA-4: Result in inadequate emergency access Construction activities associated with the project would require physical mixing of construction vehicles and ambulances on roadways serving the main hospital building Emergency Department ambulance loading area, including X Street, 45th Street, Doctor Way, and Colonial Way. Implementation of Mitigation Measure TRA-5 would reduce this impact and ensure that construction activities would not significantly impact emergency vehicle access. Therefore, this impact would be **less than significant with mitigation**.	**S**	**Mitigation Measure TRA-5: Prepare and implement a Construction Traffic Management Plan** Refer to Mitigation Measure description under Impact TRA-5.	**LTS**
Impact TRA-5: Result in construction activity that could cause temporary impacts to transportation and traffic Construction of the California Hospital Tower Project would involve construction activities that could cause temporary impacts to transportation facilities, including temporary roadway, bikeway, and sidewalk closures, degrading roadway pavement conditions, temporary degradation in traffic operations, temporary relocation or displacement of transit or shuttle stops, closure of parking lots resulting in displaced parking, increasing the potential for delays to and conflicts involving ambulances, and increasing potential for conflicts between construction vehicles and private vehicles, bicyclists, and pedestrians. Implementation of Mitigation Measure TRA-5 would reduce this impact and ensure that construction activities would not significantly impact transportation. Therefore, this impact would be **less than significant with mitigation**.	**S**	**Mitigation Measure TRA-5: Prepare and implement a Construction Traffic Management Plan** Prior to the issuance of any grading or building permits, a Construction Traffic Management Plan (TMP) shall be prepared to the satisfaction of UC Davis Health and the City of Sacramento Department of Public Works for City-owned roadways. The Construction TMP shall include items such as the following. • Preserving emergency vehicle access routes to existing buildings on the Sacramento Campus. • Preserving emergency vehicle access to the main hospital building Emergency Department temporary ambulance loading area. • Providing truck circulation routes/patterns that minimizes effects on existing vehicle traffic during peak travel periods and maintains safe bicycle circulation. • Monitoring for roadbed damage and timing for completing repairs. • Preserving safe and convenient passage for bicyclists and pedestrians through/around construction areas.	**LTS**

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Table ES-1. Continued

Impact	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
		• Creating methods for partial (i.e., single lane)/complete street closures (e.g., timing, signage, location and duration restrictions), if necessary. • Identifying detour routes for roadways subject to partial/complete street closures. • Identifying temporary UC Davis shuttle stops and detoured shuttle routes if existing stops or routes are affected. • Identifying temporary SacRT bus stops and detoured bus routes, if existing stops or routes are affected. • Developing criteria for use of flaggers and other traffic controls. • Providing a point of contact for nearby residents, Sacramento Campus staff, students, and visitors, and other stakeholders to contact to obtain construction information and have questions answered. The Construction TMP shall be developed and implemented so that the following performance standards are achieved throughout project construction. • Maintain emergency vehicle access to all buildings on the Sacramento Campus at all times. • Maintain identified emergency vehicle routes to UC Davis Health medical facilities at all times, including the main hospital building Emergency Department temporary ambulance loading area. Notify appropriate contacts for UC Davis Health and/or emergency responders at least 24 hours prior to any construction-related partial/complete closures that may affect emergency vehicle routes, and provide clear identification of detours when necessary. • Minimize construction traffic during morning and evening peak periods when street traffic on local and campus streets are highest. • Minimize the potential for conflicts between construction vehicles and private vehicles, transit vehicles, bicyclists, and pedestrians on	

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Table ES-1. Continued

Impact	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
		Stockton Boulevard, X Street, 45th Street, Doctor Way, and Colonial Way. • Minimize the potential for delays to and conflicts involving ambulances serving the main hospital building Emergency Department temporary ambulance loading area. • Close (i.e., partially or fully) any construction-related public roadways only during off-peak periods and provide appropriate construction signage, including detour routing. • Limit detour routing to campus roadways or City collector and arterial roadways, such as Stockton Boulevard and Broadway, to the extent feasible. Include measures to minimize traffic increases on local residential roadways; this may include signage and law enforcement presence during partial/complete closures to discourage through-traffic use of local residential roadways. • Clear roadways, sidewalks, crosswalks, and bicycle facilities of debris (e.g., rocks) that could otherwise impede travel and impact public safety, and maintain them in this condition. UC Davis shall also consider any concurrent construction activity and other active Construction TMPs when reviewing the Construction TMP for the California Hospital Tower Project. This review shall verify consistency across the Construction TMPs to address the effects of simultaneous construction activity.	
Utilities and Service Systems			
Impact UT-1: Relocation or construction of new or expanded water, wastewater treatment, stormwater drainage, electric power, natural gas, or telecommunications facilities, with the potential to cause significant environmental effects (less than significant) The California Hospital Tower Project would require more water for domestic use and fire water than under existing conditions; however, no major improvements of the City's wastewater and	**LTS**	**Mitigation Measures** No mitigation measures are necessary.	**LTS**

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Table ES-1. Continued

Impact	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
sewer lines would be required. Improvements related to increased capacity at the Central Utility Plant (CUP) are analyzed in various sections of this EIR. Some expansion of the existing telecommunications infrastructure may be necessary; however, the telecommunications infrastructure needed to serve the new facilities are evaluated throughout this document as part of the analysis of the new facilities, and would not result in substantial physical changes. This impact would be **less than significant**.			
Impact UT-2: Creation of a need for new or expanded entitlements or resources for sufficient water supply to serve the project and reasonably foreseeable future development during normal, dry, and multiple dry years (less than significant) While the project would create an increase in the Sacramento Campus's demand for water, this amount was considered in the planning and analysis for the 2020 LRDP Update and. according to the UWMP, the City has sufficient water supply exists to meet this demand. Furthermore, the project would incorporate strategies to minimize water consumption as described in the UC Sustainable Practices Policy. For these reasons, the increased water demand would not result in the need for the City of Sacramento to obtain additional entitlements to serve the campus at full implementation of the 2020 LRDP Update. The impact would be **less than significant.**	**LTS**	**Mitigation Measures** No mitigation measures are necessary.	**LTS**
Impact UT-3: Project-related exceedance of existing wastewater treatment capacity (less than significant) The California Hospital Tower Project would result in an increase in wastewater compared to existing conditions. The campus contains a combined storm-sewer overflow system that consists of a combined sewer main under Y Street connecting to the existing main under Stockton Boulevard, and ultimately flows to a concrete storage tank. In normal operations, no combined stormwater-	**LTS**	**Mitigation Measures** No mitigation measures are necessary.	**LTS**

NI = no impact LTS = less than significant S = significant SU = significant and unavoidable

Table ES-1. Continued

Impact	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
sanitary sewage flows to the storage tank. When the combined sewer hydraulic grade elevation is above the sewer high point, excess combined sewage flows toward the tanks. A lift station at the north end of the storage tanks pumps stored combined sewage to another combined sewer under V Street, which has a higher capacity than the Stockton Boulevard and Y Street combined sewers. New sewer pipes and sewer mains would be added to serve the California Tower, but would not require an increase in capacity. Wastewater from the California Tower would continue to be treated at the SRWTP. The Central Valley Regional Water Quality Control Board (CVRWQCB) would regulate the quality and quantity of effluent discharged from SRWTP. The project would comply with the discharge requirements of SRWTP. As described under Impact WQ-1, operational activities associated with implementation of the California Hospital Tower Project would not contribute pollutants in wastewater that is discharged into the sanitary sewer system that could cause a violation of waste discharge requirements of the SRWTP and thereby require any substantial infrastructure improvements at the SRWTP. The SRWTP did not experienced any major sanitary sewer overflows in 2019, and the California Hospital Tower Project would not require any infrastructure improvements to the SRWTP. This impact would be less than significant.			
Impact UT-4: Project-related exceedance of state or local solid waste standards or of the capacity of local infrastructure, or other impediments to attaining solid waste reduction goals (less than significant) While the implementation of the California Hospital Tower Project would generate more solid waste than existing conditions, there is adequate capacity available at the Forward Landfill to serve the campus through 2036, and expansion for the landfill is already planned and has undergone environmental review. After 2036,	**LTS**	**Mitigation Measures** No mitigation measures are necessary.	**LTS**

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Table ES-1. Continued

Impact	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
Foothill Landfill would serve the Sacramento Campus. The City of Sacramento has committed to achieving zero waste to landfills by 2040. In addition, compliance with the UC Sustainable Practices Policy would continue to reduce landfill contributions. The impact would be be **less than significant**.			
Impact UT-5: Inconsistency with federal, state, and local management and reduction statutes and regulations related to solid waste (no impact) Although UC is not subject to state and local regulations related to solid waste, development associated with implementation of the 2020 LRDP Update would comply with the UC Sustainable Practices Policy, which encourages waste reduction and diversion programs and is consistent with the management and reduction regulations related to solid waste, such as CIWMA, AB 341, SB 1374, and AB 1826. The project would comply with these existing regulations and there would be **no impact.**	**NI**	**Mitigation Measures** No mitigation measures are necessary.	**NI**

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Table ES-2. California Hospital Tower Project Mitigation and Monitoring Program

Impacts	Mitigation Measures	Monitoring and Reporting Procedure		Timing	Verification
Aesthetics					
Impact AES-1: Conflict with zoning or other regulations governing scenic quality in urbanized areas	**Mitigation Measure AES-1: Reduce visual impacts from construction** The following measures will be taken to reduce unsightly conditions at construction sites. • Before construction begins, the contractor will install visual barriers to obstruct views into the construction staging and demolition sites. The barriers will be as aesthetically pleasing as possible and may be painted plywood or enhanced chain-link fencing with privacy slats. Fencing with windscreen fabric will not be used due to its propensity to become unattached or torn, reducing its effectiveness. Barriers will be at least 8 feet high to break the line-of-sight as much as possible. If gates are needed through the fence, they will be made of a solid material or slatted chain-link and remain closed when not being used for ingress or egress. Barriers will be maintained to prevent them from being unsightly, and weeds will be removed as necessary to maintain a well-kept appearance. • The construction sites will be kept clean and organized. Unused materials, debris, trash, and	Review project design for landscaping, barriers, and fencing specifications.	DE	Prior to final design approval	Sacramento Campus Facilities Design and Construction
		Install landscaping and visual barriers.	CO	Prior to final design approval	Sacramento Campus Facilities Design and Construction

Project stage at which implementation of the measure is required:
SS = site selection; DE = detailed project planning or project design prior to project approval; CO = construction; OC = prior to occupancy; OP = operation.

Table ES-2. Continued

Impacts	Mitigation Measures	Monitoring and Reporting Procedure	Timing	Verification
	construction equipment that is no longer needed will be removed from the site on a daily basis. Unsightly materials will be stored outside of the line-of-site from adjacent land uses and away from gates that will remain open for long periods of time, such as a full day or longer. • Large equipment, such as cranes and scaffolding will be removed as soon as possible when no longer needed. If scaffolding is not needed for a later stage more than 90 days away, the scaffolding will be removed and rebuilt when needed again. • During demolition, the contractor will remove debris as quickly as possible to an appropriate landfill or recycling facility to prevent large piles of debris onsite. An offsite staging area will be used in an area not adjacent to residences. Before leaving the site, the truck loads will be wetted and/or covered to prevent fugitive dust while transporting debris. A wheel washer will be set up at the truck egress point to prevent track-out dirt as much as possible. Street washing will be used daily on Colonial Way during haul out periods. • If possible, mobile construction modular units or trailers, similar to the modular units currently on the			

Project stage at which implementation of the measure is required:
SS = site selection; DE = detailed project planning or project design prior to project approval; CO = construction; OC = prior to occupancy; OP = operation.

Table ES-2. Continued

Impacts	Mitigation Measures	Monitoring and Reporting Procedure		Timing	Verification
	Staging Site 1, will be placed along the V Street side of the staging sites (Sites 1 and 2 only). • No tall equipment or large piles of materials will be stored on Sites 1 or 2 that would be visible from V Street residences above the barrier or construction offices. This equipment or materials will be stored at an alternative site if it would be visible from the V Street residences. • Construction crew and equipment parking will be kept clean and surfaced to reduce the chances of track-out dirt. When construction will result in high levels of track-out dirt, wheel washers will be employed to reduce these impacts. • The 40-foot-wide landscaped buffer along V Street will not be used for staging for the demolition of the East Wing. If this site must be used for staging during demolition, it will do so for the shortest period possible and will be immediately landscaped when no longer needed.				
Impact AES-2: Introduction of a new source of substantial light or glare that would adversely affect daytime or nighttime views in the area	**Mitigation Measure LRDP-AES-2a: Apply design measures to building exteriors** Design for specific projects will provide for the use of textured, nonreflective exterior surfaces and nonreflective glass.	Review project design for use of textured, nonreflective exterior surfaces and nonreflective glass.	DE	Prior to final design approval	Sacramento Campus Facilities Design and Construction

Project stage at which implementation of the measure is required:
SS = site selection; DE = detailed project planning or project design prior to project approval; CO = construction; OC = prior to occupancy; OP = operation.

Table ES-2. Continued

Impacts	Mitigation Measures	Monitoring and Reporting Procedure		Timing	Verification
	Mitigation Measure LRDP-AES-2b: Utilize directional lighting methods Except as provided in Mitigation Measure LRDP AES-4c, all new outdoor lighting will use directional lighting methods with shielded and cutoff type light fixtures to minimize glare and upward-directed lighting.	Review project design for use of directional lighting methods.	DE	Prior to final design approval	Sacramento Campus Facilities Design and Construction
	Mitigation Measure LRDP-AES-2c: Review lighting, landscape, and architectural features prior to installation Non-cutoff, unshielded lighting fixtures used to enhance nighttime views of walking paths, specific landscape features, or specific architectural features will be reviewed by Sacramento Campus Facilities Planning, Design, and Construction staff prior to installation to ensure that the minimum amount of required lighting is proposed to achieve the desired nighttime emphasis, and the proposed illumination creates no adverse effect on nighttime views.	Review project design for lighting, landscaping, and architectural features.	DE	Prior to final project design	Sacramento Campus Facilities Design and Construction
	Mitigation Measure LRDP-AES-2d: Implement updated lighting design The University will implement the use of the specific lighting design and equipment designed to reduce light spill and glare when older lighting fixtures and designs are replaced over time.	Implement updated lighting design.	OP	During operation; ongoing as older exterior lighting fixtures are replaced	Sacramento Campus Facilities Design and Construction

Project stage at which implementation of the measure is required:
SS = site selection; DE = detailed project planning or project design prior to project approval; CO = construction; OC = prior to occupancy; OP = operation.

Table ES-2. Continued

Impacts	Mitigation Measures	Monitoring and Reporting Procedure		Timing	Verification
	Mitigation Measure AES-2a: Reduce construction nighttime lighting impacts Construction activities scheduled to occur after 6:00 p.m. or on weekends should not continue past daylight hours (which varies according to season) as much as possible. If nighttime construction is necessary, the contractor will minimize project-related light and glare using the following methods: • Minimize the number of nighttime lights used and illuminate only areas necessary for the nighttime work. • Avoid the use of flood lamps illuminating a large area, instead focusing light only on areas where work is occurring. • Screen individual lights and direct them downward toward specific work sites and away from offsite areas, especially residential areas. • Hang tarps or use other barriers to shield light from being visible from offsite areas, especially from construction on upper floors. • Use color-corrected halide lights where possible. • Operate portable lights at the lowest allowable wattage, with heights as low as possible.	Monitor construction activity and implement measures to reduce lighting impacts.	CO	During Construction	Sacramento Campus Facilities Design and Construction

Project stage at which implementation of the measure is required:
SS = site selection; DE = detailed project planning or project design prior to project approval; CO = construction; OC = prior to occupancy; OP = operation.

Table ES-2. Continued

Impacts	Mitigation Measures	Monitoring and Reporting Procedure		Timing	Verification
	• Exterior security lighting will be hooded, with lights directed downward and toward the area to be illuminated. Use only the amount of light necessary for safety and security. Do not use security lighting on upper floors visible above the visual barriers around the construction site or construction staging site.				
	Mitigation Measure AES-2b: Additional light and glare minimization measures All LED lighting will avoid the use of blue-rich white light lamps and use a correlated color temperature that is no higher than 3,000 Kelvin (International Dark-Sky Association 2010a, 2010b, 2015) within 200 feet of residences along V Street. Interior lighting within the parking structure will be allowed for safety. However, unnecessary interior nighttime lighting within the parking structure will be prevented by requiring that interior spaces within the parking structure utilize motion-sensor lighting that is programmed for early-morning and late-night use, beyond the hours of typical high-use. This would ensure that the parking structure's interior is not over-lit because lighting would be turned off or lowered during off-peak hours. It would also maintain safety during off-peak hours by ensuring that pedestrian	Implement updated lighting design.	DE	Prior to final design approval	Sacramento Campus Facilities Design and Construction

Project stage at which implementation of the measure is required:
SS = site selection; DE = detailed project planning or project design prior to project approval; CO = construction; OC = prior to occupancy; OP = operation.

Table ES-2. Continued

Impacts	Mitigation Measures	Monitoring and Reporting Procedure		Timing	Verification
	activity triggers the lighting levels to increase when motion is sensed. Furthermore, the walls of the parking garage will be high enough to prevent vehicle headlights from shining into nearby residences as vehicles travel through the garage. In addition, ornamental design techniques will be used on the garage façade along 45th Street, 48th Street, and V Street: this façade will have an aesthetic treatment and shield the structure's interior lighting from residents along V Street. The slatted panels of PS3 facing Stockton Boulevard and X Street represent an example of such a treatment. The exterior of PS5, however, will not be as lightly colored as PS3 in order to reduce reflective glare.				
Air Quality					
Impact AQ-2: Cumulatively considerable net increase of any criteria pollutant for which the project region is a nonattainment area for an applicable federal or state ambient air quality standard	**Mitigation Measure LRDP-AQ-2a: Reduce construction-generated fugitive dust** Land use development projects as part of the implementation of the 2020 LRDP Update will require all construction contractors to implement the following measures to reduce construction-generated fugitive dust. Control of fugitive dust is required per SMAQMD Rule 403 and enforced by SMAQMD staff. The list of required measures was informed by SMAQMD's basic and	Incorporate measure as part of construction specifications and documentation and inspect construction site at regular intervals during construction to verify compliance with specified construction-generated fugitive dust reduction measures.	DE/CO	During project design; prior to construction; regular intervals throughout the construction period	Sacramento Campus Facilities Design and Construction

Project stage at which implementation of the measure is required:
SS = site selection; DE = detailed project planning or project design prior to project approval; CO = construction; OC = prior to occupancy; OP = operation.

Table ES-2. Continued

Impacts	Mitigation Measures	Monitoring and Reporting Procedure	Timing	Verification
	enhanced construction emission control practices. • Water exposed soil with adequate frequency to prevent fugitive dust and particulates from leaving the project site. However, do not overwater to the extent that sediment flows off the site. Exposed surfaces include, but are not limited to soil piles, graded areas, and unpaved parking areas, • Suspend excavation, grading, and/or demolition activity when sustained wind speeds exceed 25 miles per hour (mph). • Install wind breaks (e.g., plant trees, solid fencing) on the average dominant windward side(s) of construction areas. For purposes of implementation, chain-link fencing with added landscape mesh fabric adequately qualifies as solid fencing. • For dust control in disturbed but inactive construction areas, apply soil stabilization measures adequate to mitigate airborne particulates as soon as possible. • Use wet power vacuum street sweepers to remove any visible trackout mud or dirt onto adjacent public roads at least once a day. Use of dry power sweeping is prohibited.			

Project stage at which implementation of the measure is required:
SS = site selection; DE = detailed project planning or project design prior to project approval; CO = construction; OC = prior to occupancy; OP = operation.

Table ES-2. Continued

Impacts	Mitigation Measures	Monitoring and Reporting Procedure	Timing	Verification
	• Treat site accesses from the paved road with a 6- to 12-inch layer of wood chips, mulch, gravel, or other approved method to reduce generation of road dust and road dust carryout onto public roads. • Cover or maintain at least 2 feet of free board space on haul trucks transporting soil, sand, or other loose material on the site. Any haul trucks that would be traveling along freeways or major roadways should be covered. • Establish a 15-mph speed limit for vehicles driving on unpaved portions of project construction sites. • Post a publicly visible sign with the telephone number and person to contact at the lead agency regarding dust complaints. This person will respond and take corrective action within 48 hours. The phone number of the SMAQMD will also be visible to ensure compliance. UC Davis will ensure that the implementation of this mitigation measure is consistent with the UC Davis stormwater program and does not result in offsite runoff as a result of watering for dust control purposes.			

Project stage at which implementation of the measure is required:
SS = site selection; DE = detailed project planning or project design prior to project approval; CO = construction; OC = prior to occupancy; OP = operation.

Table ES-2. Continued

Impacts	Mitigation Measures	Monitoring and Reporting Procedure		Timing	Verification
	Mitigation Measure LRDP-AQ-2b: Reduce construction-generated emissions from equipment and vehicle exhaust Land use development projects as part of the implementation of the 2020 LRDP Update will require all construction contractors to implement the following measures to reduce construction-generated emissions from equipment and vehicle exhaust. The list of required measures was informed by SMAQMD's basic and enhanced construction emission control practices. • For all development except Aggie Square Phase I, use construction equipment with engines meeting EPA Tier 3 or better emission standards prior to 2025 and EPA Tier 4 Final or better emission standards beginning in 2025. For Aggie Square Phase I, all engines must be EPA certified Tier 4 Final or better, regardless of construction year. Equipment requirements may be waived by UC Davis, but only under any of the following unusual circumstances: If a particular piece of off-road equipment with Tier 4 Final standards or Tier 3 standards is technically not feasible, not commercially available, or there is a compelling emergency need to use off-road equipment that does not	Incorporate measure as part of construction specifications and documentation and inspect construction site at regular intervals during construction to verify compliance with specified construction-generated emissions reduction measures.	DE/CO	During project design; prior to construction; regular intervals throughout the construction period	Sacramento Campus Facilities Design and Construction

Project stage at which implementation of the measure is required:
SS = site selection; DE = detailed project planning or project design prior to project approval; CO = construction; OC = prior to occupancy; OP = operation.

Table ES-2. Continued

Impacts	Mitigation Measures	Monitoring and Reporting Procedure	Timing	Verification
	meet the equipment requirements above. If UC Davis grants the waiver, the contractor will use the next cleanest piece of off-road equipment available, in the following order: Tier 4 Interim, Tier 3, and then Tier 2 engines. • Use renewable diesel fuel in all heavy-duty off-road diesel-fueled equipment. Renewable diesel must meet the most recent ASTM D975 specification for Ultra Low Sulfur Diesel and have a carbon intensity no greater than 50 percent of diesel with the lowest carbon intensity among petroleum diesel fuels sold in California. • All diesel on-road trucks used to haul construction materials will use a model year 2010 or newer engine. • Minimize idling time either by shutting equipment off when not in use or reducing the time of idling to 5 minutes (California Code of Regulations, Title 13, Sections 2449[d][3] and 2485). Provide clear signage that posts this requirement for workers at the entrances to the site. • Provide current certificate(s) of compliance for CARB's In-Use Off-Road Diesel-Fueled Fleets Regulation			

Project stage at which implementation of the measure is required:
SS = site selection; DE = detailed project planning or project design prior to project approval; CO = construction; OC = prior to occupancy; OP = operation.

Table ES-2. Continued

Impacts	Mitigation Measures	Monitoring and Reporting Procedure		Timing	Verification
	(California Code of Regulations, Title 13, Sections 2449 and 2449.1). • Maintain all construction equipment in proper working condition according to manufacturer's specifications. The equipment must be checked by a certified mechanic and determined to be running in proper condition before it is operated.				
	Mitigation Measure LRDP-AQ-2c: Reduce evaporative emissions during architectural coatings Land use development projects as part of the implementation of the 2020 LRDP Update will require all construction contractors to use no- or low-solids content (i.e., no- or low-volatile organic compound [VOC]) architectural coatings with a maximum VOC content of 50 grams per liter.	Incorporate measure as part of construction and contractor specifications and documentation and inspect construction site at regular intervals during construction to verify compliance with specified measure.	DE/CO	During project design; prior to construction; regular intervals throughout the construction period	Sacramento Campus Facilities Design and Construction
	Mitigation Measure LRDP-AQ-3a: Reduce receptor exposure to construction generated diesel particulate matter Land use development projects implemented under the 2020 LRDP Update will require its prime construction contractor to implement the following measures to reduce receptor exposure to DPM concentrations and associated health risks.	Incorporate measure as part of construction and contractor specifications and documentation and inspect construction site at regular intervals during construction to verify compliance with specified measure.	DE/CO	During project design; prior to construction; regular intervals throughout the construction period	Sacramento Campus Facilities Design and Construction

Project stage at which implementation of the measure is required:
SS = site selection; DE = detailed project planning or project design prior to project approval; CO = construction; OC = prior to occupancy; OP = operation.

Table ES-2. Continued

Impacts	Mitigation Measures	Monitoring and Reporting Procedure	Timing	Verification
	• Limit excess equipment idling to no more than 5 minutes (included in Mitigation Measure LRDP-AQ-2b). • Locate operation of diesel-powered construction equipment as far away from sensitive receptors as possible. • Use equipment during times when receptors are not present (e.g., when school is not in session or during non-school hours), as feasible. • Establish staging areas for the construction equipment that are as distant as possible from offsite receptors, including existing residences. • Where feasible, use equipment with engines meeting EPA Tier 4 Final or better emission standards prior to 2025 (Mitigation Measure LRDP-AQ-2b requires Tier 4 Final engines beginning in 2025 for all development except Aggie Square Phase I, which is required to use EPA Tier 4 Final or better engines regardless of the construction year). • Where feasible, use haul trucks with on-road engines instead of off-road engines even for onsite hauling. • Use electric, compressed natural gas, or other alternatively fueled construction equipment instead of the diesel counterparts, where available.			

Project stage at which implementation of the measure is required:
SS = site selection; DE = detailed project planning or project design prior to project approval; CO = construction; OC = prior to occupancy; OP = operation.

Table ES-2. Continued

Impacts	Mitigation Measures	Monitoring and Reporting Procedure		Timing	Verification
	• Coordinate with existing off-campus homeowners where projected cancer risks exceed 10 per million and offer financial assistance to use Minimum Efficiency Reporting Value (MERV) 14 air filters. Financial assistance will be provided for the purchase of up to two filters per year, or per manufacturer recommendations. UC Davis will establish an online procurement system (or similar) to facilitate the purchase and distribution of the filters to residents electing to participate in the program.				
	Mitigation Measure AQ-2a: Electrify cranes used during construction All construction contractors working on PS5, California Tower, make-ready projects, and demolition of the East Wing of the main hospital must use electric-powered cranes. Diesel or fossil-fuel powered cranes are prohibited.	Incorporate measure as part of construction and contractor specifications and documentation.	DE/CO	During project design, during construction	Sacramento Campus Facilities Design and Construction
	Mitigation Measure AQ-2b: Offset construction-generated NO_X emissions in excess of SMAQMD's threshold of significance Construction-generated emissions of NO_X would exceed the SMAQMD's threshold of significance in 2025 and 2026. Because construction-generated NOx emissions would exceed SMAQMD's threshold of significance, UC Davis will	Incorporate measure as part of construction and contractor specifications and documentation.	DE/CO	During project design, during construction	Sacramento Campus Facilities Design and Construction, annual reporting from UC Davis to SMAQMD

Project stage at which implementation of the measure is required:
SS = site selection; DE = detailed project planning or project design prior to project approval; CO = construction; OC = prior to occupancy; OP = operation.

Table ES-2. Continued

Impacts	Mitigation Measures	Monitoring and Reporting Procedure	Timing	Verification
	pay a mitigation fee in the amount of \$147,201 and an administrative fee in the amount of \$7,360 to SMAQMD to reduce the project impacts from construction NO_X emissions to a less-than-significant level. This fee will be used to fund emissions reduction projects within the SVAB. The types of projects that have been used in the past to achieve such reductions include electrification of stationary internal combustion engines (such as agricultural irrigations pumps); replacing old trucks with new, cleaner, more efficient trucks; and a host of other stationary and mobile source emissions-reducing projects. The fee amount is based on an offset cost of \$30,000 per ton of NO_X and the total quantity of NO_X emissions in excess of SMAQMD's NO_X threshold (4.9 tons based on the daily exceedances in 2025 and 2026). The administrative fee is 5 percent of the fee amount. UC Davis will pay the mitigation and administrative fees in full prior to issuing a demolition or grading permit for the project. For construction occurring during 2025 and 2026, construction contractors will provide annual construction activity monitoring data to estimate actual construction emissions. UC Davis will submit the annual construction activity monitoring data and			

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Table ES-2. Continued

Impacts	Mitigation Measures	Monitoring and Reporting Procedure	Timing	Verification
	an estimate of actual annual NOx emissions to SMAQMD for review by February 1 of each year for the prior construction year. The annual report will reconcile paid fees, if any, for the prior year relative to actual emissions. If more emissions were generated than fees paid, UC Davis will submit payment for the deficient amount based on an offset cost of $30,000 per ton of NO_X. If more fees were paid than emissions generated, SMAQMD will either issue UC Davis a refund for the surplus or a credit that can be applied to future fee payments. An alternative payment plan may be negotiated by UC Davis based on the timing of construction phases that are expected to exceed the SMAQMD's threshold of significance. Any alternative payment plan must be acceptable to SMAQMD and agreed upon in writing prior to issuance of a demolition or grading permit by UC Davis. In coordination with SMAQMD, UC Davis, or its designee, may reanalyze construction NO_X emissions from the project prior to starting construction to update the required mitigation and administrative fees. The analysis must be conducted using SMAQMD-approved emissions model(s) and the fee rates published at the time of reanalysis. The analysis may include onsite measures to			

Project stage at which implementation of the measure is required:
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Table ES-2. Continued

Impacts	Mitigation Measures	Monitoring and Reporting Procedure		Timing	Verification
	reduce construction emissions if deemed feasible by UC Davis. All onsite measures assumed in the analysis must be included in the construction contracts and be enforceable by UC Davis.				
Impact AQ-3: Exposure of sensitive receptors to substantial pollutant concentrations	**Mitigation Measure LRDP-AQ-2a: Reduce construction-generated fugitive dust** See text above under Impact AQ-2.	Incorporate measure as part of construction specifications and documentation and inspect construction site at regular intervals during construction to verify compliance with specified construction-generated fugitive dust reduction measures.	DE/CO	During project design; prior to construction; regular intervals throughout the construction period	Sacramento Campus Facilities Design and Construction
	Mitigation Measure LRDP-AQ-2b: Reduce construction-generated emissions from equipment and vehicle exhaust See text above under Impact AQ-2	Incorporate measure as part of construction specifications and documentation and inspect construction site at regular intervals during construction to verify compliance with specified construction-generated emissions reduction measures.	DE/CO	During project design; prior to construction; regular intervals throughout the construction period	Sacramento Campus Facilities Design and Construction
	Mitigation Measure LRDP-AQ-2c: Reduce evaporative emissions during architectural coatings See text under Impact AQ-2.	Incorporate measure as part of construction and contractor specifications and documentation and inspect construction site	DE/CO	During project design; prior to construction; regular intervals throughout the	Sacramento Campus Facilities Design and Construction

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Table ES-2. Continued

Impacts	Mitigation Measures	Monitoring and Reporting Procedure		Timing	Verification
		at regular intervals during construction to verify compliance with specified measure.		construction period	
	Mitigation Measure LRDP-AQ-3a: Reduce receptor exposure to construction generated diesel particulate matter Refer to text under Impact AQ-2.	Incorporate measure as part of construction specifications and documentation and inspect construction site at regular intervals during construction to verify compliance with specified construction-generated emissions reduction measures.	DE/CO	Regular intervals throughout the construction period and during project design	Sacramento Campus Facilities Design and Construction
		Coordinate with existing off-campus homeowners and offer financial assistance to use MERV 14 air filters; establish an online procurement system (or similar) to facilitate the purchase and distribution of the filters to eligible residents electing to participate in the program.	DE/CO	During project design; prior to construction; regular intervals throughout the construction period	Sacramento Campus Facilities Design and Construction
	Mitigation Measure AQ-2a: Electrify cranes used during construction Refer to measure description under Impact AQ-2.	Incorporate measure as part of construction and contractor specifications and documentation.	CO	During construction	Sacramento Campus Facilities Design and Construction

Project stage at which implementation of the measure is required:
SS = site selection; DE = detailed project planning or project design prior to project approval; CO = construction; OC = prior to occupancy; OP = operation.

Table ES-2. Continued

Impacts	Mitigation Measures	Monitoring and Reporting Procedure		Timing	Verification
	Mitigation Measure AQ-2b: Offset construction-generated NOX emissions in excess of SMAQMD's threshold of significance Refer to measure description under Impact AQ-2.	Incorporate measure as part of construction and contractor specifications and documentation.	CO	During construction	Sacramento Campus Facilities Design and Construction
Biological Resources					
Impact BIO-1: Disturbance of vegetation-nesting migratory birds and raptors, including Swainson's hawk and white-tailed kite	**Mitigation Measure LRDP-BIO-2: Conduct preconstruction surveys for nesting migratory birds and raptors, including special-status species, and establish protective buffers** For any projects implemented under the 2020 LRDP Update that would require vegetation removal (i.e., trees, shrubs, and ruderal vegetation) or would result in construction disturbances in the vicinity of vegetated areas, the following measures will be implemented prior to initiation of construction to avoid and minimize impacts to Swainson's hawk, white-tailed kite, and other vegetation-nesting migratory birds and raptors, and to avoid violation of the MBTA, CESA, and California Fish and Game Code Sections 3503, 3503.5, and 3511. • For construction activities that occur during the nesting season for migratory birds and raptors (generally February through August), the University will retain a qualified	Retain a qualified biologist to conduct preconstruction surveys; implement measures as applicable.	DE/CO	Prior to final design approval and ongoing during project construction	Sacramento Campus Facilities Design and Construction

Project stage at which implementation of the measure is required:
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Table ES-2. Continued

Impacts	Mitigation Measures	Monitoring and Reporting Procedure	Timing	Verification
	wildlife biologist familiar with the nesting behavior of bird species that occur in the plan area to conduct a preconstruction nesting bird survey. The nesting bird surveys will be conducted no less than 14 days prior to vegetation removal or construction disturbance activities near nesting habitat. The survey will include a search of all trees and shrubs, and ruderal areas that provide suitable nesting habitat for birds and raptors within the construction disturbance area. In addition, a 600-foot area around the construction area will be surveyed for nesting raptors and a 100-foot area around the construction area will be surveyed for songbirds. • If no special-status raptor species (i.e., Swainson's hawk or white-tailed kite) or active bird or raptor nests are detected during the preconstruction surveys, then no additional measures are required. If an active nest is found in the survey area, a no-disturbance buffer will be established to avoid disturbance or destruction of the nest site until the end of the breeding season (generally August 31) or until after a qualified wildlife biologist determines that the young have fledged and moved out of the construction area (this date varies by			

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Table ES-2. Continued

Impacts	Mitigation Measures	Monitoring and Reporting Procedure		Timing	Verification
	species). The extent of these buffers will be determined by a qualified biologist in coordination with any applicable agencies (as determined by species), and will depend on the level of noise or construction disturbance taking place, the line-of-sight between the nest and the disturbance, ambient levels of noise and other non-project disturbances, and other topographical or artificial barriers. Suitable buffer distances may vary between species; however, a minimum of 50 feet for songbirds and 300 feet for raptors is typical. In developed habitats, buffer areas may be adjusted based on presence of existing barriers.				
Impact BIO-2: Disturbance of structure-nesting migratory birds, including purple martin	**Mitigation Measure LRDP-BIO-3: Modify existing structures during the non-breeding season for purple martin and other structure-nesting migratory birds or implement exclusion measures to deter nesting** For any projects implemented under the 2020 LRDP Update that would modify or demolish any existing building structures, the following measures will be implemented prior to initiation of construction to avoid and minimize impacts to purple martins and other structure-nesting migratory birds, and to avoid violation of the MBTA and	Retain a qualified biologist to conduct preconstruction surveys; implement measures as applicable.	DE/CO	Prior to final design approval and ongoing during project construction.	Sacramento Campus Facilities Design and Construction

Project stage at which implementation of the measure is required:
SS = site selection; DE = detailed project planning or project design prior to project approval; CO = construction; OC = prior to occupancy; OP = operation.

Table ES-2. Continued

Impacts	Mitigation Measures	Monitoring and Reporting Procedure	Timing	Verification
	California Fish and Game Code Section 3503. • Conduct building demolition and modification activities during the non-breeding season for structure-nesting migratory birds (generally September 1 through January 31). If this is not possible, the University will implement the following avoidance measures. • Prior to the start of each phase of demolition/construction that is anticipated to occur during the migratory bird breeding season (generally February through August), the University will retain a qualified wildlife biologist to thoroughly inspect structures that would be modified or disturbed to locate remnant bird nests or areas such as drain holes or crevices that could be used as nesting areas by migratory birds, such as purple martins. It is preferable to perform this survey in the non-breeding season (September 1 through January 31) so that if nests are found and are determined to be inactive, they may be removed. • After inactive nests are removed and prior to construction that would occur between February 1 and August 31, known or potential nesting areas on or within the building structure to be			

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Table ES-2. Continued

Impacts	Mitigation Measures	Monitoring and Reporting Procedure	Timing	Verification
	modified or demolished will be covered with a suitable exclusion material that will prevent birds from nesting (i.e., 0.5- to 0.75-inch mesh netting, plastic tarp, or other suitable material safe for wildlife). Portions of the existing structures containing drain holes or crevices that would be modified or disturbed may also will be covered or filled with suitable material to prevent nesting (i.e., fiberglass insulation, foam padding, and polyvinyl chloride [PVC]/acrylonitrile butadiene styrene [ABS] caps). The University will hire a qualified wildlife management specialist experienced with installation of bird exclusion materials to ensure that exclusion devices are properly installed and will avoid inadvertent entrapment of migratory birds. All exclusion devices will be installed before February 1 and will be monitored throughout the breeding season (typically several times a week). The exclusion material will be anchored so that birds cannot attach their nests to the structures through gaps in a net. • Exclusion devices for migratory birds will be installed consistent with bat exclusion measures and in a manner			

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Table ES-2. Continued

Impacts	Mitigation Measures	Monitoring and Reporting Procedure		Timing	Verification
	that does not entrap day-roosting bats. • If exclusion material is not installed on structures prior to February 1 and migratory birds colonize a structure, removal or modification to that portion of the structure may not occur until after August 31, or until a qualified biologist has determined that the young have fledged and the nest is no longer in use. • If surveys determine that no active bird nests are present within existing structures to be modified or demolished and appropriate steps are taken to prevent migratory birds from constructing new nests as described in the preceding measures, work can proceed at any time of the year.				
Impact BIO-3: Disturbance of structure-roosting bats	**Mitigation Measure BIO-3: Conduct pre-construction surveys for roosting bats and implement protection measures** Baseline data about how bats may use structures on the project site and in the project vicinity, their individual numbers, or how they vary seasonally are not available. Daily and seasonal variations in habitat use by bats is common. To obtain the highest likelihood of detection, the following pre-construction bat surveys will be conducted within the construction	Retain a qualified biologist to conduct preconstruction surveys; implement measures as applicable during construction.	DE	Prior to final design approval and project construction	Sacramento Campus Facilities Design and Construction

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Table ES-2. Continued

Impacts	Mitigation Measures	Monitoring and Reporting Procedure	Timing	Verification
	area prior to modification or demolition of existing building structures. If surveys determine that bats are roosting in the construction area, the University will implement the following protective measures. ***Conduct Pre-Construction Surveys at Structures*** • Before work begins on any building or structure, qualified bat biologists will conduct a thorough habitat assessment of the structures to evaluate their potential to support roosting bats and to look for evidence of bat use (i.e., guano, urine staining, audible vocalizations). The biologists will inspect crevices, drain holes, and other visible features that could house bats. If potential roost areas are identified within the disturbance area, then evening emergence surveys (further described below) would be conducted to determine whether the structure is occupied by bats. Surveys will occur no earlier than 30 days prior to the construction start-date. Prior to demolition of existing structures, it is recommended that a habitat assessment and emergence surveys be conducted 1-2 years before demolition during multiple seasons (i.e., summer breeding and			

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Table ES-2. Continued

Impacts	Mitigation Measures	Monitoring and Reporting Procedure	Timing	Verification
	winter hibernation) to allow for sufficient time to evaluate potential roost sites, determine occupancy status, identify species and population numbers, develop an appropriate eviction or exclusion plan, and establish appropriate offsite replacement habitat, if necessary. • Qualified biologists also will conduct evening emergence surveys at structures that contain suitable roosting areas. The surveys will consist of at least one biologist stationed near potential entry and exit points of the structure watching for emerging bats from a half hour before sunset to 1–2 hours after sunset for a minimum of 2 nights at each survey location within the season that construction would be taking place. Surveys may take place over several nights to fully cover the extent of structure work. All emergence surveys will be conducted during favorable weather conditions (calm nights with temperatures conducive to bat activity and no precipitation predicted). Survey methodology may be supplemented as new research identifies advanced survey techniques and equipment that would aid in bat detections. Acoustic detectors will be used during emergence surveys to			

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Table ES-2. Continued

Impacts	Mitigation Measures	Monitoring and Reporting Procedure	Timing	Verification
	obtain data on bat species present in the survey area at the time of detection. • If a building or structure proposed for modification or demolition is identified as supporting an active bat roost, additional surveys may be required to determine how the structure is used by bats—whether it is used as a night roost, maternity roost, migration stopover, or for hibernation. ***Identify Protective Measures for Bats Using Structures*** • If it is determined that bats are using building structures within or adjacent to the construction area as roost sites, the University will coordinate with CDFW to identify protective measures to avoid and minimize impacts on roosting bats based on the type of roost and timing of activities. These measures could include the following actions. ○ If a non-maternity roost is located within a structure that would be modified or disturbed in a manner that would expose the roost, bats will be excluded from the structure by a qualified wildlife management specialist working with a bat biologist. An exclusion			

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Table ES-2. Continued

Impacts	Mitigation Measures	Monitoring and Reporting Procedure	Timing	Verification
	plan will be developed in coordination with CDFW that identifies the type of exclusion material/devices to be used, the location and method for installing the devices, and monitoring schedule for checking the effectiveness of the devices. Exclusion devices will be installed between September 15 and October 31 to avoid affecting maternal and hibernating bat roosts and will take place during weather and temperature conditions conducive to bat activity. Because bats are expected to tolerate temporary construction noise and vibrations, bats will not be excluded from structures if no direct impacts on the roost are anticipated. ○ An alternative to installing exclusion devices would be to make structural changes to a known roost proposed for removal to create conditions in the roost that are undesirable to roosting bats and encourage the bats to leave on their own (e.g., open additional portals so that the temperature, wind, light, and precipitation regime in the roost change). Structural changes to the			

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Table ES-2. Continued

Impacts	Mitigation Measures	Monitoring and Reporting Procedure		Timing	Verification
	roost will be authorized by CDFW and will be performed during the appropriate exclusion timing (listed above) to avoid harming bats. o If a maternity roost is located, whether solitary or colonial, that roost will remain undisturbed until September 15 or until a qualified biologist has determined that the roost is no longer active.				
Archaeological, Historical, and Tribal Cultural Resources					
Impact CUL-2: Potential to cause a substantial adverse change in the significance of an archaeological resource	**Mitigation Measure LRDP-CUL-2a: Conduct cultural resources sensitivity training** Prior to any ground disturbance, construction crews will be required to attend a cultural resources sensitivity training. The training will focus on identifying potential archaeological resources as well as human remains. If potential archaeological resources or human remains are encountered, construction crews will be instructed to notify the University immediately.	Include training in construction contract; complete informal training.	DE/CO	During project design; prior to construction; regular intervals throughout the construction period	UC Davis Environmental Planning
	Mitigation Measure LRDP-CUL-2b: Stop work in the event of discovery of an archaeological resource If an archaeological resource is discovered during construction, all project-related ground disturbance	Include measure in construction contracts; verify that work is halted; retain archaeologist to assess find. If find is significant, implement	DE/CO	During project design; prior to construction; regular intervals throughout the	UC Davis Environmental Planning

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Table ES-2. Continued

Impacts	Mitigation Measures	Monitoring and Reporting Procedure		Timing	Verification
	within 100 feet of the find will cease. The University will contact a qualified archaeologist within 24 hours to inspect the site. If a resource is determined to qualify as a unique archaeological resource (as defined by CEQA), and the University determines, in compliance with PRC 21083.2, which requires preservation in place as a first option, the University will devote retain a qualified archaeologist to conduct excavation to recover the material. Any archaeologically important artifacts recovered during monitoring will be cleaned, catalogued, and analyzed, with the results presented in an archaeological data recovery report.	additional measures as specified, including documentation.		construction period	
Impact CUL-3: Disturbance of any human remains, including those interred outside of dedicated cemeteries	**Mitigation Measure CUL-3: Develop and implement a testing, monitoring, and burial recovery plan** The University will retain a qualified archaeologist to develop and implement a subsurface testing, monitoring, and burial recovery plan. When project plans identifying the horizontal and vertical extent of subsurface disturbance have been developed, a testing plan to identify the extent of the cemetery area boundaries within the project footprint will be prepared and implemented. The plan will include methods and locations of testing and will provide guidance for the recovery, treatment and reburial of	Retain a qualified archaeologist to prepare burial recovery plan.	DE	Prior to final design and project approval	UC Davis Environmental Planning

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Table ES-2. Continued

Impacts	Mitigation Measures	Monitoring and Reporting Procedure		Timing	Verification
	any human remains or associated artifacts located during testing and project construction. The plan will also include guidance for construction monitoring for burials, including locations that require monitoring and monitoring methods.				
	Mitigation Measure LRDP-CUL-3b: Stop work if human remains are encountered In the event of a discovery on campus of human bone, suspected human bone, or a burial, all excavation within 100 feet of the find will halt immediately and the University will contact a qualified archaeologist or the County Coroner within 24 hours to determine whether the bone is human. Consistent with California Health and Safety Code Section 7050.5(b), which prohibits disturbance of human remains uncovered by excavation until the coroner has made a finding relative to PRC Section 5097.5 procedures, the University will ensure that the remains, and a reasonable buffer around the remains established in coordination with the coroner or archaeologist, are protected against further disturbance. If it is determined that the find is of Native American origin, the University will comply with the provisions of PRC Section 5097.98 regarding identification and involvement	Include measure in construction contracts; verify that work is halted in the event of discovery of suspected human bone; retain archaeologist and contact County Coroner.	DE/CO	During project design; prior to construction; regular intervals throughout the construction period	UC Davis Environmental Planning
		Arrange for archaeologist to confer with MLD to develop appropriate treatment options; document repatriation or reinterment.	DE/CO	During project design; prior to construction; regular intervals throughout the construction period	UC Davis Environmental Planning
		Archaeologist to supervise excavation and burial, as described.	DE/CO	During project design; prior to construction; regular intervals throughout the construction period	UC Davis Environmental Planning

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Table ES-2. Continued

Impacts	Mitigation Measures	Monitoring and Reporting Procedure		Timing	Verification
	of the Native American Most Likely Descendant (MLD). If human remains cannot be left in place, the University will ensure that the qualified archaeologist and the MLD are provided opportunity to confer on archaeological treatment of human remains, and that appropriate studies, as identified through this consultation, are carried out prior to reinterment. The University will provide results of all such studies to the local Native American community and will provide an opportunity of local Native American involvement in any interpretative reporting. If the human remains are determined to be historic, the area of the project site will be excavated under the supervision of an archaeologist and all human remains and associated artifacts will be removed from the site and analyzed. After analysis, all recovered human remains and associated artifacts will be placed in caskets and buried in a single mass grave at a local cemetery.				
Geology, Soils, and Seismicity					
Impact GEO-1: Potential substantial adverse effects, including the risk of loss, injury, or death involving: (1) Rupture of a known	**Mitigation Measure GEO-1: Implement design recommendations in the geotechnical investigation** A site-specific, design-level geotechnical investigation was prepared for the	Retain a certified engineering geologist or licensed geotechnical engineer to conduct site-specific geotechnical	DE	Prior to final design approval and project construction.	Sacramento Campus Facilities Design and Construction

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Table ES-2. Continued

Impacts	Mitigation Measures	Monitoring and Reporting Procedure		Timing	Verification
earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault; (2) strong seismic ground shaking; (3) seismic-related ground failure, including liquefaction; or (4) landslides	project (Rutherford & Chekene 2021). The design recommendations from this investigation will be incorporated into the plans and specifications for the California Hospital Tower Project. The design recommendations cover structural design recommendations, ancillary structures, water tanks, basement walls and slabs, issues relating to the interface between the existing Surgery Emergency Services Pavilion and the new tower, supported excavations, civil design recommendations, earthwork and grading, soil cement columns, and corrosion potential and below grade construction.	investigation; document implementation of geotechnical recommendations.			
Impact GEO-3: Placement of project-related facilities on a geologic unit or soil that is unstable or that would become unstable as a result of the project and potentially result in an onsite or offsite landslide, lateral spreading, subsidence, liquefaction, or collapse	**Mitigation Measure GEO-1: Implement design recommendations in the geotechnical investigation** See text above under Impact GEO-1.	Retain a certified engineering geologist or licensed geotechnical engineer to conduct site-specific geotechnical investigation; document implementation of geotechnical recommendations.	DE	Prior to final design approval and project construction.	Sacramento Campus Facilities Design and Construction
Impact GEO-6: Direct or indirect destruction of a unique paleontological resource or site or unique geologic feature	**Mitigation Measure GEO-6: Prepare and implement a paleontological monitoring plan.** Prior to construction, UC will retain a qualified paleontologist to prepare and	Retain a certified qualified paleontologist to prepare and implement a monitoring plan.	DE	Prior to final design approval and project construction.	Sacramento Campus Facilities Design and Construction

Project stage at which implementation of the measure is required:
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Table ES-2. Continued

Impacts	Mitigation Measures	Monitoring and Reporting Procedure		Timing	Verification
	implement a paleontological monitoring plan to address any excavation of more than 10 feet in depth. Borings and small excavations need not be monitored. The plan will include, at a minimum, criteria for sensitivity training for construction workers, criteria for monitoring, processes for stopping work for paleontological discoveries, processes for removing paleontological finds, and plans for the final disposition of those finds. The plan will also include a requirement for fossil preparation and a monitoring report.				
Greenhouse Gas Emissions					
Impact GHG-2: Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases	**Mitigation Measure LRDP-AQ-2e: Reduce operational PM10 emissions** UC Davis will implement a program that incentivizes employees, students, residents, and visitors to carpool, use EVs, walk/bike, or use public transit to commute to and from the Sacramento Campus. The program will include, but is not limited to, the following features: • **Parking**: Limit parking capacity to meet onsite demand and provide preferential parking to carpool vehicles, vanpool vehicles, and EVs. The program will implement the following parking related sub-measures.	Implement program to incentivize alternative commuting modes, purchase GHG credits, as necessary	OP	On a continuing basis with annual reporting	Sacramento Campus Facilities Design and Construction

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Table ES-2. Continued

Impacts	Mitigation Measures	Monitoring and Reporting Procedure	Timing	Verification
	a. Provide no more onsite parking spaces than necessary to accommodate the number of employees working at a project site and/or the number of residents living at a project site, as determined by the project size and design. b. Where feasible, for future residential units (on-campus and Aggie Square Phase I), lease/sell parking space separately from the unit and provide the tenant the option of not purchasing/owning a space. c. Nonresidential land uses with 20 or more onsite parking spaces will dedicate preferential parking spaces to vehicles with more than one occupant and zero emission vehicles (including battery electric vehicles and hydrogen fuel cell vehicles). The number of dedicated spaces should be no less than two spaces or 5 percent of the total parking spaces on the project site, whichever is greater. These dedicated spaces will be in preferential locations such as near the main entrances to the buildings served by the parking lot and/or under the shade of a structure or trees. These spaces			

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Table ES-2. Continued

Impacts	Mitigation Measures	Monitoring and Reporting Procedure	Timing	Verification
	will be clearly marked with signs and pavement markings. This measure will not be implemented in a way that prevents compliance with requirements in the California Vehicle Code regarding parking spaces for disabled persons or disabled veterans. d. Maintain a virtual or real "ride board" for employees and students to organize carpools and incentives for employees using public transit to commute to and from campus • **Vendor Trips**: Implement a program that incentivizes vendors to reduce the emissions associated with vehicles and equipment serving the UC Davis Sacramento Campus. The program will implement the following sub-measures to reduce vendor-related, mobile-source emissions. a. Incentivize the use of electric vehicles or other clean fuels in their trucks and equipment. b. Work with vendors, especially those using trucks, to reduce the number of vendor trips made to the campus through trip chaining, reducing the number of shipments, or other methods.			

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Table ES-2. Continued

Impacts	Mitigation Measures	Monitoring and Reporting Procedure	Timing	Verification
	• **Campus Shuttles**: Work with Fleet Services to convert Med-Transit (onsite) shuttles to electric or a lower-emission fuels or implement emission control technologies to reduce criteria air pollutant emissions from existing conditions. • **Pedestrian and Bicycle Infrastructure**: Enhance walkability and connectivity of the Sacramento Campus to surrounding residential and commercial uses. The program will implement the following site design related sub-measures. a. Ensure all new external connections from the Sacramento Campus to existing or planned streets include bicycle/pedestrian access. b. Eliminate physical barriers such as walls, landscaping, and slopes that impede pedestrian circulation throughout the Sacramento Campus. c. Require all new sidewalks internal and adjacent to the Sacramento Campus to be at least 5 feet wide. Provide grade separation and wider sidewalks (e.g., 7 feet), wherever feasible. d. Require all new sidewalks within the Sacramento Campus to include			

Project stage at which implementation of the measure is required:
SS = site selection; DE = detailed project planning or project design prior to project approval; CO = construction; OC = prior to occupancy; OP = operation.

Table ES-2. Continued

Impacts	Mitigation Measures	Monitoring and Reporting Procedure	Timing	Verification
	vertical curbs or a planting strip to separate the sidewalk from the parking or travel lane. e. Construct new roads within the Sacramento Campus to include at least one traffic calming feature, such as street parking, chicanes, horizontal shifts (lane centerline that curves or shifts), bollards, rumble strips, or woonerfs. Coordinate with the City of Sacramento to encourage these features on external roads connecting to the campus. f. Construct new intersections within the Sacramento Campus to include marked crosswalks, count-down signal timers, curb extensions, channelization islands, speed tables, raised crosswalks, raised intersections, median islands, tight corner radii, traffic circles or mini-circles. Coordinate with the City of Sacramento to encourage these features on external intersections connecting to the campus • **Landscaping Equipment**: Reduce emissions from landscaping equipment through the following sub-measures.			

Project stage at which implementation of the measure is required:
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Table ES-2. Continued

Impacts	Mitigation Measures	Monitoring and Reporting Procedure		Timing	Verification
	a. Beginning in 2030, require UC Davis landscapers and contracted landscaping companies that maintain campus greenspaces to utilize electric or alternatively fueled mowers and handheld equipment (e.g., trimmers, blowers). b. Encourage xeriscape landscaping in all new campus greenspaces.				
	Mitigation Measure TRA-1e: Monitor transit service performance and implement transportation demand management strategies to minimize delays to transit service Refer to measure description under Impact TRA-1. During the	Document transit enhancement efforts and progress; continue to work with SacRT staff.	OP	Annually	Sacramento Campus Facilities Design and Construction
	Mitigation Measure LRDP-GHG-2: Implement verifiable actions or activities or purchase the equivalent GHG credits from a CARB approved registry or a locally approved equivalent program to reduce GHG emissions generated by the Sacramento Campus As part of this mitigation measure, UC Davis is making the following separate, though overlapping, GHG emission reduction commitments: (1) As a CARB-	Implement measure to reduce GHG emissions as specified, to achieve performance standards.	OP	During operation; ongoing documentation and review	Sacramento Campus Facilities Design and Construction

Project stage at which implementation of the measure is required:
SS = site selection; DE = detailed project planning or project design prior to project approval; CO = construction; OC = prior to occupancy; OP = operation.

Table ES-2. Continued

Impacts	Mitigation Measures	Monitoring and Reporting Procedure	Timing	Verification
	covered entity, UC Davis will ensure emissions generated by the Central Energy Plant comply with CARB's cap and trade program; (2) Per the UC Sustainable Practices Policy, Scope 1 and Scope 2 GHG emissions generated by the Sacramento Campus shall, commencing in 2025, be entirely carbon neutral; (3) Also per the UC Sustainable Practices Policy, commencing in 2050, Scope 1, Scope 2, and Scope 3 (commuting and air travel) emissions generated by the Sacramento Campus shall be voluntarily offset; and (4) UC Davis shall undertake additional action to achieve the following GHG reduction performance standards for the Sacramento Campus: • By 2030, GHG emissions generated by the Sacramento Campus shall not exceed 60 percent of emissions generated by the campus in 1990. • By 2040, GHG emissions generated by the Sacramento Campus shall not exceed 20 percent of emissions generated by the campus in 1990. • By 2045 and thereafter, the Sacramento Campus shall achieve carbon neutrality. GHG emissions generated by the Sacramento Campus in 1990 have been quantified as part of this Supplemental EIR and total 50,404 metric tons CO_2e.			

Project stage at which implementation of the measure is required:
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Table ES-2. Continued

Impacts	Mitigation Measures	Monitoring and Reporting Procedure	Timing	Verification
	This yields the following GHG targets for the above performance standards. • By 2030, GHG emissions generated by the Sacramento Campus shall not exceed 30,242 metric tons CO2e. • By 2040, GHG emissions generated by the Sacramento Campus shall not exceed 10,081 metric tons CO2e. • By 2045 and thereafter, GHG emissions generated by the Sacramento Campus shall not exceed 0 metric tons CO_2e. It is possible that some strategies implemented under the below commitments could independently achieve the performance standards of this measure. Various combinations of strategies could also be pursued to optimize total costs or community co-benefits. UC Davis shall be responsible for determining the overall mix of strategies necessary to ensure the performance standards to mitigate GHG generated by the Sacramento Campus. Each of the measure commitments is described in more detail below. ***Compliance with CARB's Cap and Trade Program*** Any carbon credits purchased for the purpose of compliance with CARB's cap and trade program shall be purchased from an accredited carbon credit market.			

Project stage at which implementation of the measure is required:
SS = site selection; DE = detailed project planning or project design prior to project approval; CO = construction; OC = prior to occupancy; OP = operation.

Table ES-2. Continued

Impacts	Mitigation Measures	Monitoring and Reporting Procedure	Timing	Verification
	Such credits (or California Carbon Offsets) shall be registered with, and retired[4] by an Offset Project Registry, as defined in 17 California Code of Regulations § 95802(a), approved by the California Air Resources Board (CARB) such as, but not limited to, Climate Action Reserve (CAR), American Carbon Registry or Verra (formerly Verified Carbon Standard). In order to demonstrate that the carbon credits provided are real, permanent, additional, quantifiable, verifiable, and enforceable, as those terms are defined in the California Health and Safety Code Sections 38562(d)(1) and (2), UC Davis shall document in its annual report: (i) the protocol used to develop those credits, and (ii) the third-party verification report concerning those credits. As and when the credits are retired, UC Davis shall document in its annual report the unique serial numbers of those credits showing that they have been retired. ***Compliance with the UC Sustainable Practices Policy*** Compliance with the UC Sustainable Practices Policy for carbon neutrality will			

[4] When Climate Reserve Tonnes (CRTs) are transferred to a retirement account in the Reserve System, they are considered retired. Retirement accounts are permanent and locked to prevent a retired CRT from being transferred again. CRTs are retired when they have been used to offset an equivalent ton of emissions or have been removed from further transactions on behalf of the environment.

Project stage at which implementation of the measure is required:
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Table ES-2. Continued

Impacts	Mitigation Measures	Monitoring and Reporting Procedure	Timing	Verification
	be accomplished through reductions in direct emissions, the purchase of renewable electricity and possibly biomethane, and the purchase of carbon credits. UC Davis will purchase voluntary carbon credits as the final action to reach the GHG emission reduction targets outline in the UC Sustainable Practices Policy. As part of the University Carbon Neutrality Initiative, internal guidelines have been developed to ensure that any use of credits for this purpose will result in additional, verified GHG emissions reductions from actions that align, as much as possible, with UC's research, teaching, and public service mission. Specifically, any voluntary carbon credits used by UC Davis to comply with the UC Sustainable Practices Policy will: 1. Prioritize local (within the Sacramento region) and in-state credits over national credits. Credits shall be third-party verified by a major registry recognized by CARB such as CAR. If sufficient local and in-state credits are not available, UC Davis will purchase CARB conforming national credits registered with an approved registry. 2. Be reported publicly and tracked through the Climate Registry (TCR) as required by the UC Sustainable Practices Policy. TCR is a non-profit			

Project stage at which implementation of the measure is required:
SS = site selection; DE = detailed project planning or project design prior to project approval; CO = construction; OC = prior to occupancy; OP = operation.

Table ES-2. Continued

Impacts	Mitigation Measures	Monitoring and Reporting Procedure	Timing	Verification
	organization governed by U.S. states and Canadian provinces and territories. UC Davis TCR reports will be third-party verified and posted publicly. ***Additional GHG Reduction Actions*** UC Davis shall do one or more of the following options to reduce GHG emissions generated by the Sacramento Campus to achieve the measure performance standards. 1. Implement onsite GHG reduction actions on the Sacramento Campus (Option 1). 2. Implement GHG reduction actions throughout the communities surrounding the Sacramento Campus in the City of Sacramento (Option 2). 3. Purchase CARB verified GHG credits (Option 3). Each of the options is described in more detail below. *Onsite GHG Reduction Actions* Actions to reduce GHG emissions on the Sacramento Campus (Option 1) must exceed or not duplicate activities implemented pursuant to the UC Sustainable Practices Policy. Potential actions may include, but are not limited to the following.			

Project stage at which implementation of the measure is required:
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Table ES-2. Continued

Impacts	Mitigation Measures	Monitoring and Reporting Procedure	Timing	Verification
	• **(1)-1**: All campus fleet vehicles scheduled for retirement shall be replaced with fuel efficient, LEV, ZEV, and/or alternative-fueled vehicles consistent with the needs of the campus. • **(1)-2**: New construction shall be required to employ solar roofs on at least 30 percent of roof square footage, unless mechanical equipment or other building specifications safely prohibit inclusion of solar roofs. The inclusion of solar roofs may be part of meeting LEED Silver or equivalent requirements. • **(1)-3**: Require use of natural alternatives to HFCs that are feasible and readily available for refrigeration and air conditioning. Natural refrigerants include ammonia, CO_2, or hydrocarbons. UC Davis shall require all future development to meet CARB regulations restricting HFCs, if and when adopted. If UC Davis complies with the performance standards of this measure, as specified above, through implementation of onsite GHG reduction actions (Option 1), then no further action shall be required. If additional GHG reductions are required to meet the performance standards, they may be achieved through offsite GHG reduction			

Project stage at which implementation of the measure is required:
SS = site selection; DE = detailed project planning or project design prior to project approval; CO = construction; OC = prior to occupancy; OP = operation.

Table ES-2. Continued

Impacts	Mitigation Measures	Monitoring and Reporting Procedure	Timing	Verification
	actions (Option 2) or procurement of GHG credits (Option 3). *Offsite GHG Reduction Actions* Actions to reduce GHG emissions throughout the surrounding community (Option 2) may include, but are not limited to the following. • **(2)-1:** Develop a residential energy retrofit package in conjunction with the SMUD to achieve reductions in natural gas and electricity usage by the surrounding community. The retrofit package may include identification and sealing of dust and air leaks, installation of programmable thermostats, replacement of interior high use incandescent lamps with compact florescent lamps or LEDs, replacement of natural gas dryers with electric clothes dryers, replacement of windows with double-pane or triple-pane solar-control low-E argon gas filled wood frame windows, or other strategies selected by UC Davis in consultation with SMUD. • **(2)-2:** Develop a commercial energy retrocommissioning package in conjunction with SMUD to improve the energy efficiency of surrounding commercial buildings by at least			

Project stage at which implementation of the measure is required:
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Table ES-2. Continued

Impacts	Mitigation Measures	Monitoring and Reporting Procedure	Timing	Verification
	15 percent, relative to current (2019) energy consumption levels. • **(2)-3:** Develop a residential rooftop solar installation program in conjunction with SMUD. The installation program will allow surrounding homeowners to install solar photovoltaic systems at zero or minimal up-front cost. All projects installed under this measure must be designed for high performance (e.g., optimal full-sun location, solar orientation) and additive to utility RPS goals. • **(2)-4:** Develop a commercial rooftop solar installation program in conjunction with SMUD. The installation program will allow surrounding business owners to install solar photovoltaic systems at zero or minimal up-front cost. All projects installed under this measure must be designed for high performance (e.g., optimal full-sun location, solar orientation) and additive to utility RPS goals. • **(2)-5:** Partner with Sacramento Regional Transit to assess the feasibility of improving high-quality, regional transit serving the Sacramento Campus.			

Project stage at which implementation of the measure is required:
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Table ES-2. Continued

Impacts	Mitigation Measures	Monitoring and Reporting Procedure	Timing	Verification
	If UC Davis complies with the performance standards of this measure, as specified above, through implementation of offsite GHG reduction actions (Option 2), then no further action shall be required. If additional GHG reductions are required to meet the performance standards, they may be achieved through onsite GHG reduction actions (Option 1) or procurement of GHG credits (Option 3). *GHG Credits* UC Davis may purchase GHG credits from a voluntary GHG credit provider that has an established protocol that requires projects generating GHG credits to demonstrate that the reduction of GHG emissions are real, permanent, quantifiable, verifiable, enforceable, and additional (per the definition in California Health and Safety Code Sections 38562(d)(1) and (2)). Definitions for these terms are as follows. • **Real:** Estimated GHG reductions should not be an artifact of incomplete or inaccurate emissions accounting. Methods for quantifying emission reductions should be conservative to avoid overstating a project's effects. The effects of a project on GHG emissions must be comprehensively accounted for,			

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Table ES-2. Continued

Impacts	Mitigation Measures	Monitoring and Reporting Procedure	Timing	Verification
	including unintended effects (often referred to as "leakage"). • **Additional:** GHG reductions must be additional to any that would have occurred in the absence of the Climate Action Reserve, or of a market for GHG reductions generally. "Business as usual" reductions (i.e., those that would occur in the absence of a GHG reduction market) should not be eligible for registration. • **Permanent:** To function as offsets to GHG emissions, GHG reductions must effectively be "permanent." This means, in general, that any net reversal in GHG reductions used to offset emissions must be fully accounted for and compensated through the achievement of additional reductions. • **Verified:** GHG reductions must result from activities that have been verified. Verification requires third-party review of monitoring data for a project to ensure the data are complete and accurate. • **Enforceable**: The emission reductions from offset must be backed by a legal instrument or contract that defines exclusive ownership and the legal instrument can be enforced within the legal system in the country			

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Table ES-2. Continued

Impacts	Mitigation Measures	Monitoring and Reporting Procedure	Timing	Verification
	in which the offset project occurs or through other compulsory means. GHG credits may be in the form of GHG offsets for prior reductions of GHG emissions verified through protocols or forecasted mitigation units for future committed GHG emissions meeting protocols. All credits shall be documented per protocols functionally equivalent in terms of stringency to CARB's protocol for offsets in the cap and trade program. If using credits not from CARB protocols, UC Davis must provide the protocols from the credit provider and must document why the protocols are functionally equivalent in terms of stringency to CARB protocols. UC Davis shall identify GHG credits in geographies closest to the Sacramento Campus first and only go to larger geographies (i.e., California, United States) if adequate credits cannot be found in closer geographies, or the procurement of such credits would create an undue financial burden. UC Davis shall provide the following justification for not using credits in closer geographies in terms of either availability or cost prohibition. • Lack of enough credits available in closer geographies (i.e., Sacramento County).			

Project stage at which implementation of the measure is required:
SS = site selection; DE = detailed project planning or project design prior to project approval; CO = construction; OC = prior to occupancy; OP = operation.

Table ES-2. Continued

Impacts	Mitigation Measures	Monitoring and Reporting Procedure	Timing	Verification
	• Prohibitively costly credits in closer geographies defined as credits costing more than 300 percent the amount of the current costs of credits in the regulated CARB offset market. • UC Davis documentation submitted supporting GHG credit proposals shall be prepared by individuals qualified in GHG credit development and verification and such individuals shall certify the following. ○ Proposed credits meet the criteria in California Health and Safety Code Section 38562(d)(1) and (d)(2). ○ Proposed credits meet the definitions for the criteria provided in this measure. ○ The protocols used for the credits meet or exceed the standards for stringency used in CARB protocols for offsets under the California cap-and-trade system. ***Measure Monitoring and Reporting*** As a CARB-covered entity, UC Davis will ensure emissions generated by the Central Energy Plant comply with CARB's cap and trade program. Likewise, UC Davis will implement the UC Sustainable Practices Policy to meet the requirement of carbon neutrality for Scope 1 and 2 emissions by 2025 and carbon neutrality			

Project stage at which implementation of the measure is required:
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Table ES-2. Continued

Impacts	Mitigation Measures	Monitoring and Reporting Procedure	Timing	Verification
	for Scope 3 emissions by 2050, as described above. These commitments will be incorporated into UC Davis' annual GHG inventory, which is used to track GHG emissions and sources on the Sacramento Campus. As part of the annual GHG inventory for the Sacramento Campus, UC Davis shall submit a report to the Regents specifying the annual amount of metric ton CO_2e reduction achieved by additional GHG reduction actions implemented pursuant to this mitigation (i.e., Option 1, onsite actions, and Option 2, offsite actions). The report must include evidence that these actions are not being used to mitigate GHG for any other project or entity. GHG reductions achieved by the onsite and offsite actions should be incorporated into the Sacramento Campus' annual GHG inventory. The estimated annual emissions shall then be compared to the measure performance standards described above to determine the level of additional GHG reductions (if any). For the identified amount of exceedance of the performance standard(s), UC Davis shall purchase carbon credits according to the requirements established above under Option 3. As and when the credits are retired, UC Davis shall document in its annual report the unique identifier of			

Project stage at which implementation of the measure is required:
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Table ES-2. Continued

Impacts	Mitigation Measures	Monitoring and Reporting Procedure		Timing	Verification
	those credits showing that they have been retired and accepted by TCR.				
Hazards and Hazardous Materials					
Impact HAZ-2: Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment	**Mitigation Measure LRDP-HAZ-2: Prepare a Phase I Environmental Site Assessment** To minimize the risk of encountering unknown contamination during construction under the 2020 LRDP Update, the UC Davis Sacramento Campus would prepare a Phase I Environmental Site Assessment before all ground-disturbing construction in areas not previously investigated. A Phase I Environmental Site Assessment would conform with the American Society for Testing and Materials Standard Practice E1527-05 and include at a minimum the following site assessment requirements. • An onsite visit to identify current conditions (e.g., vegetative dieback, chemical spill residue, presence of above- or underground storage tanks). • An evaluation of possible risks posed by neighboring properties. • Interviews with persons knowledgeable about the site's history (e.g., current or previous property owners, property managers).	Conduct Environmental Site Assessment and document findings. Conduct remediation activities as necessary.	DE	Prior to final design approval and project construction	Sacramento Campus Facilities Design and Construction
		Monitor construction site, perform testing, and implement safety procedures, as necessary.	CO	Monitor construction site	Sacramento Campus Facilities Design and Construction

Project stage at which implementation of the measure is required:
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Table ES-2. Continued

Impacts	Mitigation Measures	Monitoring and Reporting Procedure	Timing	Verification
	• An examination of local planning files to check prior land uses and any permits granted. • File searches with appropriate agencies (e.g., State Water Board, fire department, county health department) having oversight authority relative to water quality and groundwater and soil contamination. • Examination of historical aerial photography of the site and adjacent properties. • A review of current and historic topographic maps of the site to determine drainage patterns. • An examination of chain-of-title for environmental liens and/or activity and land use limitations. If the Phase I Environmental Site Assessment indicates likely site contamination, a Phase II Environmental Site Assessment will be performed (also by an environmental professional). A Phase II Environmental Site Assessment would comprise the following. • Collection of original surface and/or subsurface samples of soil, groundwater, and building materials to analyze for quantities of various contaminants.			

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Table ES-2. Continued

Impacts	Mitigation Measures	Monitoring and Reporting Procedure		Timing	Verification
	• An analysis to determine the vertical and horizontal extent of contamination (if the evidence from sampling shows contamination). If contamination is uncovered as part of Phase I or II Environmental Site Assessments, remediation per EPA's RCRA regulations in 40 CFR Parts 260–299 will be required, and materials will be properly managed and disposed of prior to construction. Any contaminated soil identified on a project site must be properly disposed of in accordance with Department of Toxic Substances Control regulations in effect at the time. If, during construction, soil or groundwater contamination is suspected, construction activities will cease and appropriate health and safety procedures will be implemented, including the use of appropriate personal protective equipment (e.g., respiratory protection, protective clothing, helmets, goggles).				
Impact HAZ-3: Result in hazardous emissions or handling of hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school	**Mitigation Measure LRDP-AQ-2a: Reduce construction-generated fugitive dust** See text above under Impact AQ-2.	Incorporate measure as part of construction specifications and documentation and inspect construction site at regular intervals during construction to verify compliance with specified	DE/CO	During project design; prior to construction; regular intervals throughout the construction period	Sacramento Campus Facilities Design and Construction

Project stage at which implementation of the measure is required:
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Table ES-2. Continued

Impacts	Mitigation Measures	Monitoring and Reporting Procedure		Timing	Verification
		construction-generated fugitive dust reduction measures.			
	Mitigation Measure LRDP-AQ-2b: Reduce construction-generated emissions from equipment and vehicle exhaust See text above under Impact AQ-2.	Incorporate measure as part of construction specifications and documentation and inspect construction site at regular intervals during construction to verify compliance with specified construction-generated emissions reduction measures.	DE/CO	During project design; prior to construction; regular intervals throughout the construction period	Sacramento Campus Facilities Design and Construction
	Mitigation Measure LRDP-AQ-2c: Reduce evaporative emissions during architectural coatings See text above under Impact AQ-2.	Incorporate measure as part of construction and contractor specifications and documentation and inspect construction site at regular intervals during construction to verify compliance with specified measure.	DE/CO	During project design; prior to construction; regular intervals throughout the construction period	Sacramento Campus Facilities Design and Construction
	Mitigation Measure LRDP-AQ-3a: Reduce receptor exposure to construction generated diesel particulate matter See text above under Impact AQ-2.	Incorporate measure as part of construction specifications and documentation and inspect construction site at regular intervals during construction to verify compliance with specified construction-generated	CO	Regular intervals throughout the construction period	Sacramento Campus Facilities Design and Construction

Project stage at which implementation of the measure is required:
SS = site selection; DE = detailed project planning or project design prior to project approval; CO = construction; OC = prior to occupancy; OP = operation.

Table ES-2. Continued

Impacts	Mitigation Measures	Monitoring and Reporting Procedure		Timing	Verification
		emissions reduction measures.			
	Mitigation Measure AQ-2a: Electrify cranes used during construction See text above under Impact AQ-2.	Incorporate measure as part of construction and contractor specifications and documentation.	CO	During construction	Sacramento Campus Facilities Design and Construction
	Mitigation Measure AQ-2b: Offset construction-generated NO_X emissions in excess of SMAQMD's threshold of significance See text above under Impact AQ-2.	Incorporate measure as part of construction and contractor specifications and documentation.	CO	During construction	Sacramento Campus Facilities Design and Construction
Noise					
Impact NOI-1: Generation of increased ambient noise levels in the project vicinity in excess of applicable standards during project construction	**Mitigation Measure NOI-1a: Implementation of measures to reduce construction noise (daytime)** UC Davis will implement or incorporate the following noise reduction measures into the project construction specifications for contractor(s) implementation during project construction: 1. Construction activities will be limited to the daytime hours of 7:00 a.m. and 6:00 p.m. Monday through Saturday and between 9:00 a.m. and 6:00 p.m. on Sunday, when feasible. 2. All construction equipment will be equipped with suitable exhaust and intake silencers in good working order. All construction equipment will	Include measure in contract specifications; inspect construction site to verify measure is implemented.	DE/CO	During project design; prior to construction; regular intervals throughout the construction period	Sacramento Campus Facilities Design and Construction

Project stage at which implementation of the measure is required:
SS = site selection; DE = detailed project planning or project design prior to project approval; CO = construction; OC = prior to occupancy; OP = operation.

Table ES-2. Continued

Impacts	Mitigation Measures	Monitoring and Reporting Procedure	Timing	Verification
	be properly maintained and equipped with intake silencers and exhaust mufflers and/or engine shrouds, in accordance with manufacturer recommendations. Equipment engine shrouds, if used, will be closed during equipment operation. 3. All construction equipment and equipment staging areas will be located as far as possible from nearby noise-sensitive land uses, and/or located such that existing or constructed noise attenuating features (e.g., temporary noise wall or blankets) block the line of sight between affected noise-sensitive land uses and construction staging areas, to the extent feasible. 4. Individual operations and techniques will be replaced with quieter procedures (e.g., using welding instead of riveting, mixing concrete offsite instead of onsite) where feasible and consistent with building codes and other applicable laws and regulations. 5. Stationary noise sources such as generators or pumps will be located as far as feasible from noise-sensitive land uses. 6. Maintain all construction equipment to minimize noise emissions.			

Project stage at which implementation of the measure is required:
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Table ES-2. Continued

Impacts	Mitigation Measures	Monitoring and Reporting Procedure	Timing	Verification
	7. No less than 1 week prior to the start of construction activities, notification will be provided to academic, administrative, and residential or noise-sensitive uses (such as schools) located within 500 feet of the construction site. 8. Install temporary noise barriers as close as possible to the noise source or the receptor and located within the direct line-of-sight path between the noise source and nearby sensitive receptor(s). The barrier should be constructed of material that has a surface weight of at least 1 pound per square foot and has an acoustical rating of at least 25 STC (Sound Transmission Class). This can include a temporary barrier constructed with plywood supported on a wood frame, sound curtains supported on a frame, or other comparable material. 9. Use “quiet” gasoline-powered compressors or electrically powered compressors as well as electric rather than gasoline- or diesel-powered forklifts for small lifting, where feasible. 10. Prohibit idling of inactive construction equipment for prolonged periods (i.e., more than 2 minutes).			

Project stage at which implementation of the measure is required:
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Table ES-2. Continued

Impacts	Mitigation Measures	Monitoring and Reporting Procedure		Timing	Verification
	Mitigation Measure NOI-1b: Construction noise control plan to reduce noise during non-daytime hours The project contractor(s) shall develop a construction noise control plan to reduce noise levels and comply with City of Sacramento nighttime noise standards. Specifically, the plan shall demonstrate that noise from construction activities would not exceed the 55-dBA noise limit between the hours of 6:00 p.m. and 10:00 p.m. and the 50 dBA between the hours of 10:00 p.m. and 7:00 a.m. at the nearest existing sensitive land use. Measures to help reduce noise from construction activity during non-standard construction hours to these levels shall be incorporated into this plan and shall include at a minimum (but not be limited to) the following (noting that some of these will be implemented under NOI-1a): 1. Install temporary noise barriers as close as possible to the noise source or the receptor and located within the direct line-of-sight path between the noise source and nearby sensitive receptor(s). The barrier should be constructed of material that has a surface weight of at least 1 pound per	Include measure in contract specifications; inspect construction site to verify measure is implemented.	DE/CO	During project design; prior to construction; regular intervals throughout the construction period	Sacramento Campus Facilities Design and Construction

Project stage at which implementation of the measure is required:
SS = site selection; DE = detailed project planning or project design prior to project approval; CO = construction; OC = prior to occupancy; OP = operation.

Table ES-2. Continued

Impacts	Mitigation Measures	Monitoring and Reporting Procedure	Timing	Verification
	square foot and has an acoustical rating of at least 25 STC (Sound Transmission Class). This can include a temporary barrier constructed with plywood support on a wood frame, sound curtains supported on a frame, or other comparable material. (Note: this is required under NOI-1a). 2. Use “quiet” gasoline-powered compressors or electrically powered compressors as well as electric rather than gasoline- or diesel-powered forklifts for small lifting, where feasible. (Note: this is required under NOI-1a). 3. Plan for the noisiest construction activities to occur during daytime hours when people are less sensitive to noise. 4. Require all construction equipment be equipped with mufflers and sound control devices (e.g., intake silencers and noise shrouds) that are in good condition (at least as effective as those originally provided by the manufacturer) and appropriate for the equipment. (Note: this is required under NOI-1a). 5. Maintain all construction equipment to minimize noise emissions. (Note: this is required under NOI-1a).			

Project stage at which implementation of the measure is required:
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Table ES-2. Continued

Impacts	Mitigation Measures	Monitoring and Reporting Procedure	Timing	Verification
	6. Locate construction equipment as far as feasible from adjacent or nearby noise-sensitive receptors. 7. Require all stationary equipment be located to maintain the greatest possible distance to the nearby existing buildings, where feasible. 8. Require stationary noise sources associated with construction (e.g., generators and compressors) in proximity to noise-sensitive land uses to be muffled and/or enclosed within temporary enclosures and shielded by barriers, which can reduce construction noise by 5 to 10 dB. 9. Prohibit the use of impact tools (e.g., jack hammers) during nighttime/non-standard daytime hours. 10. Prohibit idling of inactive construction equipment for prolonged periods during both daytime and nighttime/non-standard hours (i.e., more than 2 minutes). 11. Provide advance notification in the form of the mailings/deliveries of notices to surrounding land uses regarding the construction schedule, including the various types of activities that would be occurring throughout the duration of the construction period.			

Project stage at which implementation of the measure is required:
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Table ES-2. Continued

Impacts	Mitigation Measures	Monitoring and Reporting Procedure		Timing	Verification
	12. Provide the name and telephone number of an onsite construction liaison. If construction noise is found to be intrusive to the community (i.e., if complaints are received), the construction liaison shall take reasonable efforts to investigate the source of the noise and require that reasonable measures be implemented to correct the problem. 13. Use electric motors rather than gasoline- or diesel-powered engines to avoid noise associated with compressed air exhaust from pneumatically powered tools during nighttime hours. Where the use of pneumatic tools is unavoidable, an exhaust muffler on the compressed air exhaust could be used; this muffler can lower noise levels from the exhaust by about 10 dB. External jackets on the tools themselves could be used, which could achieve a reduction of 5 dB.				
	Mitigation Measure NOI-1c: Helicopter operations plan during project construction Although emergency flights for medical purposes are exempt from regulation by local agencies, UC Davis Medical Center will prepare a Helicopter Operations Plan	Include measure in contract specifications; inspect construction site to verify measure is implemented.	DE/CO	During project design; prior to construction; regular intervals throughout the construction period	Sacramento Campus Facilities Design and Construction

Project stage at which implementation of the measure is required:
SS = site selection; DE = detailed project planning or project design prior to project approval; CO = construction; OC = prior to occupancy; OP = operation.

Table ES-2. Continued

Impacts	Mitigation Measures	Monitoring and Reporting Procedure	Timing	Verification
	for use during construction that will specify the following: • Where feasible, and if the University has discretion on flight timing, flights will occur during daytime hours when people are less sensitive to noise. • UC Davis will host regular meetings with helicopter operators to review recent complaints, emphasize preferred routing and collaborate on potential noise reduction strategies, within safety parameters. • UC Davis communications with air medical companies will request that all pilots be routinely trained to understand the desired noise attenuation for arrival and departure flight path procedures. Within approved flight paths and safety parameters, pilots will be instructed in the use of the approach and departure paths determined to be least disruptive to nearby residences, to the extent feasible, especially during nighttime hours. • UC Davis will provide and maintain pilot notifications and other essential fight operation details at the helipad and inside of the hospital to ensure it is accessible to pilots. The information will include, within safety parameters, details related to preferred departure			

Project stage at which implementation of the measure is required:
SS = site selection; DE = detailed project planning or project design prior to project approval; CO = construction; OC = prior to occupancy; OP = operation.

Table ES-2. Continued

Impacts	Mitigation Measures	Monitoring and Reporting Procedure		Timing	Verification
	and approach paths (i.e., those resulting in least disruption to nearby residences).				
Impact NOI-2: Generation of increased ambient noise levels in the project vicinity in excess of applicable standards during project operations	**Mitigation Measure LRDP-NOI-2a: Reduce noise exposure from emergency generators** Prior to approval of a building permit for individual LRDP development projects proposing the installation of emergency generators, documentation will be submitted to the University demonstrating with reasonable certainty that noise from testing of the proposed generator(s) would not exceed 55 dBA at the nearest residential land use. Acoustical treatments to reduce noise from generator testing may include, but are not limited to, the following. • Enclosing generator(s) • Incorporating the use of exhaust mufflers or silencers to reduce exhaust noise • Selecting a relatively quiet generator model • Orienting or shielding generator(s) to protect noise-sensitive receptors to the greatest extent feasible • Increasing the distance between generator(s) and noise-sensitive receptors	Provide documentation related to expected generator noise; incorporate acoustical treatments, as necessary.	DE	Prior to final project approval	Sacramento Campus Facilities Design and Construction
		Conduct testing during hours specified.	OP	During operation	Sacramento Campus Facilities Design and Construction

Project stage at which implementation of the measure is required:
SS = site selection; DE = detailed project planning or project design prior to project approval; CO = construction; OC = prior to occupancy; OP = operation.

Table ES-2. Continued

Impacts	Mitigation Measures	Monitoring and Reporting Procedure		Timing	Verification
	• Placing barriers or enclosures around generator(s) to facilitate the attenuation of noise. In addition, all project generator(s) will be tested only between the hours of 7:00 a.m. and 10:00 p.m. All recommendations from the acoustical analysis necessary to ensure that generator noise would meet the above requirements will be incorporated into the building design and operations.				
Impact NOI-3: Generation of excessive groundborne vibration or groundborne noise levels	**Mitigation Measure LRDP-NOI-3a: Implement measures to reduce vibration-related annoyance impacts to onsite land uses** Should vibration-generating construction activities that do not involve pile driving be proposed within 140 feet of on-campus Category 1 buildings, or should pile driving activities be proposed within 500 feet of Category 1 land uses, the construction contractor will work with the University to identify vibration-producing activities on the construction schedule in advance. The construction contractor will coordinate the timing of the activities with hospital or research units that may be affected to reduce potential vibration-related annoyance effects on sensitive onsite hospital or research receptors. In addition, the construction contractor will appoint a	Include measure in contract specifications; inspect construction site to verify compliance.	DE/CO	During project design; prior to construction; regular intervals throughout the construction period	Sacramento Campus Facilities Design and Construction

Project stage at which implementation of the measure is required:
SS = site selection; DE = detailed project planning or project design prior to project approval; CO = construction; OC = prior to occupancy; OP = operation.

Table ES-2. Continued

Impacts	Mitigation Measures	Monitoring and Reporting Procedure		Timing	Verification
	project vibration coordinator who will serve as the point of contact for vibration-related complaints during project construction. Contact information for the project vibration coordinator will be posted at the project site and on a publicly available project website. The project vibration coordinator will be contacted should vibration effects become too disruptive at on-campus uses, and will then work with the construction team to adjust activities to reduce vibration or to reschedule activities for a less sensitive time.				
	Mitigation Measure NOI-3: Protect adjacent structures from construction-generated vibration The University shall incorporate into construction specifications for the proposed project a requirement that the construction contractor(s) use all feasible means to avoid damage to adjacent and nearby buildings. Such methods to help reduce vibration-related damage effects may include maintaining a safe distance between the construction site and the potentially affected building (e.g., at least 10 feet for most equipment, 15 feet for vibratory rollers). In the event that vibration-generating construction activity is required within 15 feet of nearby modern buildings	Include measure in contract specifications; adjust activities, if necessary.	DE/CO	During project design; prior to construction; regular intervals throughout the construction period	Sacramento Campus Facilities Design and Construction

Project stage at which implementation of the measure is required:
SS = site selection; DE = detailed project planning or project design prior to project approval; CO = construction; OC = prior to occupancy; OP = operation.

Table ES-2. Continued

Impacts	Mitigation Measures	Monitoring and Reporting Procedure	Timing	Verification
	similar to "modern industrial/ commercial buildings" (e.g., the least sensitive building category shown in Table 3.11-5) the University will work with the construction contractor to implement a monitoring program to minimize damage to adjacent buildings and ensure that any such damage is documented and repaired. If required, the monitoring program will include the following components. • Prior to the start of any ground-disturbing activity, the project sponsor will engage a structural engineer or other professional with similar qualifications to document and photograph the existing conditions of potentially affected buildings within 15 feet of proposed vibratory-generating construction activities. • Based on the construction and condition of the resource(s), the consultant will also establish a standard maximum vibration level that will not be exceeded at nearby buildings, based on existing conditions, character-defining features, soil conditions, and anticipated construction practices (a common standard is a peak particle velocity of 0.5 inch per second for			

Project stage at which implementation of the measure is required:
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Table ES-2. Continued

Impacts	Mitigation Measures	Monitoring and Reporting Procedure		Timing	Verification
	"modern industrial/commercial buildings," as shown in Table 3.11-5). • To ensure that vibration levels do not exceed the established standard, the project sponsor will monitor vibration levels at each structure and prohibit vibratory construction activities that generate vibration levels in excess of the standard. • Should vibration levels be observed in excess of the selected standard, construction will be halted and alternative construction techniques put in practice, to the extent feasible. When vibration-intensive activity (e.g., auger drills, rollers) occurs within 15 to 20 feet of a building, the structural engineer will conduct an inspection of the building for damage within 7 days of that activity. If inspections determine that no damage is occurring from that activity, the 7-day period may be increased to 30 days for that activity. Should damage to adjacent buildings occur, the building(s) will be remediated to their preconstruction condition at the conclusion of ground-disturbing activity on the site.				
Impact NOI-4: Placement of project-related activities in the vicinity of a private airstrip or an airport land use plan or within 2 miles of	**Mitigation Measure NOI-4a: Helicopter operations plan to reduce sleep disturbance** Prior to the use of the proposed new helipads, UC Davis Medical Center will	Include measure in contract specifications; implement additional measures and monitoring	DE/CO/OP	During project design; prior to construction; during project operation.	Sacramento Campus Facilities Design and Construction

Project stage at which implementation of the measure is required:
SS = site selection; DE = detailed project planning or project design prior to project approval; CO = construction; OC = prior to occupancy; OP = operation.

Table ES-2. Continued

Impacts	Mitigation Measures	Monitoring and Reporting Procedure	Timing	Verification
a public airport or public use airport, resulting in exposure of people residing or working in the project area to excessive noise levels	prepare a Helicopter Operations Plan that will specify the following: • If UC Davis has discretion on flight timing, flights will occur during daytime hours when people are less sensitive to noise, where feasible. • Of the approved approach and departure flight paths, primary approach and departure paths for nighttime hours will be identified as the least disruptive flight paths for nearby residences. Once identified, and within safety parameters, the paths will be used as much as feasible during nighttime hours. Note that alternate approved flight paths or any other flight routing may used, based on wind conditions, safety considerations, or pilot judgment. • UC Davis will host regular meetings with helicopter operators to review recent complaints, emphasize preferred routing and collaborate on potential noise reduction strategies, within safety parameters. • UC Davis communications with air medical companies will request that all pilots be routinely trained to understand the desired noise attenuation for arrival and departure flight path procedures. Within approved flight paths and safety	program, if deemed necessary.		

Project stage at which implementation of the measure is required:
SS = site selection; DE = detailed project planning or project design prior to project approval; CO = construction; OC = prior to occupancy; OP = operation.

Table ES-2. Continued

Impacts	Mitigation Measures	Monitoring and Reporting Procedure	Timing	Verification
	parameters, pilots will be instructed in the use of the approach and departure paths determined to be least disruptive to nearby residences, to the extent feasible, especially during nighttime hours. • UC Davis will provide and maintain pilot notifications and other essential fight operation details at the helipad and inside of the hospital to ensure it is accessible to pilots. The information will include, within safety parameters, details related to preferred departure and approach paths (e.g., those resulting in least disruption to nearby residences).			
	Mitigation Measure NOI-4b: Residential sound reduction program to reduce noise Following helipad construction, UC Davis shall implement a Residential Sound Reduction Program to reduce interior noise from helicopter overflights at residential land uses within redrawn SEL 95 dBA contours (as described below). A description of the program is provided below. **Start-up Period** 1. During the first 8 weeks of operations at the California Tower helipads, UC Davis will address noise complaints, if	Conduct testing and implement program during project operations	OP	Sacramento Campus Facilities Design and Construction

Project stage at which implementation of the measure is required:
SS = site selection; DE = detailed project planning or project design prior to project approval; CO = construction; OC = prior to occupancy; OP = operation.

Table ES-2. Continued

Impacts	Mitigation Measures	Monitoring and Reporting Procedure	Timing	Verification
	any, by revising helicopter operations where feasible. 2. At the end of the start-up period, UC Davis will conduct updated acoustical flight tests. Tests will involve helicopters traveling along the new flight paths as well as to and from the new helipads. After the completion of flight tests, the SEL 95 dBA noise contours will be redrawn to reflect the noise environment in existence at that time. This redrawn contour will be used in the Qualifications stage of this program, as described below. **Qualifications** 3. Property is located within the redrawn SEL 95 dBA (single-event) noise contours, and 4. Property is a legal residential or live/work unit as of the date of approval of the helipad by the University of California, and 5. Noise levels in interior sleeping areas are at or greater than the SEL 80 dBA with windows closed, as measured by the UC Davis sound consultant. **Implementation** 6. UC Davis sends notification about the program to residential property			

Project stage at which implementation of the measure is required:
SS = site selection; DE = detailed project planning or project design prior to project approval; CO = construction; OC = prior to occupancy; OP = operation.

Table ES-2. Continued

Impacts	Mitigation Measures	Monitoring and Reporting Procedure	Timing	Verification
	owners within the redrawn SEL 95 dBA noise contour. 7. Property owners have 12 months after the date of notification about the program to apply for the program (UC Davis will send a reminder to those notified at least 3 months before the end of the application period). 8. UC Davis determines if property meets qualifications (per items 3 through 5 above). 9. Qualified UC Davis consultant may test façade for exterior-to-interior transmission loss, according to ASTM loudspeaker testing procedures. This testing would inform the determination of necessary treatments to reduce interior noise levels to below SEL 80 dBA (where technically and legally feasible), and by at least 5 dBA from existing conditions. 10. Qualified UC Davis consultant recommends sound reduction measures to reduce noise in sleeping areas, which may include: ○ Acoustical replacement windows, ○ Acoustical replacement doors, ○ Acoustically improved skylights, and ○ Ventilation improvements.			

Project stage at which implementation of the measure is required:
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Table ES-2. Continued

Impacts	Mitigation Measures	Monitoring and Reporting Procedure	Timing	Verification
	11. UC Davis consultant estimates cost of recommended sound reduction measure in sleeping areas, including labor and material costs, permit fees, and inspections. This measure includes a per-residence cap (in 2021 present value) of up to $35,000 for the aforementioned costs. 12. UC Davis consultant schedules construction of improvements with qualifying property owner. ○ Replacements will be on "like-for-like" basis, with replacement materials similar in quality or appearance to existing materials. Improvements would comply with applicable codes. 13. UC Davis will seek to work with neighbors for ongoing discussions of noise and to address those concerns, where feasible. 14. Qualifying property owner, on their behalf and on behalf of tenants and future property owners, releases UC Davis from future claims for helicopter noise at the property. This release shall be in the form of a permanent easement in exchange for residential sound improvements per Item 12, above.			
Transportation and Circulation				

Project stage at which implementation of the measure is required:
SS = site selection; DE = detailed project planning or project design prior to project approval; CO = construction; OC = prior to occupancy; OP = operation.

Table ES-2. Continued

Impacts	Mitigation Measures	Monitoring and Reporting Procedure		Timing	Verification
Impact TRA-1: Conflict with a program, plan, ordinance, or policy addressing the circulation system including transit, roadway, bicycle, and pedestrian facilities	**Mitigation Measure TRA-1a: Improve the bicycle facilities on X Street between Stockton Boulevard and 48th Street** UC Davis shall improve the bicycle facilities on X Street between Stockton Boulevard and 48th Street to accommodate changes to bicycle and vehicle travel associated with the project and to reduce the potential for vehicle-bicycle conflicts. Potential improvement alternatives include the following. 1. Restripe the existing Class II bicycle lanes to a width of 5 feet or more to meet the minimum Class II bicycle lane width requirements established in the *California Highway Design Manual*. This modification could be accommodated by reducing the width of existing vehicle travel lanes on X Street. 2. Construct Class IV separated bikeways. This modification could be accommodated by reducing the number of vehicle travel lanes or by reconstructing the sidewalk zone on the outside of the roadway envelope. 3. Reconfigure X Street to accommodate bidirectional vehicle traffic on one side of X Street and convert the other side of X Street to a shared bicycle-transit facility.	Conduct transportation improvements	DE/OC	During construction	Sacramento Campus Facilities Design and Construction

Project stage at which implementation of the measure is required:
SS = site selection; DE = detailed project planning or project design prior to project approval; CO = construction; OC = prior to occupancy; OP = operation.

Table ES-2. Continued

Impacts	Mitigation Measures	Monitoring and Reporting Procedure		Timing	Verification
	Additional, but optional, mitigation features that would further improve the bicycling environment include bike lane conflict markings, intersection crossing markings, reductions to crossing distances, and/or physically separating bicyclists from vehicles (e.g., reconfiguration of intersections into protected intersections). Implementation of any one of alternatives 1 through 3 above, or an improvement of equal effectiveness, would improve the bicycle facilities on X Street between Stockton Boulevard and 48th Street and reduce the potential for vehicle-bicycle conflicts. The bicycle facility improvements described above shall be constructed and operational prior to the completion of PS5.				
	Mitigation Measure TRA-1b: Construct the PS5 driveways and driveway intersections with X Street to comply with applicable design standards and to reduce the potential for conflicts involving bicyclists and pedestrians UC Davis shall design and construct the PS5 driveways and driveway intersections with X Street to comply with applicable design standards and to reduce the potential for conflicts involving bicyclists and pedestrians.	Conduct transportation improvements	DE/OC	During construction	Sacramento Campus Facilities Design and Construction

Project stage at which implementation of the measure is required:
SS = site selection; DE = detailed project planning or project design prior to project approval; CO = construction; OC = prior to occupancy; OP = operation.

Table ES-2. Continued

Impacts	Mitigation Measures	Monitoring and Reporting Procedure	Timing	Verification
	These facilities shall achieve the following performance measures. • Minimize the number and severity of vehicle–pedestrian conflict points along the pedestrian promenade between the Cancer Center and PS5 (generally along the southerly PS5 frontage). This would include the crossing of the pedestrian promenade and the PS5 driveway proposed immediately east of the Cancer Center. • Minimize the number and severity of vehicle–bicycle conflict points at the intersection of X Street and the PS5 driveway proposed immediately east of the Cancer Center. • Minimize the potential for vehicle queueing entering/exiting PS5 driveways to spillback and block bicycle and/or pedestrian facilities. • Comply with applicable driveway and intersection design standards. The construction of PS5 in compliance of these performance measures would ensure that PS5 driveways and driveway intersections with X Street would comply with applicable design standards and reduce the potential for conflicts involving bicyclists and pedestrians. These facilities and performance			

Project stage at which implementation of the measure is required:
SS = site selection; DE = detailed project planning or project design prior to project approval; CO = construction; OC = prior to occupancy; OP = operation.

Table ES-2. Continued

Impacts	Mitigation Measures	Monitoring and Reporting Procedure		Timing	Verification
	measures shall be accomplished prior to the completion of PS5.				
	Mitigation Measure TRA-1c: Improve the pedestrian crossings across X Street at the X Street intersections at the main hospital building patient loading zone driveway and at the Cancer Center driveway UC Davis shall construct pedestrian crossing improvements across X Street at the X Street intersections at the main hospital building patient loading zone driveway and at the Cancer Center driveway to reduce the potential for vehicle–pedestrian conflicts. Potential improvement alternatives include the following. 1. Installation of traffic signals. 2. Installation of rapid rectangular flashing beacons. 3. Construction of raised pedestrian crossings. Implementation of any one of alternatives 1 through 3 above, or an improvement of equal effectiveness, would improve the pedestrian crossings across X Street at the X Street intersections at the main hospital building patient loading zone driveway and at the Cancer Center driveway and reduce the potential for vehicle-pedestrian conflicts at these locations.	Conduct transportation improvements	DE/OC	During construction	Sacramento Campus Facilities Design and Construction

Project stage at which implementation of the measure is required:
SS = site selection; DE = detailed project planning or project design prior to project approval; CO = construction; OC = prior to occupancy; OP = operation.

Table ES-2. Continued

Impacts	Mitigation Measures	Monitoring and Reporting Procedure		Timing	Verification
	The installation of traffic signals would provide temporal separation between pedestrians and conflicting vehicular movements (i.e., through the provision of pedestrian crossing phases). The installation of rapid rectangular flashing beacons or the construction of raised pedestrian crossings would enhance the visibility of crossing pedestrians. The pedestrian crossing improvements described above shall be constructed and operational prior to the completion of PS5.				
	Mitigation Measure TRA-1d: Construct the relocated shuttle stops with sufficient capacity to accommodate campus shuttle operations UC Davis shall construct the relocated shuttle stops on X Street and/or 45th Street with sufficient capacity to accommodate campus shuttle operations. The stops shall be sufficiently sized to accommodate the anticipated number of shuttles that would dwell simultaneously. The relocated shuttle stops shall be completed as a component of the make ready component of the project.	Conduct transportation improvements	DE/OC	During construction	Sacramento Campus Facilities Design and Construction
	Mitigation Measure TRA-1e: Monitor transit service performance and implement transportation demand management strategies to minimize delays to transit service	Monitor and document on-campus collisions and associated rates as specified; develop and implement	OP	During operation; ongoing documentation and review	Sacramento Campus Facilities Design and Construction

Project stage at which implementation of the measure is required:
SS = site selection; DE = detailed project planning or project design prior to project approval; CO = construction; OC = prior to occupancy; OP = operation.

Table ES-2. Continued

Impacts	Mitigation Measures	Monitoring and Reporting Procedure	Timing	Verification
	During the 2021–2022 academic year, UC Davis shall coordinate with SacRT and other relevant transit operators to establish baseline on-time performance metrics for routes operating on Broadway and Stockton Boulevard within the vicinity of the Sacramento Campus consistent with established standards and methods. This process should consider the effects of the current COVID-19 pandemic on transit performance. UC Davis shall additionally coordinate with SacRT and other relevant transit operators to assess on-time performance for routes operating on Broadway and Stockton Boulevard within the vicinity of the Sacramento Campus every 2 years over the 2020 LRDP Update planning horizon. During its standard project review process, UC Davis shall forecast and analyze traffic conditions on Broadway and Stockton Boulevard within the vicinity of the Sacramento Campus for individual development projects proposed under the 2020 LRDP Update that are expected to affect operations on these roadways. Relative to baseline levels, if operations on Broadway and Stockton Boulevard are found to cause transit services to fail to meet established standards or to worsen transit performance for services that already fail to meet established standards, or if a	countermeasures, including improvements, if necessary.		

Project stage at which implementation of the measure is required:
SS = site selection; DE = detailed project planning or project design prior to project approval; CO = construction; OC = prior to occupancy; OP = operation.

Table ES-2. Continued

Impacts	Mitigation Measures	Monitoring and Reporting Procedure	Timing	Verification
	project-level analysis indicates the same, UC Davis shall institute transportation demand management (TDM) strategies to reduce peak hour vehicle trips and, in turn, delays to transit service on Broadway and Stockton Boulevard within the vicinity of the Sacramento Campus. The implementation of TDM strategies shall offset degradations to transit on-time performance in excess of established on-time performance standards (per the most up-to-date SacRT Service Standards) that are attributable to the implementation of the 2020 LRDP Update. Implementation of TDM strategies that would reduce delays to transit service on Broadway to Stockton Boulevard include strategies to reduce vehicle travel to and from campus and to minimize the effect of campus operations on surrounding roadways. Specific potential TDM strategies include, but are not limited to, the following. • Modify campus-operated shuttles to avoid Broadway and Stockton Boulevard, to the extent practical. • Promote walking and bicycling for student and employee trips to and from the UC Davis Sacramento Campus.			

Project stage at which implementation of the measure is required:
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Table ES-2. Continued

Impacts	Mitigation Measures	Monitoring and Reporting Procedure		Timing	Verification
	• Expand public transit service, including additional service connecting campus with student and employee residential areas. • Implement a fair value commuting program or other pricing of vehicle travel and parking. • Provide carpool and/or vanpool incentive programs. • Allow flexible work hours and schedule classes to reduce arrivals/departures during peak hours. • Offer remote working options. The TDM strategies implemented to reduce delays to transit service at these locations will be consistent with existing and planned TDM programs on campus. If these TDM strategies are not sufficient to reduce delays to transit service per the criteria described above, additional TDM measures or adjustments to the measures above shall be implemented, as needed to reduce peak hour intersection delay consistent with the criteria described above.				
	Mitigation Measure TRA-1f: Monitor transit service performance and implement transit service and/or facility improvements	Document transit enhancement efforts and progress; continue to work with SacRT staff.	OP	Annually	Sacramento Campus Facilities Design and Construction

Project stage at which implementation of the measure is required:
SS = site selection; DE = detailed project planning or project design prior to project approval; CO = construction; OC = prior to occupancy; OP = operation.

Table ES-2. Continued

Impacts	Mitigation Measures	Monitoring and Reporting Procedure	Timing	Verification
	During the 2021–2022 academic year, UC Davis shall coordinate with SacRT and other relevant transit operators to establish baseline transit performance (i.e., loading, productivity, and on-time performance) and safety metrics for routes operating within the vicinity of the Sacramento Campus consistent with established standards and methods. This process should consider the effects of the current COVID-19 pandemic on transit performance. UC Davis shall additionally coordinate with SacRT and other relevant transit operators to assess transit performance and safety for routes operating within the vicinity of the Sacramento Campus every 2 years over the 2020 LRDP Update planning horizon. Relative to baseline levels, if the performance of routes operating within the vicinity of the Sacramento Campus is found to fail to meet established standards or if performance worsens for services that already fail to meet established standards, SacRT and other relevant transportation agencies shall implement transit service and/or facility improvements. The implementation of transit service and/or facility improvements shall offset degradations to transit performance in excess of established performance standards (per the most up-to-date SacRT Service			

Project stage at which implementation of the measure is required:
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Table ES-2. Continued

Impacts	Mitigation Measures	Monitoring and Reporting Procedure	Timing	Verification
	Standards) that are attributable to the implementation of the 2020 LRDP Update. Currently, SacRT and other relevant transit operators regularly monitor transit service performance and adjust service levels, as feasible, according to established service standards. SacRT and other relevant transit operators would continue to implement this monitoring and service change process over the duration of the 2020 LRDP Update implementation. Moreover, UC Davis would continue to adjust campus-operated shuttle routes and schedules as warranted by passenger demand and other operating considerations. Additionally, nearby roadway owners such as the City of Sacramento and Caltrans operate and maintain their facilities consistent with their policies and standards related to multi-modal transportation operations. As requested, UC Davis shall meet with SacRT, the City of Sacramento, Caltrans, and/or other transportation agencies to coordinate the implementation of transit service and/or facility improvements. Potential transit improvements include modifying existing transit routes or adding new routes to serve areas of the Sacramento Campus underserved by transit, adding service capacity (through			

Project stage at which implementation of the measure is required:
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Table ES-2. Continued

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

Project stage at which implementation of the measure is required:
SS = site selection; DE = detailed project planning or project design prior to project approval; CO = construction; OC = prior to occupancy; OP = operation.

Table ES-2. Continued

Impacts	Mitigation Measures	Monitoring and Reporting Procedure		Timing	Verification
	Mitigation Measure TRA-1g: Monitor transit-related collisions and implement countermeasures to reduce potential conflicts with transit service and facilities During the 2021–2022 academic year and every 2 years thereafter, UC Davis shall record on-campus collisions involving a transit vehicle and establish a transit vehicle collision rate. The rate should be sensitive to transit provider, location context, and facility type (e.g., intersection versus segment). UC Davis shall determine the on-campus transit vehicle collision rate as part of a biennial mitigation monitoring program. In instances where the rate increases from the prior observation period, UC Davis shall develop and implement countermeasures that address collision hot-spots and common primary collision factors. UC Davis shall also identify and develop countermeasures for locations where the change in the mix of travel patterns and behavior is determined to be incompatible with the facility as designed. Potential countermeasures include physically separating modes in shared operating environments, particularly high-versus low-speed travel modes, and increased education and enforcement.	Monitor and document traffic conditions as specified; forecast and analyze traffic conditions as specified; implement TDM strategies as necessary.	OP	During operation; ongoing documentation and review	Sacramento Campus Facilities Design and Construction

Project stage at which implementation of the measure is required:
SS = site selection; DE = detailed project planning or project design prior to project approval; CO = construction; OC = prior to occupancy; OP = operation.

Table ES-2. Continued

Impacts	Mitigation Measures	Monitoring and Reporting Procedure		Timing	Verification
	Transit facility and roadway improvements that intend to reduce conflicts between transit vehicles and other travel modes shall be designed and constructed in accordance with industry best practices and applicable UC Davis, City of Sacramento (for facilities within the City of Sacramento), and State of California standards. Improvements shall be implemented or constructed in a manner that would not physically disrupt existing transit service or facilities or otherwise adversely affect transit operations.				
Impact TRA-3: Result in changes to the transportation system that would create hazardous features or incompatible traffic uses.	**Mitigation Measure TRA-1a: Improve the bicycle facilities on X Street between Stockton Boulevard and 48th Street** Refer to measure description under Impact TRA-1.	Conduct transportation improvements	DE/OC	During construction	Sacramento Campus Facilities Design and Construction
	Mitigation Measure TRA-1b: Construct the PS5 driveways and driveway intersections with X Street to comply with applicable design standards and to reduce potential conflicts involving bicyclists and pedestrians Refer to measure description under Impact TRA-1.	Conduct transportation improvements	DE/OC	During construction	Sacramento Campus Facilities Design and Construction
Impact TRA-4: Result in inadequate emergency access	**Mitigation Measure TRA-5: Prepare and implement a Construction Traffic Management Plan**	Preparation of a Construction Traffic Management Plan.	DE	Prior to final project approval	Sacramento Campus Facilities Design and Construction

Project stage at which implementation of the measure is required:
SS = site selection; DE = detailed project planning or project design prior to project approval; CO = construction; OC = prior to occupancy; OP = operation.

Table ES-2. Continued

Impacts	Mitigation Measures	Monitoring and Reporting Procedure		Timing	Verification
	Refer to measure description under Impact TRA-5.				
Impact TRA-5: Result in construction activity that could cause temporary impacts to transportation and traffic	**Mitigation Measure TRA-5: Prepare and implement a Construction Traffic Management Plan** Prior to the issuance of any grading or building permits, a Construction Traffic Management Plan (TMP) shall be prepared to the satisfaction of UC Davis Health and the City of Sacramento Department of Public Works for City-owned roadways. The Construction TMP shall include items such as the following. • Preserving emergency vehicle access routes to existing buildings on the Sacramento Campus. • Preserving emergency vehicle access to the main hospital building Emergency Department temporary ambulance loading area. • Providing truck circulation routes/patterns that minimizes effects on existing vehicle traffic during peak travel periods and maintains safe bicycle circulation. • Monitoring for roadbed damage and timing for completing repairs. • Preserving safe and convenient passage for bicyclists and pedestrians through/around construction areas.	Preparation of a Construction Traffic Management Plan.	DE	Prior to final project approval	Sacramento Campus Facilities Design and Construction

Project stage at which implementation of the measure is required:
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Table ES-2. Continued

Impacts	Mitigation Measures	Monitoring and Reporting Procedure	Timing	Verification
	• Creating methods for partial (i.e., single lane)/complete street closures (e.g., timing, signage, location and duration restrictions), if necessary. • Identifying detour routes for roadways subject to partial/complete street closures. • Identifying temporary UC Davis shuttle stops and detoured shuttle routes if existing stops or routes are affected. • Identifying temporary SacRT bus stops and detoured bus routes, if existing stops or routes are affected. • Developing criteria for use of flaggers and other traffic controls. • Providing a point of contact for nearby residents, Sacramento Campus staff, students, and visitors, and other stakeholders to contact to obtain construction information and have questions answered. The Construction TMP shall be developed and implemented so that the following performance standards are achieved throughout project construction. • Maintain emergency vehicle access to all buildings on the Sacramento Campus at all times. • Maintain identified emergency vehicle routes to UC Davis Health medical			

Project stage at which implementation of the measure is required:
SS = site selection; DE = detailed project planning or project design prior to project approval; CO = construction; OC = prior to occupancy; OP = operation.

Table ES-2. Continued

Impacts	Mitigation Measures	Monitoring and Reporting Procedure	Timing	Verification
	facilities at all times, including the main hospital building Emergency Department temporary ambulance loading area. Notify appropriate contacts for UC Davis Health and/or emergency responders at least 24 hours prior to any construction-related partial/complete closures that may affect emergency vehicle routes, and provide clear identification of detours when necessary. • Minimize construction traffic during morning and evening peak periods when street traffic on local and campus streets are highest. • Minimize the potential for conflicts between construction vehicles and private vehicles, transit vehicles, bicyclists, and pedestrians on Stockton Boulevard, X Street, 45th Street, Doctor Way, and Colonial Way. • Minimize the potential for delays to and conflicts involving ambulances serving the main hospital building Emergency Department temporary ambulance loading area. • Close (i.e., partially or fully) any construction-related public roadways only during off-peak periods and provide appropriate construction signage, including detour routing.			

Project stage at which implementation of the measure is required:
SS = site selection; DE = detailed project planning or project design prior to project approval; CO = construction; OC = prior to occupancy; OP = operation.

Table ES-2. Continued

Impacts	Mitigation Measures	Monitoring and Reporting Procedure	Timing	Verification
	• Limit detour routing to campus roadways or City collector and arterial roadways, such as Stockton Boulevard and Broadway, to the extent feasible. Include measures to minimize traffic increases on local residential roadways; this may include signage and law enforcement presence during partial/complete closures to discourage through-traffic use of local residential roadways. • Clear roadways, sidewalks, crosswalks, and bicycle facilities of debris (e.g., rocks) that could otherwise impede travel and impact public safety, and maintain them in this condition. UC Davis shall also consider any concurrent construction activity and other active Construction TMPs when reviewing the Construction TMP for the California Hospital Tower Project. This review shall verify consistency across the Construction TMPs to address the effects of simultaneous construction activity.			

Project stage at which implementation of the measure is required:
SS = site selection; DE = detailed project planning or project design prior to project approval; CO = construction; OC = prior to occupancy; OP = operation.

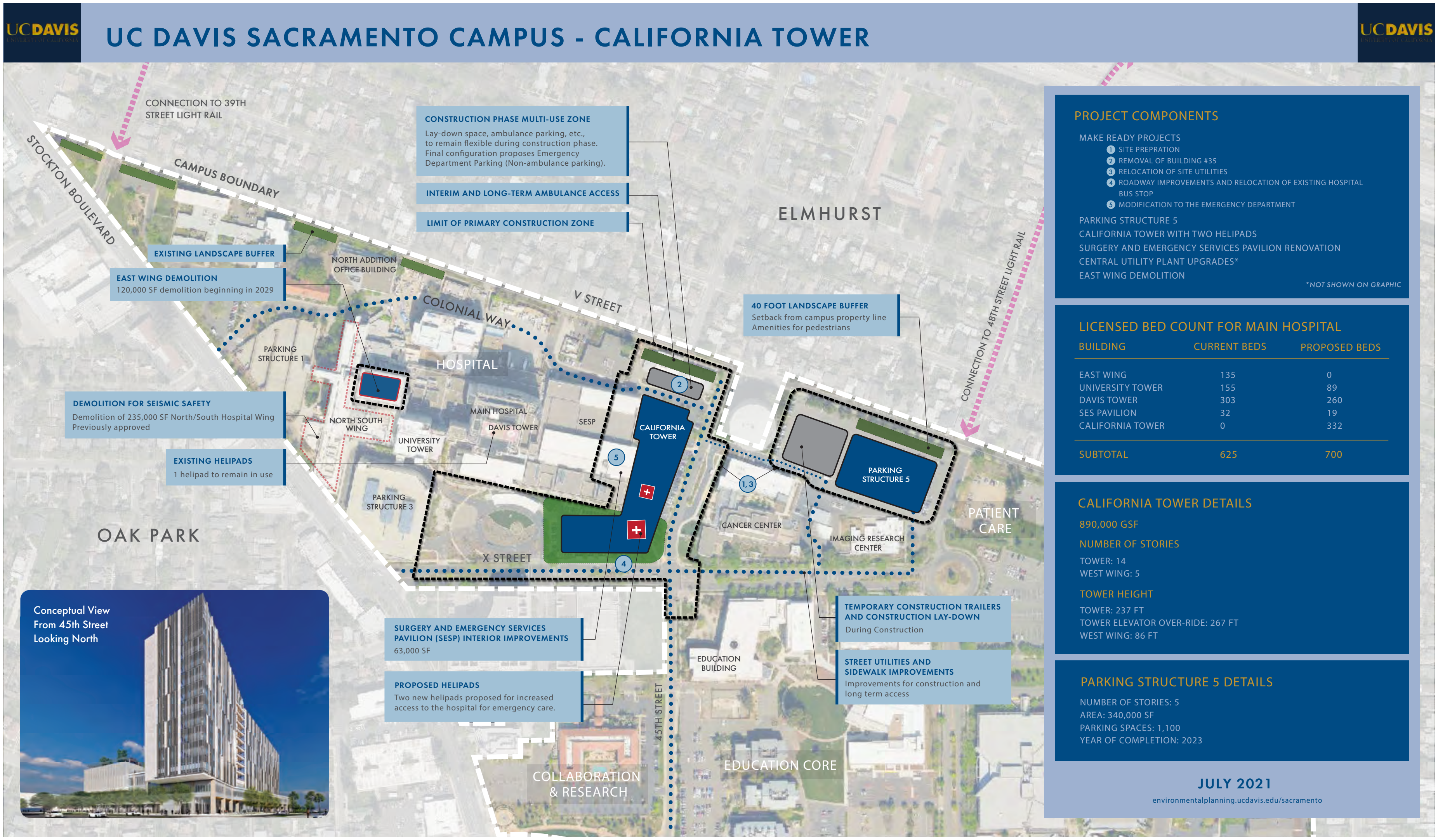

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Figure ES-1
California Tower

Chapter 1
Introduction

1.1 Purpose and Intended Use of this EIR

This analysis has been prepared under the direction of the University of California (UC) Board of Regents (the Regents) in accordance with the requirements of the California Environmental Quality Act (CEQA; Public Resources Code [PRC] Section 21000 *et seq*.) and the State CEQA Guidelines (California Code of Regulations [CCR], Title 14, Division 6, Chapter 3, Section 15000 *et seq*.). The Regents is serving as the lead agency under CEQA for consideration of certification of this environmental impact report (EIR) and potential project approval; CCR Section 15367 defines "lead agency" as the agency with principal responsibility for carrying out and approving a project.

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

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

1.2 Relationship to Long Range Development Plan

Each campus within the UC system periodically prepares a Long Range Development Plan (LRDP) to guide campus development in anticipation of projected growth of student enrollment and new UC-added programs. An LRDP is defined as a "physical development and land use plan to meet the academic and institutional objectives for a particular campus or medical center of public higher education" (PRC Section 21080.09(a)(2)). The LRDP establishes the land use patterns and relevant policies that guide the development of campus facilities and infrastructure.

The Regents adopted the Sacramento Campus 2020 LRDP Update after certifying its Supplemental EIR in November 2020. The 2020 LRDP Update reflects the growth projections and plans for the Sacramento Campus and establishes land use designations for areas within the LRDP. LRDPs do not have an end date and remain in effect until replaced or augmented by subsequent UC approvals. For the purposes of evaluating environmental impacts, the Supplemental EIR for the 2020 LRDP Update projected that the potential growth in the 2020 LRDP Update could occur by 2040 and that the campus will have an onsite daily population of 21,200 people and growth up to 7.07 million gross square feet within the 2040 EIR projection period.

The California Hospital Tower Project is described in the 2020 LRDP Update as the "Replacement Hospital Tower" and as an anticipated campus project, and the associated population and building square footage of the California Tower analyzed in this Draft EIR is within the overall planning scenario that was considered in the 2020 LRDP Update. The Replacement Hospital Tower project was listed as one of the first projects that would be developed under the 2020 LRDP Update. The purpose of the project was described therein as the need to address the Main Hospital's aging and seismically deficient structures. However, at the time of the publication of the 2020 LRDP Update Supplemental EIR, the Replacement Hospital Tower project description was still being considered and defined. Therefore, although the Supplemental EIR prepared for the 2020 LRDP Update analyzed the effects of the Replacement Hospital Tower on a programmatic level, this EIR is a stand-alone project-level EIR that does not tier from nor rely on the conclusions of the 2020 LRDP Update Supplemental EIR.

1.3 Public and Agency Involvement during the Environmental Review Process

1.3.1 Notice of Preparation and Public Scoping

Scoping refers to the process used to assist lead agencies under CEQA in determining the focus and content of an EIR. Scoping solicits input on the potential topics to be addressed in an EIR, the range of project alternatives, and possible mitigation measures. Scoping is also helpful in establishing methods of assessment and in selecting the environmental effects to be considered in detail. Tools used in scoping this EIR included informal stakeholder and interagency consultation, a public scoping meeting, and publication of the Notice of Preparation (NOP) of the EIR.

Pursuant to State CEQA Guidelines Section 15082, the lead agency is required to send an NOP to the State Office of Planning and Research (OPR), responsible and trustee agencies, and federal agencies involved in funding or approving the project. The NOP must provide sufficient information in order for responsible agencies to make a meaningful response. At a minimum, the NOP must include a description of the project, location of the project, and probable environmental effects of the project (State CEQA Guidelines Section 15082(a)(1)). Within 30 days after receiving the NOP, responsible and trustee agencies and OPR must provide the lead agency with specific detail about the scope and content of the environmental information related to that agency's area of statutory responsibility that must be included in the Draft EIR (State CEQA Guidelines Section 15082(b)).

In accordance with PRC Section 21092 and CCR Section 15082, a NOP was prepared and circulated on February 26, 2020, for a 30-day period of public and agency comment. The NOP was submitted to the State Clearinghouse and the Sacramento County clerk-recorder. A copy of the NOP and the written comments received during the NOP comment period are provided in Appendices A and B, respectively. A summary of the relevant NOP comments is provided at the beginning of each topical section in Chapter 3.

UC Davis conducted a virtual open house scoping session during the NOP comment period on Wednesday, March 17, 2021, from 4:30 pm to 6:30 pm via Zoom Webinar. The objective of the session was to brief interested parties on the scope of the California Hospital Tower Project and obtain the views of agency representatives and the public on the scope and content of the upcoming Draft EIR and potentially significant environmental impacts related to the project. The scoping meeting presentation can be found at the following URL.

https://environmentalplanning.ucdavis.edu/sites/g/files/dgvnsk2921/files/inline-files/CT_ScopingMeeting_March17Final.pdf

1.3.2 Draft EIR Review and Comment

This Draft EIR is being circulated for a 45-day period of review and comment by the public and other interested parties, agencies, and organizations. A virtual public hearing will be held on Tuesday, August 10, 2021, to receive verbal comments from agencies and the public on the Draft EIR. Individuals or agencies can register to attend the virtual meeting by clicking on the link below.

https://environmentalplanning.ucdavis.edu/california-tower

Copies of the Draft EIR are available on the UC Davis Environmental Planning website for review at the link below.

https://environmentalplanning.ucdavis.edu/california-tower

Hard copies of the document are available at the following locations.

- UC Davis Health Center, Facilities Design and Construction, 4800 Second Avenue, Suite 3010, Sacramento, CA 958178.
- UC Davis Office of Environmental Stewardship and Sustainability in 436 Mrak Hall on the UC Davis Campus, Davis, CA 95616.
- Reserves at Shields Library on the UC Davis Campus, Davis, CA 95616
- Colonial Heights Library, 4799 Stockton Blvd, Sacramento, CA 95820.

The public review period will conclude at 5:00 p.m. on September 6, 2021. All comments on the Draft EIR should be addressed to:

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

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

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

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

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

CEQA requires that when a public agency makes findings based on an EIR, the public agency must adopt a reporting or monitoring program for those measures it has adopted or made a condition of the project approval to mitigate significant adverse effects on the environment. The reporting or monitoring program must be designed to ensure compliance during project implementation. The Mitigation Monitoring and Reporting Program for the project will be prepared and considered by the Regents in conjunction with the Final EIR review.

1.4 Scope of the Draft EIR

UC Davis has determined that a project-level EIR is required for this project.

As discussed in the NOP, several resource areas will not be analyzed in detail in the EIR—agricultural and forestry resources, mineral resources, and wildfire—for the reasons described below. All other environmental topics covered by CEQA are addressed at a project level in this EIR.

- The project site is listed as Urban/Built-up Land by the Farmland Mapping and Monitoring Program Sacramento County Important Farmland Map. The project site is designated as an urban center and zoned for commercial, office, and single- and multi-family residential uses. The project site is not zoned for agricultural use, and there are no parcels enrolled in a Williamson Act contract in the vicinity. There is no forest land or timberland in the vicinity. Because development on the project site would not convert farmland or forest land to non-agricultural uses, there would be no impact on these resources, and no further analysis is required.
- Development on the UC Davis Sacramento Campus would not involve extraction of mineral resources and therefore would not result in the loss of availability of a known mineral resource. There would be no impact, and no further analysis is required.
- No wildfire impacts are anticipated because the project site is in an existing urbanized area, not near a California Department of Forestry and Fire Protection state responsibility area, and not within a very high fire hazard severity zone. There would be no impact, and no further analysis is required.

1.5 Known Areas of Controversy and Issues of Concern

Pursuant to State CEQA Guidelines Section 15123(b)(2), a lead agency is required to include in the EIR areas of controversy raised by agencies and the public during the public scoping process. Issues of concern and issue areas raised during the scoping process include noise (especially noise from helicopters), visual impacts, traffic, and greenhouse gases.

UC Davis carefully reviewed comments provided during the NOP scoping period (described in Section 1.3.1 above) to assist in refining the proposed project details and to assist in preparing the information and analysis contained in this EIR. After the NOP scoping period, UC Davis revised the proposed project with a reduced building height for the California Tower, reduced gross square footage, and more efficient use of hospital space, leading to a total of 75 net new licensed beds. The reduced size of the California Tower resulted in the proposed height limit in the Hospital land use designation being reduced from 290 feet to 270 feet for areas within 180 feet of the property line.

1.6 Responsible and Trustee Agencies

Under CEQA, responsible agencies are state and local public agencies other than the lead agency that have the authority to carry out or approve a project or that are required to approve a portion of the project for which a lead agency is preparing or has prepared an EIR. Trustee agencies are state agencies with legal jurisdiction over natural resources affected by a project that are held in trust for the people of the State of California. Agencies may have responsibility for or jurisdiction over implementation of elements of the project are listed in Section 2.6, *Anticipated Approvals and Permits*.

This EIR and any environmental analysis relying on this EIR are expected to be used to satisfy the CEQA requirements of the listed responsible and trustee agencies.

1.7 Organization of the Draft EIR

As noted above, this Draft EIR is a project-level evaluation of the impacts of the California Tower Project. This EIR is organized as follows.

- *Executive Summary* provides an overview of the environmental evaluation, including impact conclusions and recommended mitigation measures.
- *Chapter 1—Introduction* describes the purpose, process, scope, and public outreach for this EIR.
- *Chapter 2—Project Description* describes the location of the project, the project background, existing conditions on the project site, and the nature and location of specific elements of the project.
- *Chapter 3—Existing Environmental Setting, Impacts, and Mitigation* includes a topic-by-topic analysis of impacts that would or could result from project implementation. The analysis is organized in 16 topical sections. Each section includes a discussion of the environmental and regulatory setting, impact analysis, and mitigation measures (if any).

- *Chapter 4—Cumulative Impacts* provides information regarding the potential cumulative impacts that would result from implementation of the project together with other past, present, and probable future projects.
- *Chapter 5—Other CEQA Considerations* includes a discussion of growth inducement and unavoidable adverse impacts.
- *Chapter 6—Alternatives* describes feasible alternatives to the project, including the No Project Alternative that describes the consequences of taking no action.
- *Chapter 7—Preparers* identifies preparers of the Draft EIR.
- *Chapter 8—References* lists source material cited in the Draft EIR.
- *Chapter 9—Acronyms and Abbreviations* defines terms used in the Draft EIR.

1.8 COVID-19 Considerations

In December 2019, the U.S. Centers for Disease Control and Prevention identified the first human cases of the COVID-19 coronavirus. In January 2020, the first case was identified in the United States, and the virus was identified in California in February 2020. As a key component of providing key new regional hospital facilities, the proposed project design incorporates new information learned from the COVID-19 pandemic with key facility details for isolation treatment flexibility, air handling for improved ventilation, material handling efficiencies for potential infected materials, and adaptable patient rooms for improved intensive care flexibility in case of future pandemics.

In relation to the COVID-19 pandemic events, Governor Gavin Newsom declared a State of Emergency in California. As of July 2021, there were 3,724,833 confirmed cases and 63,376 fatalities in the state (California Department of Public Health 2021). On March 19, 2020, the State Public Health Officer issued an order directing all individuals living in the state to stay at home except as needed to perform essential activities. As of the writing of this document, while the stay at home order has ended, COVID-19 continues to present a significant risk to the health of individuals throughout California and some restrictions are still in place.

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

Chapter 2
Project Description: California Hospital Tower Project

2.1 Project Background

UC Davis Health is an integrated, academic healthcare organization maintaining the historic UC Davis tradition of being guided by a mission of public service in all its endeavors. Serving 6 million residents across 33 counties encompassing 65,000 square miles in northern and central California, UC Davis Health includes the School of Medicine, the Betty Irene Moore School of Nursing, a 625-bed acute care hospital, a National Cancer Institute–designated Comprehensive Cancer Center, and outpatient clinics on the UC Davis Sacramento Campus and in communities throughout the Sacramento region. With more than 6,500 employees, UC Davis Health provides vital care to more than 200,000 patients every year, admitting 25,000 patients for extended care in the hospital and handling more than 900,000 visits. The hospital is an accredited Level-1 trauma center for both pediatric and adult patients requiring exceptionally high levels of medical care, and it is the only Level-1 adult and pediatric trauma center in the region.

The UC Davis Main Hospital is the primary service provider for the growing Sacramento region for high acuity bed capacity, and the population of the Sacramento region continues to grow steadily. Over the last two decades, UC Davis Health has increased its role as a regional referral center for oncology, transplant, and high acuity care. Regional network partners and affiliates rely on UC Davis Health to support their patients with complex needs, and the demand for patient transfers to UC Davis Health continues to grow. Demographic changes over the next 10 years, including an increase in national Medicare enrollment, are expected to increase patient acuity and length of stay. The medical complexity of patients coming to UC Davis Health is expected to increase, which will require longer lengths of stay for patients and more beds.

For the past 20 years, UC Davis Health's facility planning has focused on addressing the State of California seismic safety mandates outlined in Sections 130000 through 130070 of the California Hospital Seismic Retrofit Program as added by Chapter 740 of the Statutes of 1994 Senate Bill (SB) 1953. Efforts have been largely focused on clearing the seismically deficient North/South Wing of the UC Davis Main Hospital so that the structure can be physically disconnected and deconstructed per SB 1953 mandates. The construction of the Davis Tower (May 1999), and the subsequent build-out of its six floors of shelled space (1999–2009) for licensed beds, as well as the construction of the Surgery and Emergency Services Pavilion (October 2010), have made way for virtually all of the critical systems and licensed beds to be located in facilities that are seismically compliant. With the recent completion of the North Addition Office Building (May 2019), nearly all administrative office spaces have been cleared from the North/South Wing. After demolition of the North/South Wing, the disconnection work would begin allowing UC Davis Health to meet its current deadline of July 1, 2022. Deconstruction will occur as an activity separate from the California Hospital Tower Project. In 2016, the UC certified the Seismic Safety/Office Building EIR thereby completing the CEQA evaluation of constructing the North Addition Office Building and demolishing the North/South Wing of the hospital.

Beyond demolition of the North/South Wing, in 2015, UC Davis Health embarked upon a comprehensive facilities master planning effort (the Clinical Services Master Plan or CSMP) to further outline the infrastructure and facilities needed to address future healthcare, education, research, and teaching needs on the Sacramento Campus and in the greater Sacramento region. The CSMP identified a critical need for UC Davis Health to address its seismically deficient and aging patient bed towers to properly sustain its inpatient operations and continue to support the care needs of the Sacramento region (UC Davis Health 2018).

The East Wing (constructed in 1964) of the Main Hospital is a Structural Performance Category 2 (SPC-2) rated structure that must be brought into seismic compliance by January 1, 2030, per SB 1953 mandates. The approximately 120,000-gross-square-foot (gsf), eight-level (plus basement) structure houses approximately 135 licensed beds. UC Davis Health determined that the cost to retrofit and renovate the structure to current code would exceed the cost of replacement, considering the temporary displacement of occupants and patient beds and the phasing of work required to complete the project. Accordingly, it has been determined that the structure must be replaced. In replacing the East Wing with the proposed California Tower, UC Davis would advance seismic safety needs, expand bed capacity, and improve patient care and operational efficiencies.

Constructed in 1982, the University Tower is an approximately 125,000 gsf, eight-level (plus basement) structure that houses approximately 155 licensed beds. The University Tower is one of the primary inpatient intensive care unit structures for the Main Hospital complex. Delivery of patient care within this aged structure is challenging due to (1) undersized rooms, (2) an aging utilities infrastructure with no redundancy (requiring building-wide shutdowns when repairs are required), and (3) building skin deficiencies such as window leaks. With the proposed California Hospital Tower Project, UC Davis would shift licensed beds from the University Tower, Davis Tower, and Surgery and Emergency Services Pavilion to the California Tower.

2.2 Project Location and Setting

2.2.1 UC Davis Sacramento Campus

The proposed project would be located on the UC Davis Sacramento Campus, which is in the city of Sacramento in the Sacramento Valley of northern California (Figure 2-1). The region's easternmost portion consists of the greater Sacramento metropolitan region, while its westernmost portion primarily consists of the growing city of West Sacramento and outlying agricultural lands, including the Yolo Bypass. The landscape pattern is influenced by development sprawling from the cores of existing cities and the major roadways, such as Interstate (I-) 80, U.S. Route 50, I-5, and State Route 99. The region primarily supports developed, industrial, agricultural, and open space land uses, further discussed below in Section 2.3.2, *Surrounding Land Uses*. In addition to numerous creeks and irrigation channels, major water bodies in the region include the Sacramento River, the American River, the Deep-Water Ship Channel, and the Yolo Bypass when flooded.

The Sacramento Campus is approximately 11 miles southeast of the Sacramento International Airport and 3 miles southeast of the Sacramento Valley Station, which serves as a terminal for Amtrak. The Sacramento Valley Station is also the western terminus on the Sacramento Regional Transit's light rail gold line, which runs from the Sacramento Valley Station in downtown Sacramento to the city of Folsom. The gold line parallels U.S. Route 50 just north of the Sacramento Campus, and the nearest transit stops are the 39th and 48th Street stations.

Located near the State Route 99/Interstate 80 Business interchange in the city of Sacramento, the 146-acre Sacramento Campus includes a 625-bed teaching hospital, a National Cancer Institute–designated Comprehensive Cancer Center, and a nationally ranked children's hospital. In 2018–2019, UC Davis Medical Center had over 34,000 inpatient admissions, over 80,000 emergency room visits, and over 900,000 clinic or office visits.

2.2.2 Project Site

As shown in Figure 2-1, the California Hospital Tower Project would be located within the UC Davis Sacramento Campus, which is bounded by V Street on the north, Stockton Boulevard on the west, Broadway to the south, and a residential neighborhood to the east. Components of the California Hospital Tower Project would be located as described below; these components are shown in Figure 2-2. Figure 2-3 shows the interim (construction period) site plan. Figures 2-4a and 2-4b show the final (after construction) site plan.

- **California Tower construction**—west of 45th Street and north of X Street, at the east end of the existing UC Davis Medical Center, adjacent to the Surgery and Emergency Services Pavilion.
- **Surgery and Emergency Services Pavilion interior renovation—**west of 45th Street and north of X Street, adjacent to the proposed California Tower.
- **Parking Structure 5 (PS5) construction**—southwest of the intersection of 48th and V Streets.
- **Central Utility Plant (CUP) upgrades—**west of the convergence of 2nd Avenue with 49th and 50th Streets.
- **East Main Hospital Wing demolition**—south of Colonial Way, north of Stockton Boulevard, and west of the Surgery and Emergency Services Pavilion.
- **Make-ready projects to prepare for construction—**various locations within the Sacramento Campus, including removal of Building #35 at the southwest corner of 45th and V Streets, modifications to the Emergency Department and various floors within the Surgery and Emergency Services Pavilion, as well as site preparations and roadway improvements primarily in the northern portion of the Sacramento Campus (although some offsite traffic improvements could occur, such as the signal upgrades at Stockton Boulevard and Colonial Way).

2.2.3 Surrounding Land Uses

Land uses surrounding the project site are residential neighborhoods composed of single-family homes and some commercial and urban development. Stockton Boulevard, along the western boundary of the campus, is lined mostly with one- to three-story office buildings and a small amount of retail. A Shriners Hospital is located on Stockton Boulevard just south of X Street across from the UC Davis Health Main Hospital. The Main Hospital is at 2315 Stockton Boulevard, with commercial uses on the other side of Stockton Boulevard and the Elmhurst neighborhood to the north.

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

2.3 Goals and Objectives of the California Hospital Tower Project

UC Davis has identified the following objectives for the proposed California Hospital Tower Project.

- Provide a patient-centered hospital of the future to keep pace with community healthcare needs and to support UC Davis Health's teaching, research, and community engagement missions in the most efficient manner, with the least amount of disruption to clinical care operations.
- Construct the new California Tower with maximum operational efficiency to optimize healthcare outcomes and create a space for increased patient and staff satisfaction.
- Provide single-occupancy patient rooms with acuity-adaptable beds.
- Address seismic and other code-related deficiencies in aging buildings and replace the hospital's East Wing with a new, state-of-the-art, seismically compliant facility that meets current codes and sustainability standards.
- Demolish outdated spaces to achieve seismic safety and to remove buildings that cannot be operated efficiently or renovated.
- Ensure the California Tower stands the test of time by providing adaptability and flexibility within building systems.
- Implement sustainable site design and building design practices to support ongoing implementation of UC's Sustainable Practices Policy.
- Provide adequate healthcare helicopter landing areas and reduce helicopter idling time by providing increased helipad capacity.
- Ensure appropriate facility adjacencies, provide convenient access, and improve pedestrian connections.
- Increase parking capacity near the hospital to meet future parking demand, thereby better serving patients, and to provide construction worker parking during project construction.
- Consolidate surface parking into structured parking near the Hospital and Ambulatory Care districts to ensure easy access by patients, visitors, staff, residents, and partners, while minimizing potential conflicts among pedestrians, cyclists, and motorists.

2.4 California Hospital Tower Project

The California Hospital Tower Project would provide a state-of-the-art hospital facility with additional licensed beds and an interventional platform that supports new surgical techniques and technologies. It would include acuity adaptable (intensive care unit [ICU] adaptable or medical/surgical adaptable) single-occupant inpatient rooms, procedure rooms, an interventional operating platform, support space (sterilization, pharmacy, diagnostic), public waiting space, as well as other support spaces such as building maintenance, food service, and building facilities support. The California Tower would replace existing double-occupancy patient rooms and licensed ICU beds (currently located in the seismically deficient East Wing) with single-occupancy rooms and beds for patients with the highest severity of need, including adult trauma, stroke, and burn patients.

The facility would be designed to maximize operational efficiency and flexibility to accommodate future health care technologies. The size of the California Tower would allow UC Davis Health to provide acuity adaptable rooms, which would enable every room to be ICU capable. Patients would be admitted based on their acuity level, and the rooms would be capable of being licensed as ICU or surgical depending on the needs of the patient population.

As stated above, the California Tower would allow UC Davis Health to strategically relocate beds. With the demolition of the East Wing, 135 licensed beds would be removed and placed in single-occupancy rooms in the California Tower.

Table 2-1 shows the total licensed bed count for the entire hospital. Figure 2-5 shows the bed count diagram, including relocation of future licensed beds.

Table 2-1. Bed Count at the University of California, Davis Sacramento Campus

Building	Current Beds	Future Beds
East Wing	135	0
University Tower	155	89
Davis Tower	303	260
Surgery and Emergency Services Pavilion	32	19
California Tower	–	332
Subtotal	625	700

2.4.1 Project Components

Components of the California Hospital Tower Project are detailed below and shown in Figure 2-2. Additionally, as part of this project UC Davis proposes to amend the 2020 LRDP Update to revise the height restriction in the Hospital land use designation from 200 feet to 270 feet for areas within 180 feet of the property line.

California Tower

Construction of the California Tower is a key piece of UC Davis Health's overall strategy to achieve seismic safety compliance, expand service capacity, and improve operations.

Renderings of the proposed California Tower are shown in Figure 2-6. The approximately 890,000 gsf structure would be L-shaped, with a 5-story leg extending off the main 14-story tower. The 5-story leg—termed the "West Wing"—would include a lobby, family resource area, conference room, café, and rooftop garden and have an overall height of approximately 86 feet. The West Wing would have a shade canopy approximately 94 feet in height, and the elevator over-ride would be approximately 100 feet in height. The 14-story tower would provide up to 332 licensed beds, surgery space, procedure rooms, public space, and support space (sterilization, diagnostic, etc.) and would include two new helipads. The west side of the new tower would be connected to the existing hospital from floors one through three. The ground level activity would include a bistro and coffee shop, conference rooms, resident sleep rooms, a family resource center, and the Emergency Department. The 2nd, 4th, and 14th floors are mechanical floors, and the 3rd floor would be the interventional floor with operating and procedure rooms with their support spaces. Patient rooms would be located on floors 5–13 and would contain a combination of adult intensive care units and adult medical, surgery, and trauma units.

The tower would reach 237 feet at the roofline. The California Tower elevator over-ride would reach a height of approximately 267 feet. Additional details regarding the helipads are provided below under *Helicopter Air Ambulance Operations*.

Landscaping and outdoor plaza spaces would be incorporated into the California Tower design, including a rooftop garden located on the roof of the West Wing. Figure 2-7 shows the landscaped areas, including the rooftop garden. Trees removed during construction would be replaced at a 1:1 ratio. The California Tower would be designed to accommodate existing public spaces such as the West Arrival Garden and hospital courtyard. Public spaces would include seating areas, walking paths, shaded areas, bicycle facilities, landscaping, and public art. Along the north edge of the project site, a 40-foot landscape buffer would be located between the Emergency Department parking area and the V Street sidewalk and would contain trees and a walking path.

Surgery and Emergency Services Pavilion Interior Renovation

The California Tower would be connected to the existing hospital within the Surgery and Emergency Services Pavilion, which would entail approximately 63,000 gsf of renovation and, potentially, a bridge connection. The interior renovation includes constructing interim Emergency Department entrances and renovating the existing basement, second floor, and third floor to create continuity and the code-required fire separation between the California Tower and the Surgery and Emergency Services Pavilion.

The California Tower itself would be connected to the Surgery and Emergency Services Pavilion in order to create a contiguous interventional operational platform for surgery and perioperative services. The interventional platform would combine multiple surgical and procedural specialties into one common area and will provide space for future-technology services that are currently unavailable at the hospital.

Parking Structure 5 Construction

PS5—a new five-story, approximately 340,000 gsf parking structure—would be constructed, providing approximately 1,100 parking spaces. PS5 would be consistent with with the height restrictions of the 2020 LRDP Update, having a maximum height of 40 feet in the area 40–100 feet from the edge of campus and a maximum height of 75 feet in the area 100–180 feet from the edge of campus.

Site improvements associated with PS5 would require reconfiguring Parking Lot 4 and vehicular access from X Street. No vehicular access is proposed for V Street. The site has been designed to provide direct and clear pedestrian wayfinding from the garage exits and Parking Lot 4 to the Cancer Center and the new California Tower, as well as existing circulation networks to the west and southeast. The north side of PS5 would include pedestrian amenities such as benches and shade within the 40-foot landscape buffer along V Street, complementing the PS4 landscape buffer improvements. PS5 would also include short-term and long-term bicycle parking.

Central Utility Plant Upgrades

Energy demands of the California Hospital Tower Project would be met through the CUP. The CUP provides the campus with medium voltage normal and emergency power, chilled water, medium temperature hot water, and process steam. The CUP utilities that would be provided to the California Hospital Tower Project are normal power, emergency power, chilled water, and heating hot water. To ensure the CUP can serve the project, facility upgrades would be installed at the CUP to provide increased capacity. Upgrades would include three new 2,000 kW (3,450 HP rated) emergency generators, three water chillers with 13,100 total pounds of refrigerant charge, and one 10,000 MBH electric heat pump. This new equipment would be enclosed and located within the existing CUP site.

East Main Hospital Wing Demolition

The approximately 120,000 gsf East Main Hospital Wing would remain in operation throughout most of the project's construction period, with phase out beginning in 2029 and demolition expected to commence in early 2031.

Make-Ready Projects

To prepare for construction and operation of project components described above, several make-ready projects would be required. These include site preparation, roadway improvements, removal of Building #35, relocation of site utilities between the existing Hospital facilities and the California Tower, and modifications to the Emergency Department.

Several roadway improvements would be made prior to construction of the California Tower. These modifications would accommodate planned future changes to Stockton Boulevard as identified in the *Draft Stockton Boulevard Corridor Study* (City of Sacramento 2021). The project includes relocation of the existing hospital bus stop to the north side of X Street, west of the main hospital loading zone driveway, or the east side of 45th Street south of X Street. The project also includes improvements to 45th Street for the Comprehensive Cancer Center drop-off. The majority of transportation improvements would take place onsite within the Sacramento Campus.

Building #35, which is currently an unoccupied group of trailers, would be demolished to make room for underground fire suppression water storage tanks and interim ambulance parking to be used during construction of the California Hospital Tower Project. Additional construction trailers would be placed in Parking Lot 4, directly east of the water tower at 45th and V Streets.

A temporary ambulance area (shown as *New Emergency Department/Ambulance Parking* in Figure 2-2) would be constructed for use during the extended construction period. It would contain an ambulance entrance and parking. An Emergency Department patient drop-off area, including covered canopies, registration, and security would be provided on the south side of the Surgery and Emergency Services Pavilion, accessible via the existing main entrance traffic circle from X Street. The final improvement proposed in place of Building #35 is a small Emergency Department parking lot. An 8-foot-high solid wall would be constructed just north of the parking lot, along the edge of the 40-foot landscape buffer. The wall would most likely be constructed of architectural concrete, with a finish and color to be determined. Much of the wall would be concealed with a 4.5-foot-high sloped berm between the wall and the V Street sidewalk, planted with vegetation including trees, shrubs, and groundcover. A walking path with bench seating would be placed on the berm.

2.4.2 Population

As shown in Table 2-2, the proposed California Tower would accommodate approximately 2,364 employees, academic personnel, visitors, and patients.

Table 2-2. Existing and Projected Average Daily Population

	Existing East Wing	Proposed California Tower	Net Change
Employees (full time and part time)	1,152	1,402	250
Academic personnel	345	345	0
Visitors	256	256	0
Patients	111	361	250
Subtotal	1,864	2,364	500

2.4.3 Access and Circulation

The California Tower would be accessible from 45th Street and X Street. During construction, Emergency Department entry and ambulance drop-off would be temporarily re-routed. Emergency vehicles would enter the campus at X Street, turn north on 45th Street, and access the ambulance entry and drop-off area at the north side of the California Tower (Figure 2-4a). The construction of the California Tower would be east of the Davis Tower and its existing rooftop heliport and would have temporary impacts on the Davis Tower heliport operations. Temporary impacts include the eastern portion of the East Touchdown and Liftoff (TLOF) flightpath closing during the construction period due to the obstructions of the construction crane(s). The West TLOF should become primary for most helicopter operations. Due to the closure of the East TLOF flightpath, under certain wind conditions, larger aircraft may need to approach from the north during the construction period.

2.4.4 Helicopter Air Ambulance Operations

The two new helipads proposed for the California Tower would allow for increased access to the hospital for critical emergency hospital-related flights and to accommodate agencies such as the California Department of Forestry and Fire Protection, the National Guard, and other firefighting agencies that are changing their fleets in order to increase emergency response capabilities. The south helipad would be larger to allow for (infrequent) landing of Sikorsky Firehawk helicopters, which are much larger than the Airbus and Bell helicopters that currently land at the hospital. Under future conditions, approximately 15 percent of the hospital's helicopter traffic would be expected to land at the existing Davis Tower; 85 percent of the hospital's helicopter traffic would be expected to land at the California Tower. After construction of the California Tower is complete, it is anticipated that both existing helipads on the Davis Tower would remain, one for active operations and one relegated to backup use during maintenance of the other helipads. Additional information on helicopter operations can be found in Section 3.11, *Noise*, and Appendix C of this EIR.

2.4.5 Utilities and Energy

Electricity, heating, and cooling for the California Hospital Tower Project would be supplied from the CUP, with the exception of steam which would be provided by onsite boilers. Potable water is supplied to the campus from the City of Sacramento domestic water system, and wastewater from the campus is conveyed to the City of Sacramento combined sewer and stormwater facilities via existing facilities. Make-ready projects (described above) include relocation of site utilities.

2.4.6 Construction Timing and Staging

Construction of the project would occur in nine phases and take approximately 10 years to complete. The construction and demolition periods for the California Hospital Tower Project would take place between November 2021 and December 2031, and it is anticipated that that the East Wing would need to remain in operation until the new California Tower is complete and occupied. Table 2-3 shows the approximate construction timing for all project components. Figure 2-8 shows the construction logistics and crane placement, and Figure 2-9 shows the maximum crane elevations.

Table 2-3. Approximate Construction Timing of California Hospital Tower Project Components

Project Component	Approximate Start Date	Approximate End Date
Make-ready projects	**November 2021**	**September 2023**
Building #35 demolition	11/2021	4/1/2022
Off-site utilities	6/1/2022	9/1/2023
Underground tank install	7/1/2022	2/1/2023
Temporary ambulance area	12/1/2022	12/1/2023
PS5 construction	**March 2022**	**May 2023**
PS5 site preparation	3/7/2022	5/6/2022
PS5 grading	5/9/2022	6/27/2022
PS5 foundation and utility	7/8/2022	9/1/2022
PS5 facility erection and deck pour	8/29/2022	1/27/2023
PS5 asphalt and landscaping	2/1/2023	4/28/2023
PS5 coatings and finishing	3/27/2023	5/30/2023
California Tower construction	**February 2022**	**November 2030**
Site demolition and preparation	9/1/2023	8/1/2024
Foundations	8/1/2024	4/1/2025
Structural steel	2/1/2025	3/1/2026
Concrete and superstructure	4/1/2025	4/1/2026
Exterior skin	6/1/2025	6/1/2028
Interior buildout and paving	8/1/2025	3/1/2029
Building commissioning	5/1/2028	5/1/2030
Fit up, licensing, staff and stock	5/1/2030	11/1/2030
Surgery and Emergency Services Pavilion interior renovation	**February 2022**	**May 2024**
Central Utility Plant upgrades	**July 2023**	**January 2028**
East Main Hospital Wing demolition	**January 2031** (earliest date expected)	Demolition expected to be completed within 1 year of start date

PS5 = Parking Structure 5.

2.5 Sustainability

As stated in UC's Sustainable Practices Policy, the requirement for new buildings is to be at least 20 percent more efficient than Title 24 standards. In addition, UC Davis implements Green Building practices under the U.S. Green Building Council's Leadership in Energy and Environmental Design program (LEED). UC Davis is targeting to achieve LEED Silver Certification for all renovated and new buildings, including the California Hospital Tower Project. UC Davis has also committed to using Tier 4 engines for construction of the project.

PS5 would be a minimum of "Bronze" ParkSmart Certification with a stretch goal to Silver or Gold. ParkSmart certification was developed after parking garages were excluded from LEED certification; the program is intended to inform the design of parking garages to support advanced environmental sustainability across design, construction, and operations. Points toward certification can be earned in a variety of ways such as using regional materials and labor, utilizing reused/recycled materials, providing bicycle parking, and following specific cleaning procedures.

2.6 Anticipated Approvals and Permits

The Regents would be the lead agency under CEQA and would approve the project. UC Davis would lead coordination with external agencies such as the City of Sacramento, Sacramento Municipal Utility District, and other regulatory and utility providers. It would also lead coordination with neighborhood and community groups. The following agencies may be required to issue permits or approve certain aspects of the project.

- **California Department of Transportation (Caltrans; Responsible Agency).** To provide temporary access for construction within Caltrans rights-of-way and temporary variance from the East TLOF flightpath during construction.
- **Central Valley Regional Water Quality Control Board (Responsible Agency).** To provide waste discharge requirements for impacts on waters of the state and for the project's stormwater pollution prevention plan for construction/operation.
- **State Water Resource Control Board (Responsible Agency).** To provide coverage under General Construction Stormwater Permit.
- **Sacramento Metropolitan Air Quality Management District (Responsible Agency).** To comply with stationary source permitting requirements (e.g., Authority to Construct and Permit to Operate).
- **City of Sacramento (Responsible Agency).** Potential approval of roadway, helipad, bike path, and sidewalk improvements.
- **Sacramento Area Council of Governments** serves as the Airport Land Use Commission for Sacramento County.

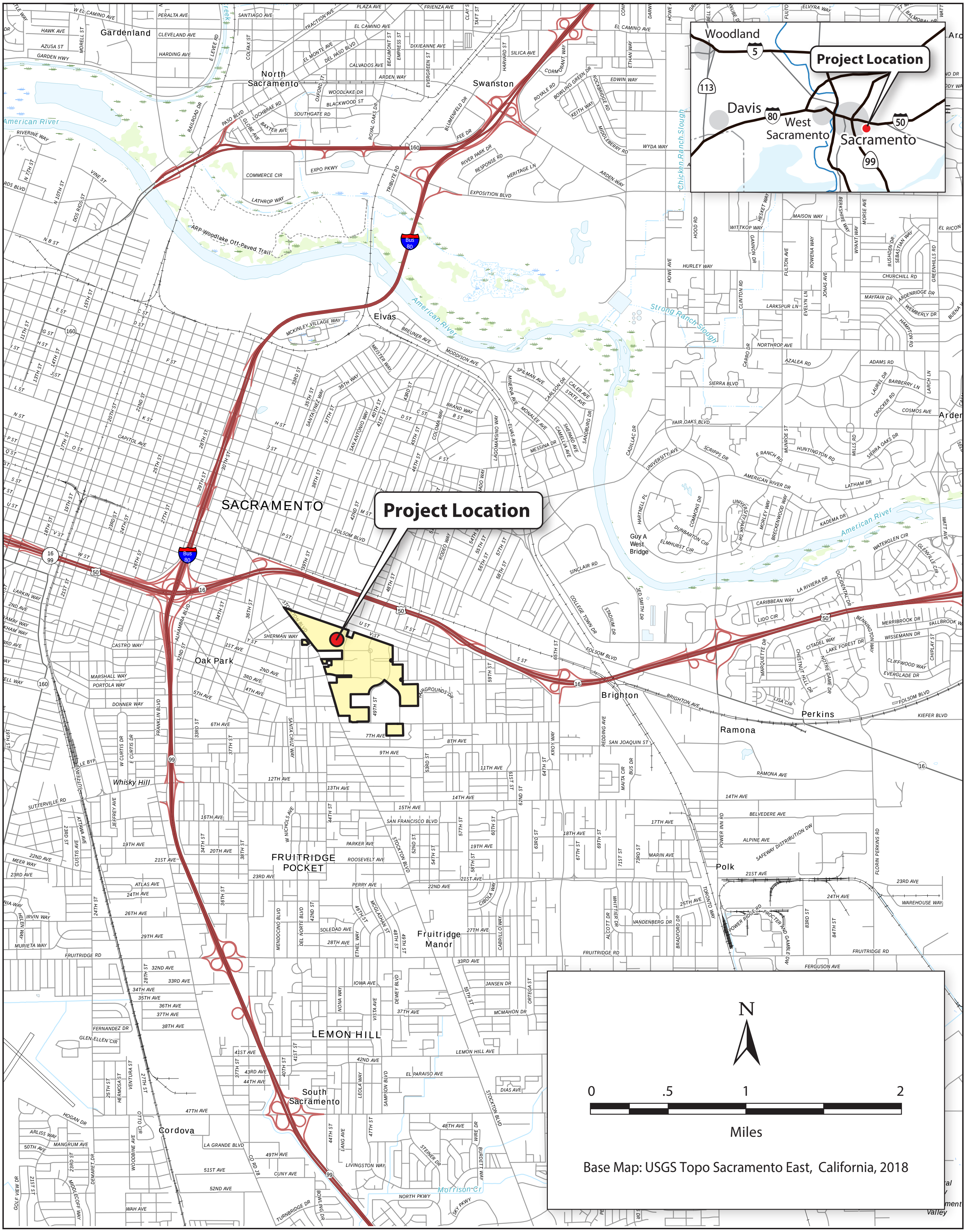

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Figure 2-1
Project Vicinity

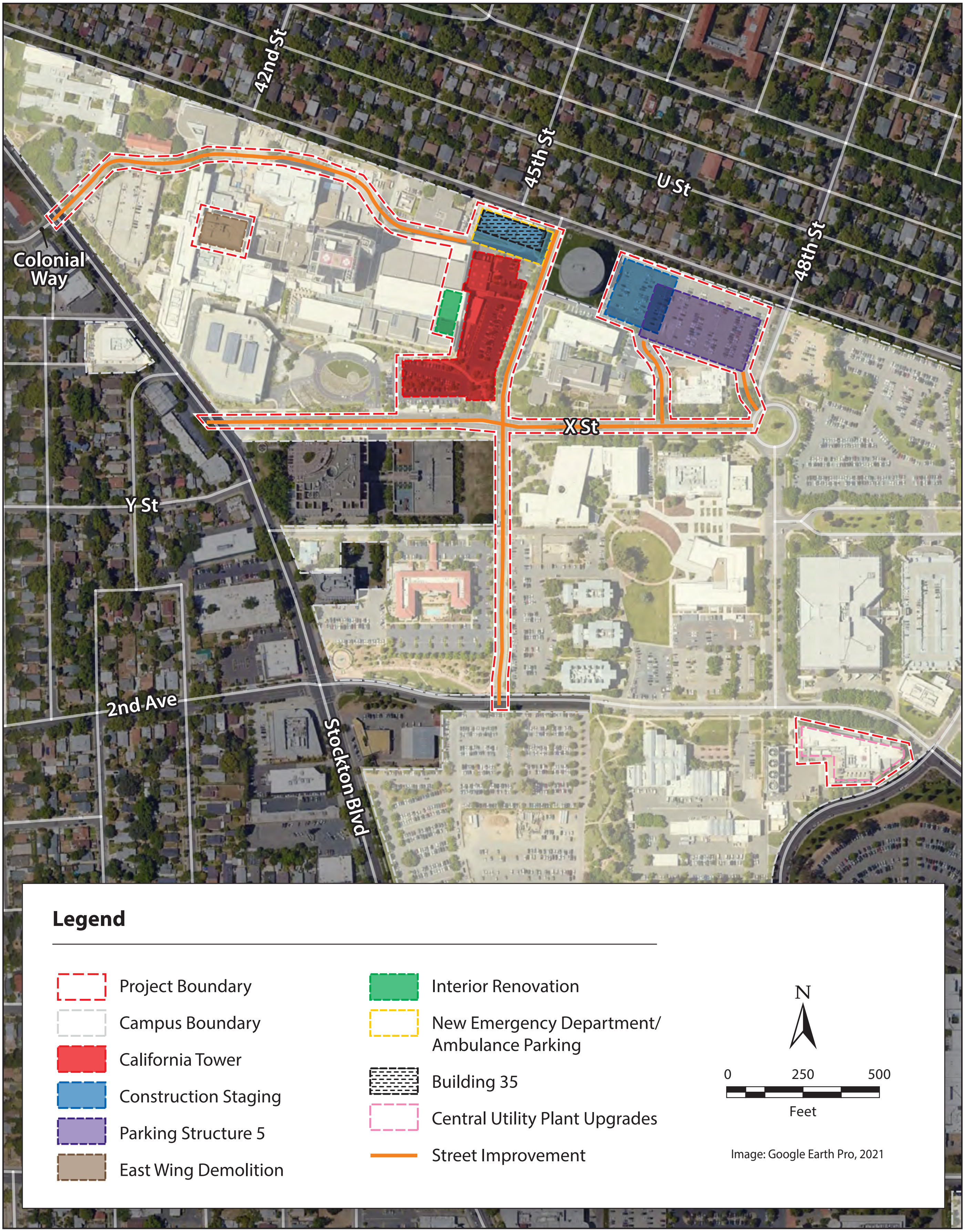

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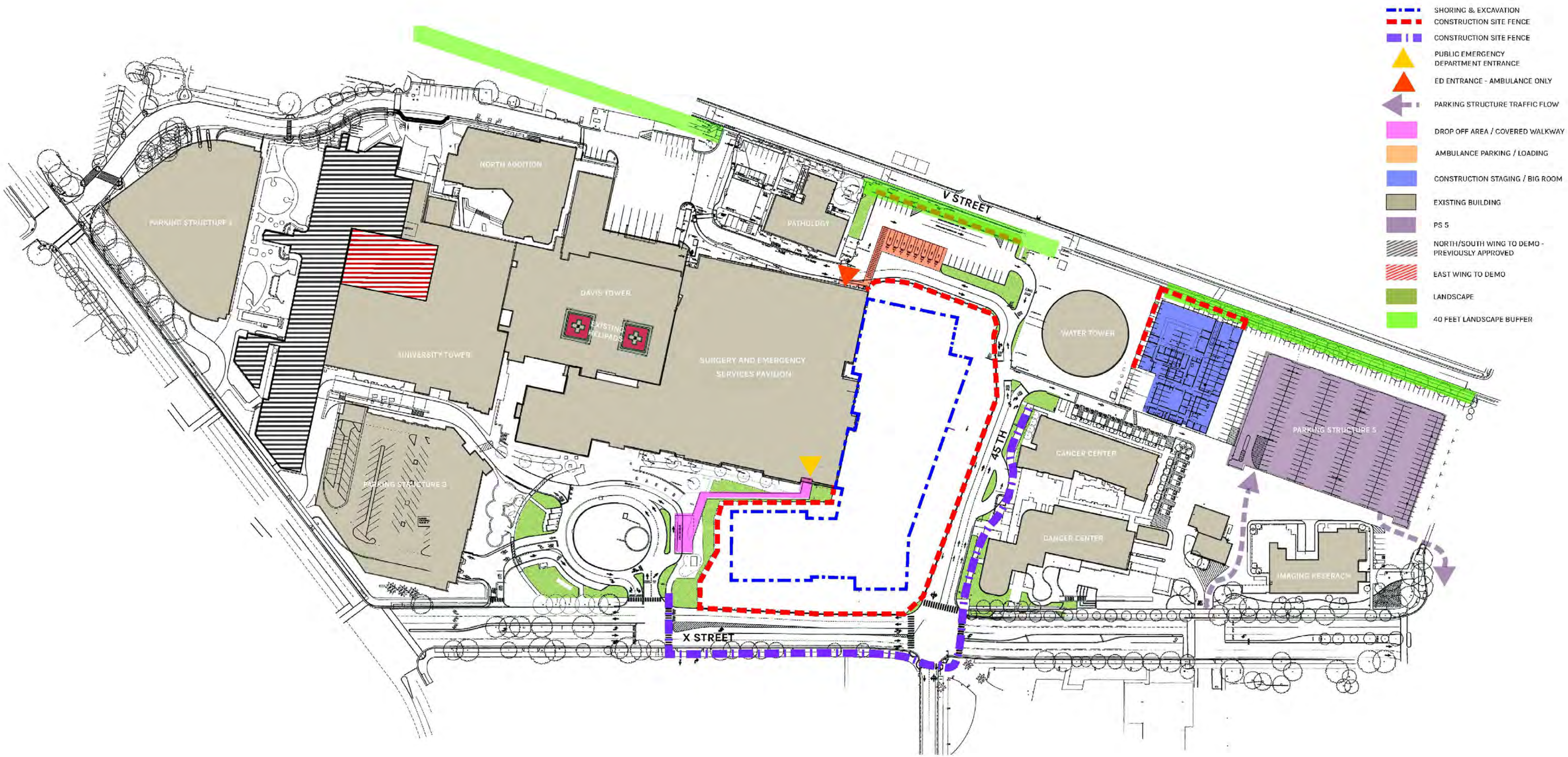
Figure 2-2
Project Components



Source: SmithGroup, 2021.

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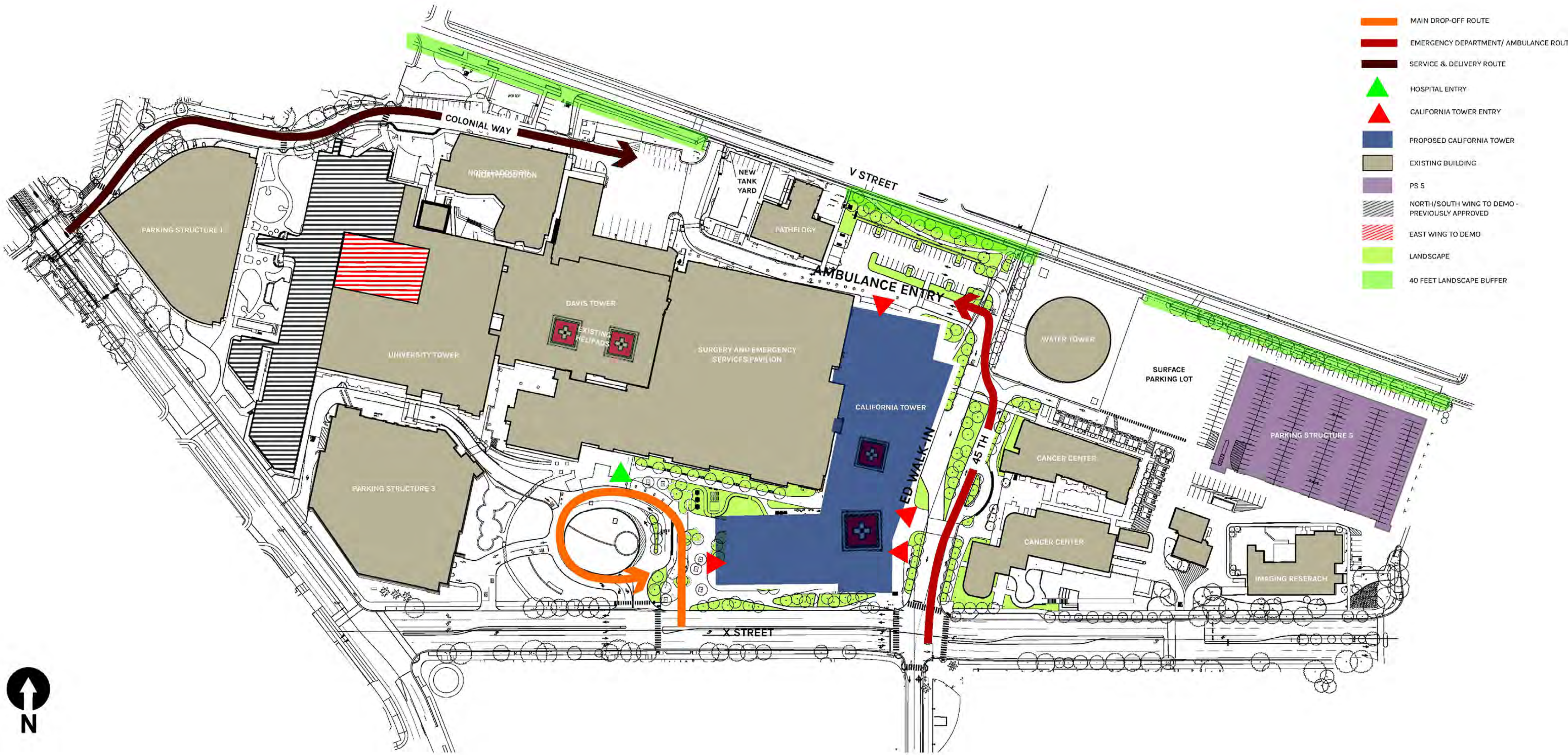
Figure 2-3
Interim Site Plan



Source: SmithGroup, 2021.

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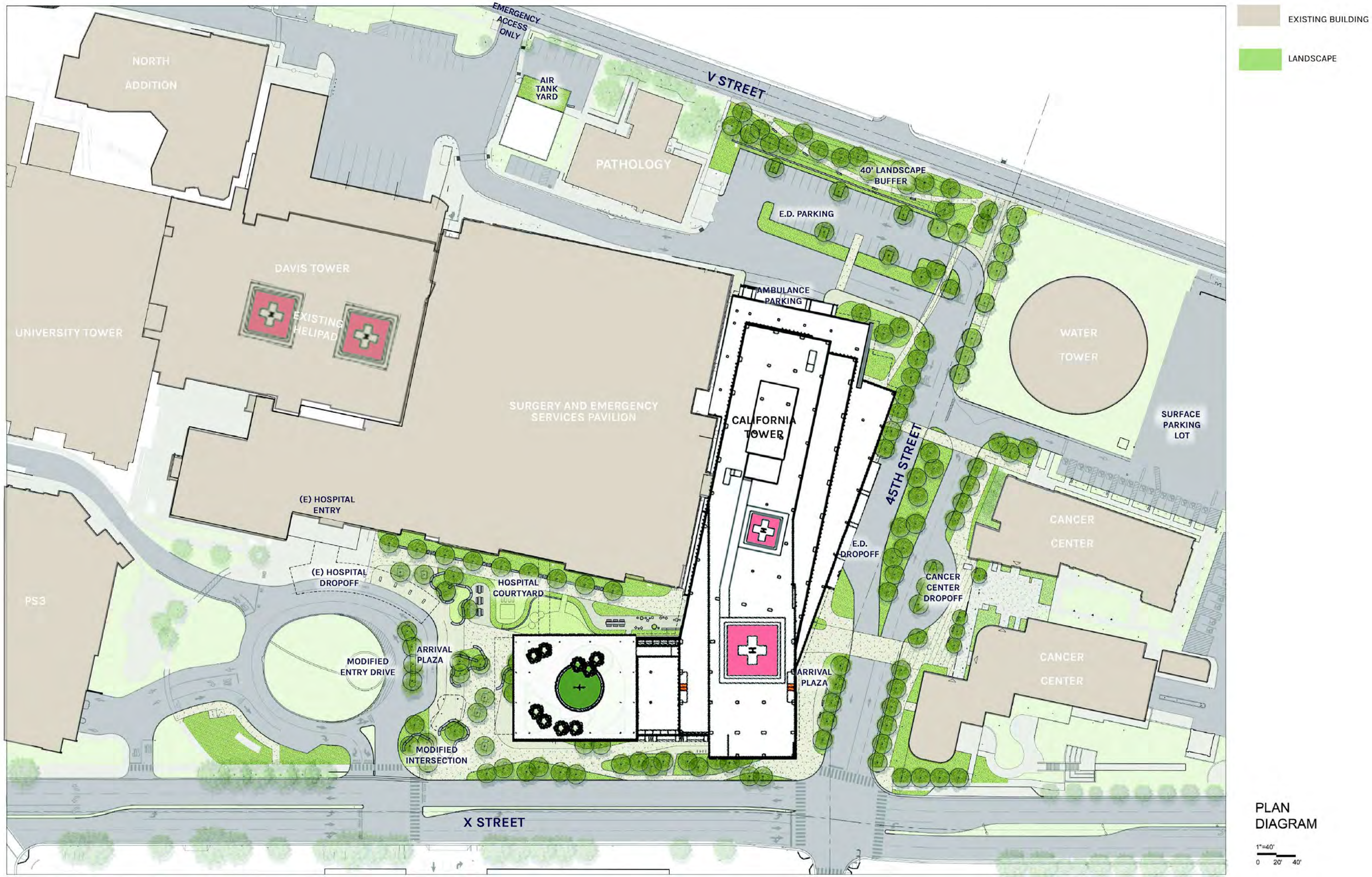
Figure 2-4a
Final Site Plan



Source: SmithGroup, 2021.

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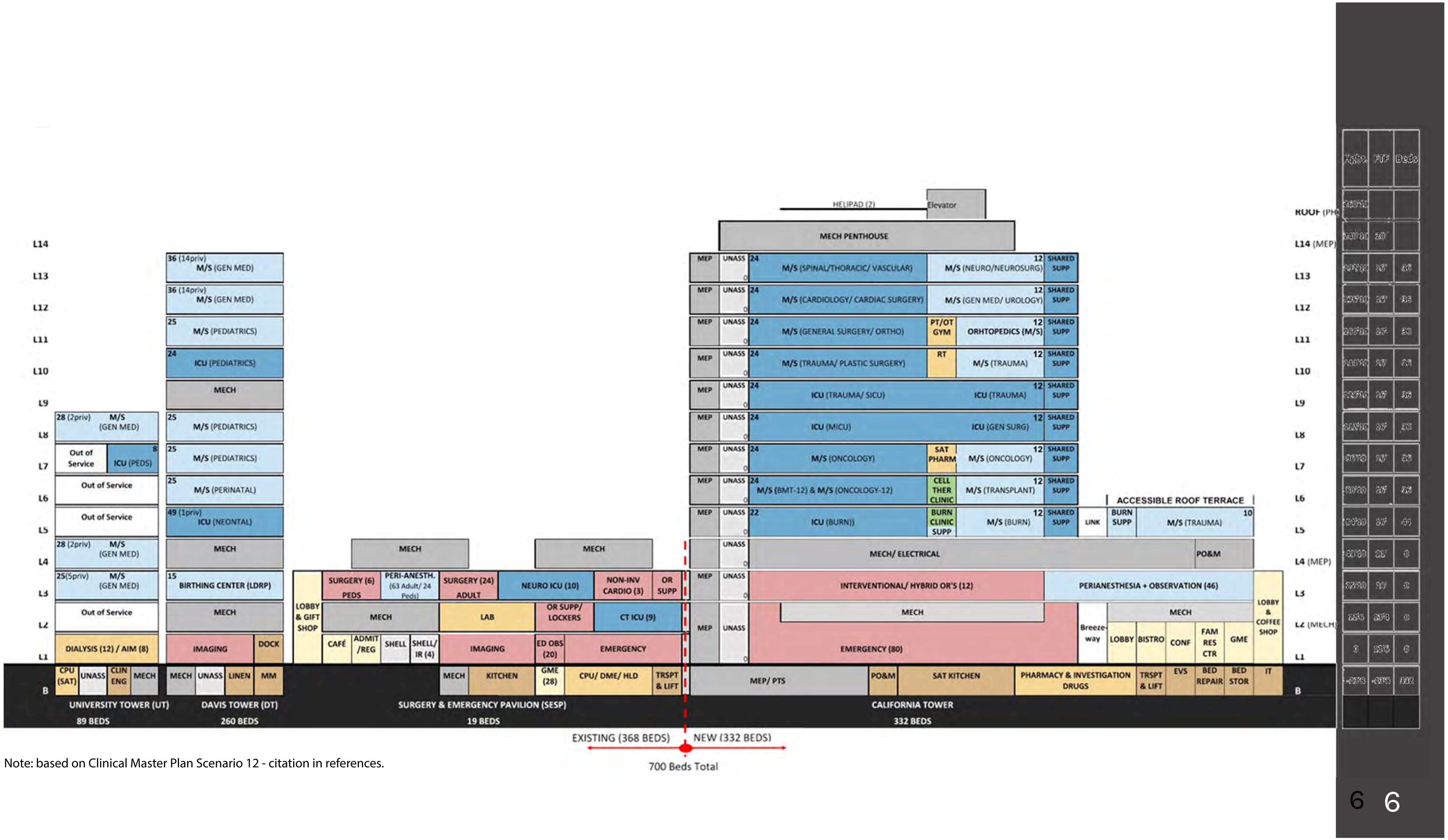
Figure 2-4b
Final Site Plan



Note: based on Clinical Master Plan Scenario 12 - citation in references.

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Figure 2-5
Conceptual Planning for Licensed Beds

South Elevation

East Elevation

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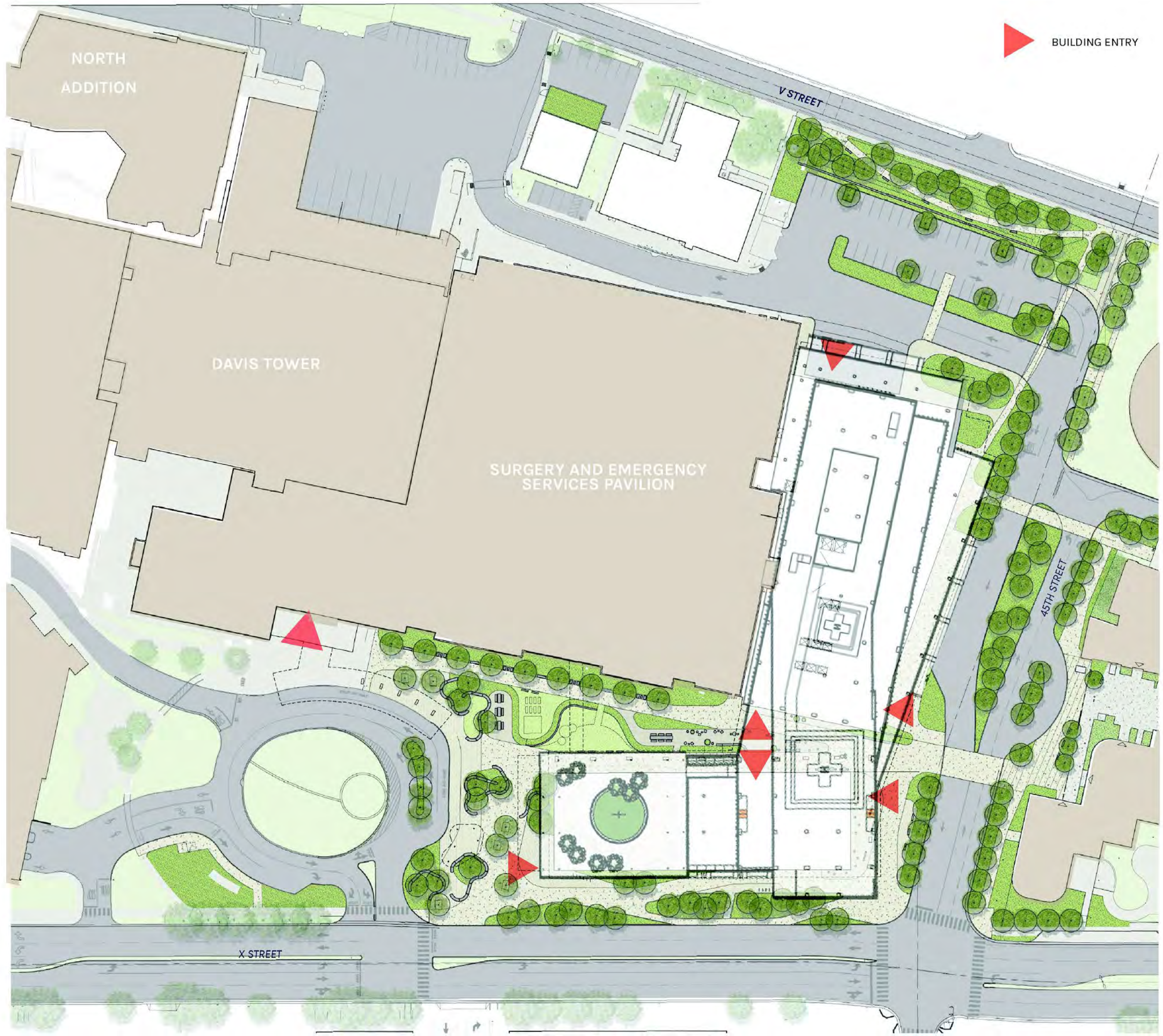
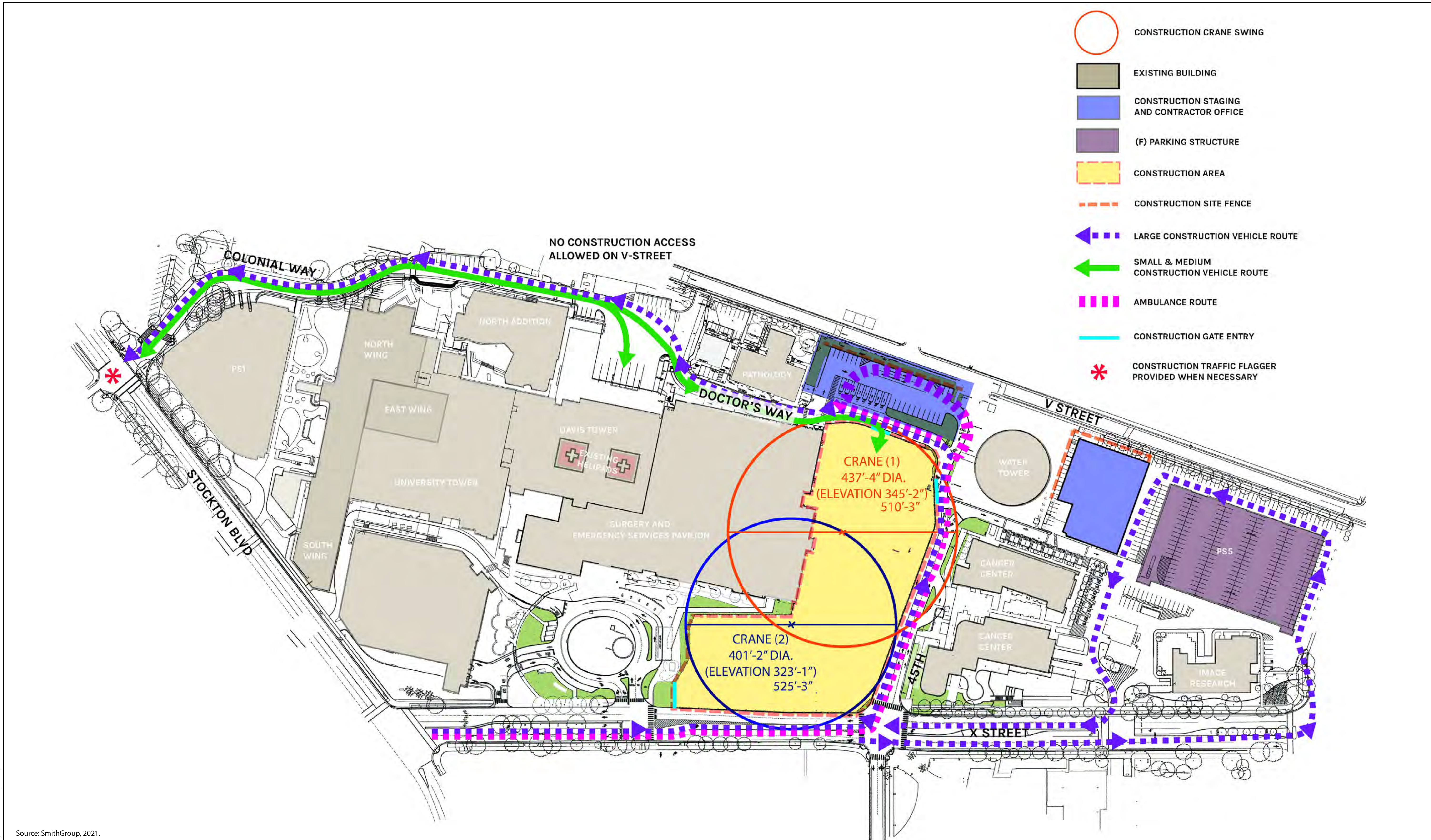
Figure 2-6
Renderings



Source: SmithGroup, 2021.

Figure 2-7
Landscape Plan



Source: SmithGroup, 2021.

Graphics ... 00643.19 (7/7/21) AB

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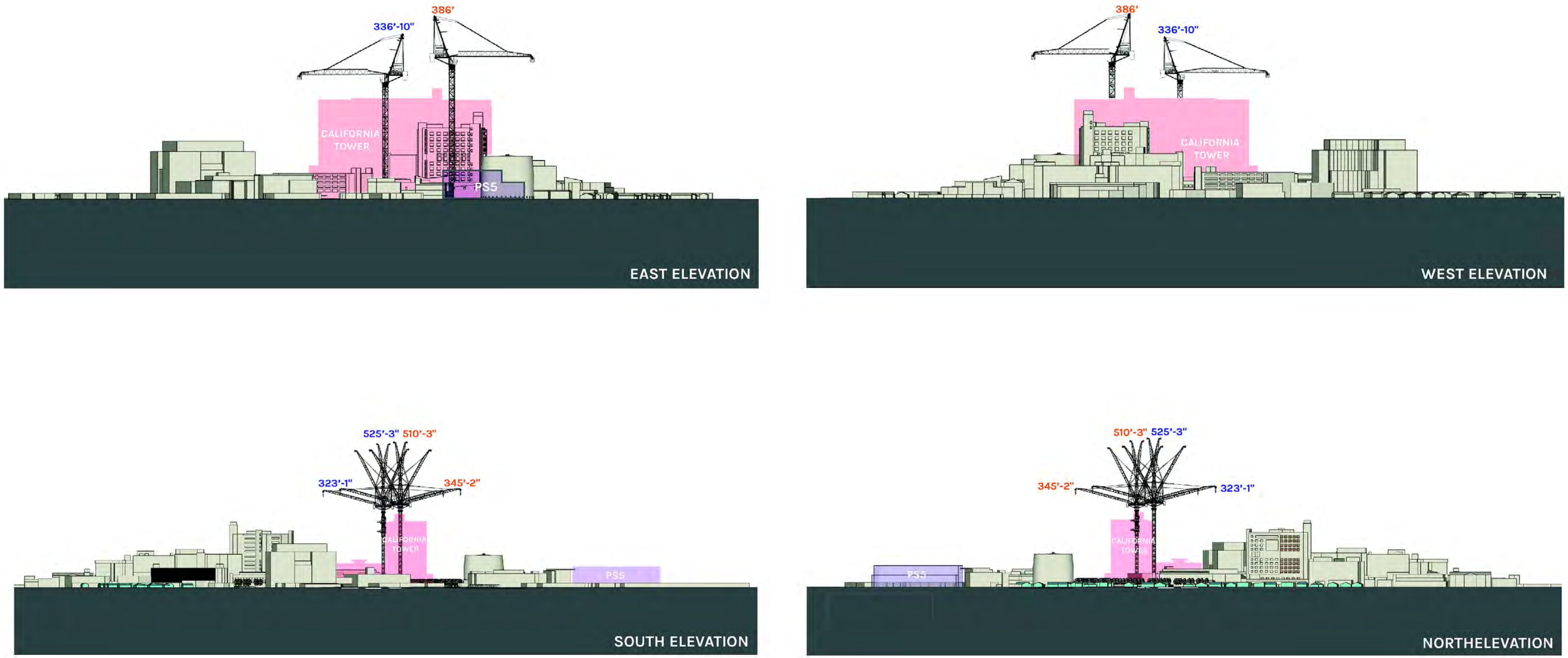
Figure 2-8
Construction Logistics Crane Placement



Source: SmithGroup, 2021.

Figure 2-9
Crane Elevations

Chapter 3
Existing Environmental Setting, Impacts, and Mitigation

3.0 Introduction to the Analysis

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

- Section 3.1, *Aesthetics*
- Section 3.2, *Air Quality*
- Section 3.3, *Biological Resources*
- Section 3.4, *Archaeological, Historical, and Tribal Cultural Resources*
- Section 3.5, *Energy*
- Section 3.6, *Geology, Soils, and Seismicity*
- Section 3.7, *Greenhouse Gas Emissions*
- Section 3.8, *Hazards and Hazardous Materials*
- Section 3.9, *Hydrology and Water Quality*
- Section 3.10, *Land Use*
- Section 3.11, *Noise*
- Section 3.12, *Population and Housing*
- Section 3.13, *Public Services*
- Section 3.14, *Recreation*
- Section 3.15, *Transportation and Circulation*
- Section 3.16, *Utilities and Service Systems*

Sections 3.1 through 3.16 follow the same general format as described below.

The *Regulatory Setting* includes the laws, regulations, plans, and policies that are relevant to each resource category. Regulations originating from the federal, state, UC, and regional and local levels are each discussed where applicable. Please see the discussion under *University of California Autonomy* below with respect to land use policies and municipal regulations.

The *Environmental Setting* presents the existing environmental conditions on the project site and vicinity as appropriate, in accordance with the State CEQA Guidelines (CCR Section 15125). This EIR uses the year 2019 as the baseline year to reflect existing environmental conditions. The extent of the environmental setting area evaluated (the study area) differs among resources, depending on the locations where impacts would be expected. For example, air quality impacts are assessed for the air basin (macroscale) as well as the project site and vicinity (microscale), whereas aesthetic impacts are assessed for the project site and vicinity only.

Environmental Impacts and Mitigation Measures identifies the thresholds of significance used to determine the level of significance of the environmental impacts for each resource category, in accordance with the State CEQA Guidelines (CCR Sections 15126, 15126.2, and 15143). The thresholds of significance used in this EIR are based on the checklist presented in Appendix G of the State CEQA Guidelines, best available data, and applicable regulatory standards of relevant public agencies. The thresholds may also reflect local policies adopted for the purpose of avoiding or reducing an environmental impact, particularly for impacts that may affect off-campus resources, even if UC Davis is not bound by such policies. Please see the *University of California Autonomy* section below. The level of each impact is determined by comparing the effects of the project to the environmental setting and the listed thresholds. Key methods and assumptions used to frame and conduct the impact analysis as well as issues or potential impacts not discussed further (such issues for which the project would have no impact) are also described. Project impacts are organized in each subsection by resource and number (e.g., Impact BIO-1, Impact BIO-2, Impact BIO-3, etc.). As shown below for Impact BIO-1, a bold-font impact statement, a summary table of each impact, and its level of significance precedes the discussion of each impact.

As stated in Chapter 1, Section 1.2, *Relationship to Long Range Development Plan,* the 2020 Long Range Development Plan (LRDP) Update Supplemental EIR was certified in November 2020. The Supplemental EIR contains programmatic analysis of all future projects that would be built on the campus through the year 2040 and includes mitigation measures that could apply to new projects on the campus. Where appropriate, existing mitigation measures for the LRDP are included in this EIR and labeled accordingly. For example, Mitigation Measure LRDP-AQ-1a from the 2020 LRDP Update Supplemental EIR would reduce impacts associated with the California Hospital Tower Project and is therefore included in Section 3.2, *Air Quality*. New mitigation measures developed specifically for the California Hospital Tower Project are labeled according to their impact number and do not include “LRDP” in their titles: Mitigation Measure AQ-2, for example, is a new mitigation measure associated with Impact AQ-2 of the California Hospital Tower Project.

The summary of impacts by component identifies where impacts may occur during one or more phases of the project, and further identifies where mitigation measures may be required during one or more phases of the project. This would enable UC Davis to make Findings for each separate project component as it is approved. For example, demolition of the East Main Hospital Wing may require mitigation to avoid impacts on bat species, where construction of Parking Structure 5 does not require mitigation to avoid impacts on bat species. In general, the components are analyzed qualitatively. Project phases are described in detail in Chapter 2, *Project Description*. The impact statement identifies the level of significance of the impact resulting from the project as a whole. The abbreviations are used in these summary tables are the same as in the Executive Summary table.

- NI = no impact
- LTS = less than significant
- S = significant
- SU = significant and unavoidable

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

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

3.0.1 Terminology Used in the EIR

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

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

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

Less than Significant with Mitigation: A project impact is considered less than significant with mitigation if it results in a substantial adverse change in the physical conditions of the environment, but mitigation measures would reduce the impact below the thresholds of significance.

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

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

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

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

a) avoiding the impact altogether by not taking a certain action or parts of an action;

b) minimizing impacts by limiting the degree of magnitude of the action and its implementation;

c) rectifying the impact by repairing, rehabilitating, or restoring the affected environment;

d) reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action; and

e) compensating for the impact by replacing or providing substitute resources or environments.

3.0.2 University of California Autonomy

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

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

3.1 Aesthetics

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

In response to the Notice of Preparation for this EIR, commenters expressed general concerns related to aesthetics. The following concerns specific to the California Hospital Tower Project were expressed.

- Parking structures abutting V Street in the Elmhurst neighborhood and use of building height step backs and building edge setbacks from V Street with adequate buffer landscaping to keep homes from being overshadowed.
- Suggestion that the California Hospital Tower Project have gradual height increases from V Street with a neighborhood-friendly design.
- Design features and landscaping to keep light from the garage itself and lights from cars in the garage from impacting residents on V Street.

3.1.1 Existing Conditions

Regulatory Setting

University of California

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

UC Davis Sacramento Campus 2020 Long Range Development Plan Update

The *UC Davis Sacramento Campus 2020 Long Range Development Plan Update* (2020 LRDP Update) is a planning document for the Sacramento Campus "that anticipates population growth and establishes the land use patterns and relevant policies to guide implementation of facilities and infrastructure as the campus evolves." The 2020 LRDP Update includes the following relevant planning principles related to aesthetics (University of California, Davis 2020a):

> **Principle #2: Enhance Campus Public Realm and Landscape Character**
>
> Recent investments and improvements have created a strong public realm core on the Sacramento campus, centered on the Vanderhoef Commons in the Education Core district, and expanding into the Naturalized Open Space that runs north-south adjacent to the Facilities Support Services Building, and a handful of other smaller interventions such as the "parklet" associated with the North Addition office building. These robust public realm moves provide a strong foundation for continued

improvement in the amount and character of intentional landscape space on campus with anticipated program growth and facility renovation. Components of the open space strategy include:

- Complete a network of comfortable landscaped spaces across campus that are connected by pedestrian-oriented trails and walkways, allowing for the ability to traverse campus safely on a primarily off-street route with supporting amenities including pedestrian-scaled lighting and seating.
- Cultivate a "healing landscape" across campus, using the design of the outdoor environment to support the physical and mental wellbeing of patients, visitors, students, staff, and the community.
- Create a new green public space in the Hospital District with the demolition of the North-South wing, which will serve as both a generous pedestrian entrance to campus and an amenity for the patients, visitors, staff, and students who occupy the hospital district.
- Connect the campus-focused public realm with existing public green spaces including Cancer Survivor's Park and the community garden to better integrate them as usable space.
- Create an "urban street" pedestrian corridor running north-south along 45th Street including the 45th Street extension into Aggie Square, which provides generous paved pedestrian realm, landscape, lighting, and other amenities, and direct connection with active ground-floor uses on the buildings that line 45th Street.
- Create a public realm focus for the south half of campus centered in the Research and Partnerships district, anchored by a market square at Stockton Boulevard and 3rd Avenue and the Aggie Square Plaza at 45th Street and 3rd Avenue.
- Continue the strong landscape treatment of major roads and open space areas to provide shaded areas sidewalks for pedestrians with at least no net loss of trees and contribute to the City of Sacramento goal of 40% tree canopy coverage.
- Create a network of secondary building-related courtyards with amenities such as benches and shade, to provide an outdoor destination for patients, visitors, students, faculty, and staff.
- Create a continuous landscape edge around the portions of campus that abut residential neighborhoods, which will buffer neighbors from campus facilities and operations and provide a green amenity for the surrounding.
- Include green infrastructure elements in the design of public realm landscapes, such as permeable paving, bioswales, stormwater capture and infiltration, and other measures.

Principle #4: Improve Pedestrian Connections throughout the Campus

All areas of campus will be improved for better pedestrian access. The public realm network will provide the backbone of the connected system. Pedestrian walkways and tree-lined sidewalks will provide additional connections and will ensure safe, comfortable, and efficient ways to move throughout the campus without needing to drive.

These pedestrian connections will have a consistent treatment including shade, paving, and plant treatments to orient pedestrians and provide clear direction along the path of travel.

Building entries will be aligned to support these pedestrian connections and to make using them the easiest way to move around campus. Amenities such as benches, good lighting, and wayfinding will support this system.

As noted in the preceding section, patient access will be designed to be clear and convenient, requiring minimal walking from parking and transit access, and with parking located in close proximity to the hospital and other clinical destinations. Pedestrian connections between parking areas and treatment facilities will be generous, comfortable, and highly visible.

Principle #5: Provide Attractive Campus Entries and Edges

A number of different entries and entry types for the various members of the campus community and the modes in which they arrive:

- Pedestrian scaled
- Bike oriented
- Transit connections
- Vehicular entries

Each requires different treatment including scale of the travel paths, signage, and landscape, but all should clearly delineate an entry into a special place and be easy to orient toward from the surrounding area.

While pedestrians are able to use any of the various entries to campus, those that are pedestrian-focused will have special scale and character. There are two main pedestrian-focused entries to campus off of Stockton Boulevard: at the new green space in the hospital district between Parking Structure 1 and the hospital, and at 3rd Avenue into the Market Plaza at Aggie Square. Other pedestrian-focused entries will be from V Street, at 45th Street, 48th Street, and 49th Street. Entries of this scale and focus should have generous landscaping as well as pedestrian-scaled signage to orient people to the path of travel.

While the City of Sacramento plan is to create continuous connectivity for cyclists along Stockton Boulevard, a large proportion of cyclists accessing campus will do so from other routes. Primary entry points for cyclists connecting to the local and regional bicycle network will be along 2nd Avenue, 49th Street both at V Street and Broadway, and 48th Street at V Street. Important considerations at bicycle entries will be seamless connectivity to bike routes on and off campus, bicycle-scaled signage, and separation of modes to prevent conflict with pedestrians and vehicles.

Transit vehicles accessing campus will generally use the same entry points as private vehicles; however a transit rider's first experience of campus will be where they disembark. The Mobility Hub on 45th Street as well as the connection along 48th Street to the light rail station should both be considered campus entry points. Larger-scaled signage and markers, such as a beacon sign or special landscaping, will indicate arrival and welcome visitors to campus, and pedestrian-scaled signage and wayfinding with general orientation material will help people navigate to their destinations.

There are two scales of vehicular entries: primary entries that are iconic and oriented toward the occasional visitor, and secondary that are clearly navigable but more comfortable for those who come to campus regularly. Entries scaled for private vehicles should also be welcoming for pedestrians.

Primary vehicular entry will be focused at Stockton Boulevard and X Street, with the most direct access to the hospital and ambulatory care facilities and associated parking from the north and west, and Broadway and 50th Street, for access to the ambulatory care facilities from the south and east. These primary vehicular entries should be adequately demarcated with consistent signage and building or landscape treatments to help orient first-time and infrequent visitors as they approach campus.

Secondary vehicular entry will happen at V Street and 49th Street, with direct access to staff parking and the ambulatory care facilities, Stockton Boulevard and 3rd Avenue, with direct access to Aggie Square and the associated parking structure, and Broadway and 39th Street, with convenient access to the Inpatient Rehabilitation Hospital, Governor's Hall, and the Institute for Regenerative Cures.

The Sacramento campus directly adjoins residential neighborhoods along the north and east sides. On these edges, wherever possible, the campus will maintain a landscape buffer. As explained in the following 2020 Land Use Plan section, buildings on the campus edges will be limited in height. In combination with the landscaped setbacks, this will provide a visual and physical transition from the smaller-scaled residential neighborhoods to the campus. In the Hospital land use along V Street, some existing buildings currently within the 40 feet buffer may remain until redeveloped.

Along Stockton Boulevard, the new community-oriented uses within Aggie Square will help integrate the campus into the existing urban fabric and provide a new front facing entry along the commercial corridor.

The Land Use Plan section of the 2020 LRDP Update identifies that the majority of the proposed project falls within Hospital land use category. The exception is the proposed Parking Structure 5 (PS5), which falls in the Parking Structure land use category. A campus-wide base-case building height maximum is set at 200 feet, not inclusive of mechanical penthouses and other ancillary roof uses. The Hospital land use category also identifies that a 40-foot minimum landscape buffer (i.e., the Landscape Buffer land use category) will be installed along V Street in the hospital area and that beyond the 40-foot buffer, building heights will conform to the following step-backs to address building heights next to the residential community along V Street.

- 0-40 feet from edge of campus: buffer (zero height).
- 40–100 feet from edge of campus: 40-foot maximum height.
- 100–180 feet from edge of campus: 75-foot maximum height.

In addition, the Land Use Plan states that some existing buildings within the Hospital land use category and currently within the 40-foot buffer may remain until redeveloped.

The Parking Structure land use category ensures that surface parking will continue to be consolidated into parking structures, minimizing the impacts of surface parking lots. The Landscape Buffer land use category provides a setback between the campus and adjoining neighborhoods to the north and east. The buffer is intended to be a minimum of 40 feet wide and attractively landscaped. The buffer is also intended to provide an amenity to the community by contributing to green infrastructure and including pathways, shade, lighting, and seating.

UC Davis Sacramento Campus 2020 Physical Design Framework

The *UC Davis Sacramento Campus 2020 Physical Design Framework* (2020 Physical Design Framework) accompanies the 2020 LRDP Update and provides planning and design guidance for site and architectural designers and consultants working on Sacramento Campus projects. There are four campus-wide systems or “frameworks” that make up the structure for future development and redevelopment: the Public Realm Framework, Mobility Framework, 45th Street, and District Framework. All of these frameworks apply to the proposed project and include measures to ensure that the campus includes pedestrian-friendly public spaces and streetscapes that are well-designed and well-landscaped to create a sense of place and space, create campus gateways and landscape buffers, provide shade and site amenities, contribute to the urban forest, and create aesthetically pleasing built and natural landscapes. The proposed project falls within the Hospital District, which includes the following relevant design objectives and principles that are related to aesthetics (University of California, Davis 2020b).

Hospital District Objectives

Planning Objectives

- Support 45th Street as an urban corridor and connection to the south end of campus, as well as a connection point to and from the adjacent Patient Care District. Provide ample setbacks to accommodate wide pedestrian paths and amenities, and animate the ground floor of new and renovated buildings along this corridor with visible activity, even if direct access is not feasible. Manage pedestrian-vehicular conflicts, particularly at the north end of 45th Street, to safely accommodate ambulance and servicing access and maintain pedestrian connections to the Cancer Center and Patient Care District.

- Create and enhance clear, direct, legible, entries to the campus and district along Stockton Boulevard, X Street, and V Street, and strengthen visual and physical connections to buildings from all forms of transport. Increase visibility from Stockton Boulevard by ensuring new buildings address the street, and creating a new statement landscape between PS 1 and PS 3. Clarify the pedestrian connections to PS3, and to the transit zone on X Street. Preserve and enhance safe pedestrian connections across Stockton Boulevard at Sherman Way.
- Consolidate servicing of buildings from the east and west to reduce conflicts with pedestrians, and complete the buffer along the northern edge connections to the Elmhurst Neighborhood. Where service access is necessary through and adjacent to major public spaces such as the new hospital green, routes should be designed with care to prioritize safety and comfort of pedestrians while maintaining critical access.

Landscape Objectives

- Develop the new hospital green as a major landscape space that is cohesive while providing a variety of experiences for the diverse population of the hospital district. Focus on wellness and healing, both mental and physical, and create easily accessible spaces for quiet repose, relief from hospital work, stay, and procedures, space to wait for loved ones, and other group and solitary uses. In addition to patient and family healing, staff and students often work long shifts and need spaces for respite and quiet discussion, along with the ability to travel seamlessly to other parts of campus. A service access route from Stockton to the hospital loading dock through the center of this space may be necessary; if so, it should be designed in a way that prioritizes pedestrian access and comfort while retaining critical access routes. Strategies may include gate-restricted access for approved vehicles only; plaza-like treatment for roadbeds with concrete or other durable material that is flush with pedestrian surfaces; clearly demarcated pedestrian crossing points; and other strategies to reduce vehicular speed and increase visibility and safety of pedestrians.
- Preserve a safe, intuitive, and comfortable pedestrian connections from the hospital to surrounding districts, especially direct connections to the Education Core and the Patient Care Districts.
- Create statement landscapes at campus entries along Stockton Boulevard. Make the new pedestrian entrance at Stockton Boulevard and Sherman Way a welcoming expression of campus identity by incorporating a trellis, arbor, or other similar vertical element. Enhance the X Street entrance landscape at Stockton Boulevard, and update signage as part of a coordinated campus-wide wayfinding strategy.
- Enhance the landscape buffer along V Street as the district redevelops to close gaps, and to provide amenities for campus and the surrounding community including walking paths, shade, seating, art, and stormwater infrastructure.
- Enhance indoor–outdoor connections with a series of building-related courtyards, including stronger connections to the hospital café patio and the new hospital green.

Architectural Objectives

- Maintain direct connections both through buildings and to building entries with additions and demolitions.
- Celebrate entries with distinct architectural treatments to aid in identity and wayfinding, and provide open and generous lobbies for casual meetings, waiting for transport or patients, connections from outside spaces, hospital café, and other lobby spaces.

- Design public spaces to balance comfort and security.
- Create inspirational architecture in sites with high visibility such as major intersections and entry points to elevate the image of the Medical Center as a cutting-edge institution.

Resiliency and Materiality

This section of the 2020 Physical Design Framework provides an approach to materials and design to create continuity and consistency across the campus. These building and landscape elements apply to new and refurbished buildings and landscapes across campus. Because all of the elements within this section would affect the look of the campus, all of these elements apply to aesthetics. However, the major themes of these elements include the following.

- Applying a targeted use of façade coloring and materials that promote high-quality aesthetics while reducing glare,
- Providing shaded areas, included shaded seating,
- Using high-quality materials that maintain their appearance,
- Screening service areas in an aesthetically pleasing manner,
- Creating aesthetically pleasing pathways, public spaces, and naturalized spaces,
- Installing site furnishings that complement building and landscape design,
- Designing lighting for comfort and ambiance while minimizing glare and light pollution,
- Designing landscaped spaces to balance hardscape and softscape features to create beautiful spaces, and
- Utilizing public art and water elements to create points of interest.

UC Davis Health Campus Design Guidelines

The *UC Davis Health Campus Design Guidelines* (Design Guidelines) contain guidelines for such features as concrete, masonry, finishes, site furnishings, electrical, and exterior improvements. Section 26.51.10, *Exterior Lighting,* of the Design Guidelines specify that exterior lighting fixtures shall be LED type with a color temperature of 4,000 Kelvin (K). In addition, this section specifies that "all fixtures shall be designed to minimize light pollution and glare, while meeting the light distribution requirements for a given area. A designation of full cutoff shall be considered, but not the sole criteria in evaluating a fixture's ability to minimize light pollution and glare" (University of California, Davis 2021).

Federal and State

There are no federal plans or policies addressing aesthetics that pertain to the California Hospital Tower Project. In addition, there are no eligible or officially designated State Scenic Highways near the UC Davis Sacramento Campus (California Department of Transportation 2019).

Regional and Local

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

City of Sacramento General Plan

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

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

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

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

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

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

Environmental Setting

The study area for aesthetic resources—also referred to as the "area of visual effect" (AVE)—is located within an urbanized area. The physical context in which a proposed project would be located is a key consideration when analyzing whether the project would have significant impacts on aesthetic resources. Identifying a project area's aesthetic resources and conditions involves the following three steps.

- Objective identification of the aesthetic features (i.e., visual resources) of the landscape, including whether there are any designated scenic vistas or state scenic highways.
- Assessment of the character and quality of those resources relative to overall regional visual character.
- Determination of the importance to people, or sensitivity, of views of aesthetic resources in the landscape.

Concepts and Terminology

Aesthetic resources are the visible components of the natural and built environments in the study area. Aesthetic resources include all objects (artificial and natural, moving and stationary) and features (e.g., landforms and water bodies) visible on a landscape. These resources add to or detract from the scenic quality of the landscape (i.e., the visual appeal of the landscape).

Identifying a study area's aesthetic resources and conditions involves understanding the visual character of the area's visual features and the regulatory context. Once those parameters are understood, a study area's aesthetic resources are further defined by establishing the AVE and documenting the visual character of the environmental setting, including the natural and built environments. For the purposes of this section's analysis, the study area and AVE are synonymous. The affected population, or viewers, are defined by their relationship to the study area, their visual preferences, and their sensitivity to changes associated with the changes. Visual preferences, or what viewers like and dislike about the AVE's visual character, define the AVE's visual quality.

- "Visual character" includes attributes such as form, line, color, and texture and is used to describe, not evaluate, the visual environment; that is, these attributes are neither considered good nor bad.
- "Visual quality" is used to describe what viewers like and dislike about the visual resources that compose a particular scene and is expressed in terms of natural harmony and built environment.

Visual quality serves as the baseline for determining the degree of visual impacts and whether a project's visual impacts would be negative, beneficial, or neutral (Federal Highway Administration 2015:5-1–5-5).

Regional Character

The project region lies in the Sacramento Valley of northern California, within the city of Sacramento. The easternmost portion of the region is characterized by the Greater Sacramento Metropolitan region and the agricultural lands and rangelands that lie south of U.S. Route 50. The westernmost portion of the region primarily consists of the growing city of West Sacramento and outlying agricultural lands, which include the Yolo Bypass. The landscape pattern is influenced by development sprawling from the cores of existing cities and the major roadways, such as Interstates 5 and 80, U.S. Route 50, and State Route 99. The region primarily supports developed, industrial, agricultural, and open space land uses. In addition to numerous creeks and irrigation channels, major water bodies in the region include the American River, Sacramento River, Deep Water Ship Channel, Yolo Bypass when flooded, Lake Natoma, and Folsom Lake.

Project and Vicinity Character

The Sacramento Campus is in the city and county of Sacramento. Figure 2-1 identifies the project vicinity, and the project components and site plans are identified in Figures 2-2,2-4a, and 2-4b, respectively. Figure 3.1-1 depicts the overall project site and the locations of key view photos taken of the project site. Photos taken from these representative key viewpoints are shown in Figures 3.1-2 and 3.1-3.

The Sacramento Campus is located 2.5 miles southeast of downtown Sacramento on Stockton Boulevard between V Street and Broadway in east Sacramento. The 146-acre campus is surrounded by low- to medium-density traditional residential neighborhoods and regional commercial uses. The Elmhurst neighborhood, which consists primarily of single-family homes, lies north of V Street and the campus. To the west is the North Oak Park neighborhood, which consists of a mix of single-family and multi-family residences. These neighborhoods are characterized as pre–World War II traditional neighborhoods. The Fairgrounds neighborhood southeast of the campus consists primarily of single-family and multi-family residential uses. Several public institutions and commercial uses are located between the southern edge of the campus and Broadway and continue south of Broadway and west of the campus along Stockton Boulevard. As identified in *Regulatory Setting*, there are no State Scenic Highways near the campus (California Department of Transportation 2019). In addition, due to the amount of development and landscaping associated with the project site and vicinity, there are no scenic vista views associated with the project site.

The campus currently includes medical facilities and support buildings, roadways, parking lots, and landscaping. Buildings on the project site range in height from 1 story to 14 stories. In addition to surface parking lots, there are three aboveground parking structures with three and four levels. A City of Sacramento circular aboveground water tank is present on V Street adjacent to the Sacramento Campus. Open spaces are vegetated with nonnative grasses, mature trees, and shrubs. The Sacramento Campus's existing built environment has a visual character that is generally typical of a hospital and medical center campus. The existing campus buildings date to as far back as 1916 and include buildings of various ages and architectural styles. The most visually prominent building is the 13-story Davis Tower, which is part of the main hospital. Many of the buildings are painted with off-white and muted brown tones and have gray or red-tiled roofs. Some buildings display an industrial look and utilitarian quality. The entire campus cannot be viewed from a single offsite vantage point due to the flat topography and the presence of off-campus buildings and street trees. However, portions of the campus are visible from nearby residential neighborhoods, public roadways, and commercial buildings.

The East Wing demolition site is located adjacent to the previously approved North/South Wing demolition area. This site is largely screened from public views by campus buildings and landscaping. However, the site can be seen from within the campus, when in close proximity to the site.

The California Tower site is flat, with paved, car-filled parking lots and accent plantings. There are no structures on the existing site, but the area surrounding it is built-out with medical buildings associated with the campus. The color of the site is dominated by dark gray asphalt paving, with trees, shrubs, grasses, and bark mulch providing green and brown accents. The multi-story buildings and dense perimeter trees surrounding the site create the enclosed character of the project site.

The PS5 site is also a large, paved parking lot filled with cars and lined with trees on two sides. With the low-scale buildings set back from the site by some distance, the character is expansive and flat. The only vertical elements are light standards and trees around the edge. Site colors are the gray of the asphalt and the various colors of the cars.

The Building #35 demolition site/temporary ambulance area contains a group of vacant buildings. In addition, security fencing with green security slats is located between the temporary buildings and the sidewalk along V Street. Trees and a grassy median line 45th Street, east of the temporary buildings.

The California Tower, PS5, and temporary ambulance sites are currently visible from local streets, including 45th, 48th, V, and X Streets and Colonial Way. They are also visible from the adjacent medical buildings near the three project sites (Figure 3.1-2, Key View 1), and the Elmhurst neighborhood north of V Street (Figure 3.1-2, Key View 2a and Figure 3.1-3, Key Views 2b and 2c). As seen in these key views, existing buildings, and mature landscaping obscure large portions of the California Tower and PS5 sites.

The project site is well-lit by street and parking lot lighting, exterior building lighting, light coming from building and parking garage interiors, lighted signage, and bollard lighting along certain pedestrian pathways. Lighting levels in the residential areas north of V Street are lower than the campus lighting levels due to the residential land uses, denser tree cover that filters light, fewer streetlights, and less light emanating from building interiors.

Overall, the built environment of the project site and project vicinity consists of well-planned land uses that serve the medical campus. Although some of the buildings differ in age and architectural style, campus buildings are well-maintained and contribute to an orderly built environment. Similarly, the natural environment associated with the project site and project vicinity consists of well-manicured lawns, ornamental grasses, shrubs, and trees that provide aesthetic relief, seasonal visual interest (e.g., flowers and fall colors), and shading. This landscaping helps to create a pedestrian-friendly environment and also helps to reduce the apparent scale of nearby buildings. The resulting visual quality is moderately high due to the order of the built environment and natural harmony created by existing landscaping of the well-designed campus.

Viewers Groups, Viewer Exposure, and Viewer Sensitivity

The study area consists of the developed land uses, and viewer groups include residential and recreational viewers, medical center employees and visitors, and travelers on local roadways. This analysis evaluates the sensitivity of each viewer group and describes it using five ratings: low, moderately low, moderate, moderately high, and high.

Residential Viewers

The residential viewer group is a small group of residents in the Elmhurst neighborhood that have views of the project site, primarily along V Street. Their views of the East Wing demolition and California Tower sites are mostly screened by intervening buildings and landscaping, but the views into the Building #35 demolition site/temporary ambulance area, PS5, and staging areas are not screened. However, portions of these sites can be more or less visible depending on the location of the residence and existing landscaping in that area. The Central Utility Plant (CUP) improvements would not be visible from the Elmhurst neighborhood.

The residential viewer group north of V Street is located approximately 50 feet from the PS5 site and Building #35, 160 feet from the California Tower site, and 325 feet from the East Wing demolition site. The group of viewers is relatively small because only a few residences are located in the viewshed. The duration of their views may be extended when they are looking through their front windows or spending time in their front yards. This results in a moderately high level of viewer exposure for recreational viewers as a whole.

The residential viewer group is often preoccupied with their activities, including inside and outside their homes. These viewers are usually highly aware of their surroundings and the site. Most of these viewers have low aesthetic expectations for the existing site but a high expectation for future hospital campus development due to the high-quality, aesthetically pleasing buildings constructed on the campus recently. Therefore, this viewer group has high viewer sensitivity.

Recreationists

The recreationist viewer group includes people traveling on foot or by bicycle. Recreationists are located directly adjacent to project site because they are using sidewalks on 45th Street, 48th Street, V Street, X Street, and Colonial Way. They also use designated bicycle lanes on X Street and other roadways, mostly for transportation, not for recreation.

This viewer group is relatively large; as is typical of campuses, many people travel by foot or by bicycle. Because these viewers move at a slower pace of travel, the duration of their views is longer than those in vehicles. This results in a moderately high level of viewer exposure.

This viewer group is somewhat preoccupied with the act of walking and biking but still has time to take in the visual environment around them. These viewers are typically aware of their surroundings because most of them use the street, sidewalks, and trails regularly. Most of them are not expected to have expectations of high aesthetic values for the site. The current use of the project site as a parking lot or an existing building raises little expectation of high visual quality. Therefore, this viewer group has moderate viewer sensitivity.

Medical Center Employees and Visitors

The medical buildings viewer group includes people working in or visiting the medical buildings surrounding the project site. The buildings are multiple stories, and some are very tall, providing long-range views. Most have windows facing the project site.

Some viewers in this group are located in buildings that are separated from the project site by intervening streets. The existing Surgery and Emergency Services Pavilion is directly adjacent to the proposed California Tower. Several medical buildings are directly adjacent, or attached, to the demolition site. Although the medical offices are busy, the number of people looking out of the windows is a minority of the building workers and visitors. The duration of their views is relatively short, due to their activities, though a few of the hospital patients and their visitors may spend longer periods looking out the windows. This results in a moderate level of viewer exposure.

This viewer group is preoccupied with their activities, whether that is working or visiting the medical buildings. These viewers are moderately aware of their surroundings because many of them work or visit in the building regularly. Because of high-quality architecture for recent new buildings in the hospital district, many of these viewers would have expectations of high visual quality. Therefore, despite high expectations, due to a lower awareness, this viewer group has moderate viewer sensitivity.

Roadway Travelers

Roadway travelers are in cars or shuttles and include drivers, passengers, and shuttle riders on 45th Street, 48th Street, V Street, X Street, and Colonial Way. In addition, this viewer group includes people using existing parking lots on the project site.

Although roadways surrounding the project sites are local, fairly low-speed routes, the duration of roadway travelers’ views would be relatively short, a minute or two for those on the adjacent roads, as travelers pass by the project sites. In addition, viewing times available from parking lots are also relatively short due to the time it takes to park and walk to destinations and walk back to the parking lots. This results in a moderate level of viewer exposure.

This viewer group is generally preoccupied with the act of driving (though less so for passengers in cars or shuttles). These viewers are typically aware of their surroundings because most of the vehicles are traveling to places where they regularly go. They are not expected to have high aesthetic values when it comes to the project site. None of the streets they are traveling on have scenic route designations, and the site’s current use as parking raises little expectation of high visual quality. Therefore, this viewer group has moderately low viewer sensitivity.

3.1.2 Environmental Impacts

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

Methods for Analysis

Aesthetic resources are assessed by evaluating the visual character and visual quality of the resources composing the proposed project environment before and after construction of the proposed project and how these changes affect the surrounding natural and built environments. As described under *Concepts and Terminology*, visual quality serves as the baseline for determining the degree of visual impacts and whether a project's visual impacts would be negative, beneficial, or neutral. A visual impact is the creation of an intrusion or perceptible contrast that impacts the scenic quality of a viewscape. A visual impact can be perceived by an individual or group as either positive or negative, depending on a variety of factors or conditions (e.g., personal experience, time of day, weather, seasonal conditions). Neutral impacts reflect little change to the visual environment and visual quality, retaining the existing landscape composition and vividness. Beneficial impacts can result where visual quality is improved through the enhancement of aesthetic resources or where visual experiences are improved through the creation of new or improved views of resources. The level of beneficial impact is determined by how much a project improves the existing landscape composition, and vividness and can range from small to very substantial improvements. Negative impacts can result when visual quality is degraded through aesthetic resource modification or by blocking or altering views in a negative manner. The level of negative impact is determined by how much a project degrades the visual landscape and ranges from general negative changes to severe declines in the existing landscape composition and vividness (Federal Highway Administration 2015:6-1–6-8).

The impact assessment methodology for aesthetic resources includes the following components.

- Establish the AVE for aesthetics resources.
- Inventory and describe the environmental setting, affected viewers, and existing visual quality.
- Identify key observation points (KOPs) and views for visual assessment.
- Assess visual compatibility of the proposed project and viewer sensitivity and analyze visual impacts.
- Propose methods to mitigate significant visual impacts.

The aesthetic impact assessment is also based on review of aerial and ground-level photos of the project area, the project description, and project design details, including a shade and shadow study prepared for the California Tower. A pedestrian survey was conducted on April 28, 2020.

The methods for evaluating impacts are intended to satisfy the state requirements for CEQA and general conformity. In accordance with CEQA requirements, an EIR must include a description of the existing physical environmental conditions in the vicinity of the proposed project. Those conditions, in turn, "will normally constitute the baseline physical conditions by which a lead agency determines whether an impact is significant" (State CEQA Guidelines Section 15125[a]).

Thresholds of Significance

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

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

Issues Not Evaluated Further

The project would be located entirely within an urbanized area. No rural areas would be affected by the project. In addition, as described in *Environmental Setting*, no scenic vistas or federal, state, or local scenic routes are associated with the study area. For these reasons, rural areas, scenic vistas, and scenic routes would not be affected by the project and these resources are not discussed further. There would be no impact.

Impacts and Mitigation Measures

Impact AES-1: Conflict with zoning or other regulations governing scenic quality in urbanized areas (less than significant with mitigation)

Summary of Impact AES-1 by Component

Component	Level of Significance before Mitigation	Mitigation Measures Required	Level of Significance after Mitigation
Make-ready projects	S	LRDP-AQ-2a LRDP-AES-1 AES-1	LTS
California Tower construction, Surgery and Emergency Services Pavilion interior renovation, Central Utility Plant upgrades	S	LRDP-AQ-2a LRDP-AES-1 AES-1	LTS
Parking Structure 5 construction	S	LRDP-AQ-2a LRDP-AES-1 AES-1	LTS
East Main Hospital Wing demolition	S	LRDP-AQ-2a LRDP-AES-1 AES-1	LTS
Whole project	S	LRDP-AQ-2a LRDP-AES-1 AES-1	LTS

NI = no impact; LTS = less than significant; S = significant; SU = significant and unavoidable.

Construction

Surgery and Emergency Services Pavilion Interior Renovation

The Surgery and Emergency Services Pavilion interior renovation component would consist of modifications to the building interior that would not be visible from public vantages.

California Tower

Construction of the California Tower would result in significant impacts on the visual character and quality of the area. These impacts would occur during each phase of construction. During the demolition and earthwork phases, these impacts would result from the presence of large construction equipment on the site, demolition debris, stockpiles, and the exposure of the cleared soil. If there are construction delays between earthwork and further construction, planned or otherwise, the exposed soil may become covered in weeds and appear unkempt. In addition, construction activities could result in fugitive dust, which would affect visual quality onsite and offsite.

Construction of the high-rise building would require the use of cranes, scaffolding, and other equipment that may be unsightly and would be visible for long distances, including from sensitive residential viewers along V Street. Two construction cranes would be approximately 510 and 525 feet tall at the highest extension (Figure 2-9), introducing notably tall construction equipment into views. Materials storage, construction parking and access, and staging areas can also be unsightly. However, construction is a common occurrence in this area, including the use of cranes.

Construction-phase impacts would be significant. Air Quality Mitigation Measure LRDP-AQ-2a and Mitigation Measure AES-1 would reduce these impacts to a less-than-significant level for residential viewers along V Street. Therefore, construction impacts would be less than significant with mitigation.

Parking Structure 5

Construction of PS5 would result in temporary but significant impacts on the visual character and quality, similar to those described for the California Tower, but to a lesser extent due to the smaller scale of the parking structure. Construction of the parking structure may require the use of cranes, scaffolding, and other equipment that may be unsightly and would be visible to the adjacent viewers, including sensitive residential viewers along V Street. Materials storage, construction parking and access, and staging areas can also be unsightly.

Construction-phase impacts would be significant. Air Quality Mitigation Measure LRDP-AQ-2a and Mitigation Measure AES-1 would reduce these impacts to a less-than-significant level for residential viewers along V Street.

Demolition Sites and Make-Ready Projects

Like the Surgery and Emergency Services Pavilion, the CUP improvements would take place in the building interior and would not be visible from public vantages. Roadway improvements are not expected to result in significant impacts due to the commonality of roadway projects occurring in the project vicinity and areas surrounding the vicinity.

Demolition of the East Main Hospital Wing would occur near the center of the hospital complex, near the intersection of 42nd Street and Colonial Way, south of V Street. The demolition site is visible from Colonial Way, on the campus, which has very little traffic. It can also be seen from V Street, 42nd Street north of the campus, and a few residences north of V Street. Elsewhere this building is not visible because it is blocked by other hospital buildings. The demolition site is otherwise enclosed because it is mostly surrounded by other hospital buildings and the site can also be seen from windows in the surrounding hospital buildings. Because of the proximity of the other hospital buildings, it is anticipated that the demolition site would be small and constrained to the area close to the East Wing itself. Viewers would see heavy machinery, cranes, demolition in progress, haul trucks removing debris from the site, and the empty site after demolition. Large numbers of trucks may be necessary during some periods of demolition, which could cause a line-up of trucks on residential streets. Demolition would also produce fugitive dust visible to onsite and offsite viewers. The negative impacts on views from the nearby streets and residences as well as from hospital building windows would result in a short-term but significant impact on visual character and quality during demolition.

The demolition of Building #35 would also result in the visible presence of machinery, demolition in progress, haul trucks removing debris from the site, and the empty site after demolition. In addition, the installation of underground storage tanks and the construction of the temporary ambulance area, to be used during construction of the California Hospital Tower Project, would also be visible, resulting in a short-term but significant impact on visual character and quality during demolition and installation of the tanks and temporary parking due to proximity to sensitive residential receptors. Although a solid barrier fence would be constructed between the temporary ambulance area and V Street to limit views of ambulances, the presence of the temporary ambulance area would likely be viewed negatively because ambulances would be arriving at all times of the day and night in close proximity to residences along V Street. In addition, the barrier would not limit views that are available from east of 45th Street.

Construction-phase impacts would be significant. Air Quality Mitigation Measure LRDP-AQ-2a and Mitigation Measure AES-1 would reduce impacts associated with these impacts to a less-than-significant level.

Construction Staging Sites

Construction staging would be located along the south side of V Street, west of 45th Street, where Building #35 is currently located (Staging Site 1) and the west end of in Parking Lot 4 next to the Sacramento Water Tank along V Street (Staging Site 2). Staging Sites 1 and 2 would be visible from the adjacent roadways and from residences along the north side of V Street. Staging Site 1 would also be visible from the segment of 45th Street north of V Street. No construction staging site access would occur on V Street, and no large trucks or equipment would be parked or lined up on V Street. No access gates would be placed on the V Street side (Sites 1 and 2 only). Both staging sites would also be visible from some windows in the adjacent hospital buildings with views of the sites.

During construction, the staging sites would be used to store equipment and materials necessary for the construction of the California Tower and possibly for the demolition of the East Wing after completion of the California Tower. Views into the construction staging site would result in significant impacts on visual character and quality. Mitigation Measure AES-1 would reduce this impact to less-than-significant levels.

Operation

During operation, the Surgery and Emergency Services Pavilion interior renovation component would consist of modifications to the building interior that would not be visible from public vantages. However, public views would be altered by the project through the construction and operation of the California Tower and PS5. Public views that are likely to be affected include views that are available from locations that are adjacent to the project site including Parking Lots 3, 4, and 18; the roadway and sidewalks along 45th and 48th Streets from their intersections with X Street and north to V Street; X Street from near Stockton Boulevard to the traffic circle with 48th Street; V Street from approximately just west of the Pathology Building to 49th Street; and approximately one-half of a block along 45th and 48th Streets, north of V Street. Affected viewers associated with these vantages primarily include residential viewers; roadway users; hospital workers, patients, visitors, and vendors; and recreationists using local streets and sidewalks for walking, running/jogging, and cycling.

The Surgery and Emergency Services Pavilion interior renovation component would consist of modifications to the building interior that would not be visible from public vantages. The California Tower would be built off the eastern side of the existing Surgery and Emergency Services Pavilion (three stories), as shown in Figures 2-4a and 2-4b. Mature trees along 45th and X Streets and within Parking Lot 3 obscure large portions of the existing Surgery and Emergency Services Pavilion from adjacent public vantages and from within the campus. Therefore, only the upper portions of the building are currently visible above the tree line from 45th and X Streets, Parking Lot 4, and from residential areas along V Street. In addition, Davis Tower (14 stories) can be seen rising above the Surgery and Emergency Services Pavilion in views. However, views of the Surgery and Emergency Services Pavilion and Davis Tower from V Street, east of 45th Street, are not generally visible due to the tall water tower, the Cancer Center, and mature trees along V Street at Parking Lot 4 that block views of the Surgery and Emergency Services Pavilion and Davis Tower. Similarly, views of the Surgery and Emergency Services Pavilion and Davis Tower from V Street, west of 45th Street, are not generally visible due to the Building #35, the Pathology Building, and mature trees along V Street that block views of the Surgery and Emergency Services Pavilion. The exception is near the parking lot for the Pathology Building where a break in vegetation allows for views toward the upper portions of these buildings. The Surgery and Emergency Services Pavilion and Davis Tower are more visible from within the campus, at the entrances to Parking Lot 3, where there are gaps in landscape plantings.

The California Tower would be 14 stories tall and include the 5-story West Wing, as illustrated by the renderings shown in Figures 3.1-4 through 3.1-7. The California Tower would be connected to the existing Surgery and Emergency Services Pavilion and would appear to be a visual expansion of the existing building. The design of the California Tower would be architecturally compatible with the existing hospital buildings surrounding the tower, as shown in the renderings. The West Wing would only be slightly taller than the existing structure, but the proposed tower would be much taller than the existing structure. The California Tower is not likely to be immediately visible to future residents at the housing/community building associated with the proposed Aggie Square project, which would have housing located on the corner of Stockton Boulevard and 3rd Avenue. This is because the California Tower would be located approximately a quarter mile away from the proposed housing/community building at Aggie Square and separated from it by the existing Courtyard by Marriott Hotel, Shriners Hospital Parking Structure, and existing mature trees lining streets and within plazas located in between the two locations. However, the California Tower would be visible to residents located along V Street, across from the proposed project.

The 2020 LRDP Update establishes that beyond the 40-foot landscape buffer along V Street, building heights would be limited to 45 feet between 40 and 100 feet from the property line, 75 feet between 100 and 180 feet from the property line, and 200 feet beyond 180 feet for the property line. Part of the proposed project is to revise the height restriction in the Main Hospital Zone within the Hospital land use designation. Under the 2020 LRDP Update, the height restriction is 200 feet in areas 180 feet beyond the property line. UC Davis proposes to revise this height restriction to 270 feet. The 2020 LRDP Update building height guidelines include step-backs to address the surrounding land uses and ensure that taller buildings are located closer to the interior of the Sacramento Campus. In addition, there are already multiple high-rise buildings in the Hospital land use designation, including the existing East Wing (to be demolished), University Tower, and Davis Tower. This is consistent with the 2020 LRDP Update, which requires buildings on the edges of campus to be limited in height to respect the scale of the surrounding neighborhood. As stated in Section 3.10, *Land Use*, increasing the height restriction by 70 feet is not anticipated to conflict with any land use plan or policy, including the 2020 LRDP. In addition, as seen in the rendering in Figure 3.1-7, the height of the tower does not seem to overpower views when seen from residential areas along V Street. From this vantage, the California Tower would appear to blend well with the heights of the existing water tower and Davis Tower, as seen in the rendering. It should be noted that the rendering does not depict vegetation associated with the 40-foot landscape buffer that would be planted along V Street, which includes planting in front of the water tower. This landscaping would mature to obscure large portions of the tower over time.

Construction of the California Tower would also require that trees be removed from within and surrounding Parking Lot 3. Cutting down existing trees would remove visual resources that help to soften the appearance of the built environment. However, the proposed project would include landscaped areas and greenspaces, including the 40-foot landscape buffer. In addition, trees removed during construction would be replaced at a 1:1 ratio. These project elements implement 2020 LRDP Update Principles #2, #4, and #5 that strive to create pedestrian-friendly greenspaces that enhance the pedestrian experience, create a sense of place, provide shade, create a sense of arrival, provide a strong landscape treatment along major campus roads, and ease transitions between the campus and residential areas. Tree removal has the potential to create openings in the landscape that would make the lower portions of the California Tower more visible to adjacent public views until new landscaping matures. Once matured, however, the landscaping would soften the verticality of the California Tower and West Wing and create a smooth transition between this affected area and campus areas that are adjacent to the site. The mature landscaping would do little to reduce the apparent height of the tower from V Street, as seen in Figure 3.1-7 and described above.

PS5 would be a located in Parking Lot 4, where there are no trees located within the existing surface parking lot. PS5 would comply with the height restrictions of the 2020 LRDP Update, having a maximum height of 40 feet in the area 40–100 feet from the edge of campus and a maximum height of 75 feet in the area 100–180 feet from the edge of campus. The parking structure would be architecturally similar to the other parking structures in the hospital district, so it would be visually consistent with other campus parking structures. Most existing trees along V Street adjacent to the PS5 site would be removed due to structural and health issues. Between three and five mature trees would be kept and protected. All trees will be replaced at a 1:1 ratio.

The project site is in the urbanized area of Sacramento; however, as described in *Regulatory Setting*, UC Davis is exempt under the state constitution from compliance with local land use regulations, including general plans and zoning. Therefore, the only local land use plan applicable to the campus is the 2020 LRDP Update. The 40-foot landscape buffer; landscaping at the hospital courtyard, west arrival plaza, and the campus arrival from V Street; and streetscape plantings along X Street and 45th Street would replace trees at a 1:1 ratio and include additional new trees, shrubs, and ornamental grasses. Mitigation Measure LRDP-AES-1 would ensure that the landscape buffer is planted within 1 year so that it can become established and buffer views in a timely manner.

The trees and shrubs would mature over time, providing effective screening for the proposed PS5 and, from many locations, the California Tower; they would be consistent with LRDP Principal #2: *Enhance Campus Public Realm and Landscape Character*, Principle #4: *Improve Pedestrian Connections throughout the Campus*, and Principal #5: *Provide Attractive Campus Entries and Edges*. In addition, PS5 complies with the height restrictions in the 2020 LRDP Update Land Use Plan. PS5 also adheres to the design principles set forth in the 2020 Physical Design Framework. Therefore, PS5 complies with the 2020 LRDP Update and meets the plan's intent of minimizing impacts on the visual character of the campus as seen from the adjacent neighborhoods to the north. As a result, the impact of PS5 would be less than significant because the structure is in an urbanized setting and is consistent with the 2020 LRDP Update.

Further, the project includes an amendment to the 2020 LRDP Update height limits in the Main Hospital zone, which would mean that the California Tower would comply with the plan's height restrictions. The 2020 LRDP Update Land Use Plan identifies that these height restrictions are in place to respect relationships with the surrounding community, focusing taller buildings toward the center of campus. The California Tower and associated landscaping would be designed to integrate the building and grounds with the surrounding campus so that the look of the proposed project would not be a concern to adjacent residents. Therefore, the primary concern of the California Tower would be whether or not the height of the California Tower would conflict with the Plan's goals of respecting the relationships with the surrounding community and how the height of the tower would be perceived from residences along V Street. As detailed above and shown in the rendering in Figure 3.1-7, the height of the California Tower does not seem to overpower views, and it appears to blend well with the heights of the existing water tower and Davis Tower. In addition, the rendering does not depict vegetation associated with the 40-foot landscape buffer that would be planted along V Street and includes planting in front of the water tower. This landscaping would mature to obscure large portions of the tower over time. Therefore, because the California Tower would be visually compatible with the existing setting, the proposed California Tower would be consistent 2020 LRDP Update Principles #2 and #5 and the 2020 LRDP Update Land Use Plan that strive to create pedestrian-friendly greenspaces that enhance the pedestrian experience, create a sense of place, provide shade, create a sense of arrival, provide a strong landscape treatment be provided along major campus roads, and ease transitions between the campus and residential areas and also adheres to the design principles set forth in the 2020 Physical Design Framework. However, if landscaping is not planted in a timely fashion, then the benefits of landscaping would not be realized, prolonging the pronounced appearance of the tower and conflicting with the 2020 LRDP Update's goals of respecting affected residential viewers, resulting in significant impacts. Mitigation Measure LRDP AES-1 would reduce these impacts to a less-than-significant level for residential viewers along V Street by ensuring that landscaping is planted within 1 year of the development of the new projects. Therefore, impacts associated with the California Tower would be less than significant with mitigation.

Mitigation Measure LRDP-AQ-2a: Reduce Construction-Generated Fugitive Dust

Refer to Mitigation Measure LRDP-AQ-2a under Impact AQ-2 in Section 3.2, *Air Quality*.

Mitigation Measure LRDP-AES-1: Install New Landscaping

The University will install landscaping within the 40-foot landscape buffer adjacent to new specific projects that are approved. Installation would occur within 1 year of the development of the new projects.

Mitigation Measure AES-1: Reduce Visual Impacts from Construction

The following measures will be taken to reduce unsightly conditions at construction sites.

- Before construction begins, the contractor will install visual barriers to obstruct views into the construction staging and demolition sites. The barriers will be as aesthetically pleasing as possible and may be painted plywood or enhanced chain-link fencing with privacy slats. Fencing with windscreen fabric will not be used due to its propensity to become unattached or torn, reducing its effectiveness. Barriers will be at least 8 feet high to break the line-of-sight as much as possible. If gates are needed through the fence, they will be made of a solid material or slatted chain-link and remain closed when not being used for ingress or egress. Barriers will be maintained to prevent them from being unsightly, and weeds will be removed as necessary to maintain a well-kept appearance.
- The construction sites will be kept clean and organized. Unused materials, debris, trash, and construction equipment that is no longer needed will be removed from the site on a daily basis. Unsightly materials will be stored outside of the line-of-site from adjacent land uses and away from gates that will remain open for long periods of time, such as a full day or longer.
- Large equipment, such as cranes and scaffolding will be removed as soon as possible when no longer needed. If scaffolding is not needed for a later stage more than 90 days away, the scaffolding will be removed and rebuilt when needed again.
- During demolition, the contractor will remove debris as quickly as possible to an appropriate landfill or recycling facility to prevent large piles of debris onsite. An offsite staging area will be used in an area not adjacent to residences. Before leaving the site, the truck loads will be wetted and/or covered to prevent fugitive dust while transporting debris. A wheel washer will be set up at the truck egress point to prevent track-out dirt as much as possible. Street washing will be used daily on Colonial Way during haul out periods.
- If possible, mobile construction modular units or trailers, similar to the modular units currently on the Staging Site 1, will be placed along the V Street side of the staging sites (Sites 1 and 2 only).
- No tall equipment or large piles of materials will be stored on Sites 1 or 2 that would be visible from V Street residences above the barrier or construction offices. This equipment or materials will be stored at an alternative site if it would be visible from the V Street residences.
- Construction crew and equipment parking will be kept clean and surfaced to reduce the chances of track-out dirt. When construction will result in high levels of track-out dirt, wheel washers will be employed to reduce these impacts.
- The 40-foot-wide landscaped buffer along V Street will not be used for staging for the demolition of the East Wing. If this site must be used for staging during demolition, it will do

so for the shortest period possible and will be immediately landscaped when no longer needed.

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

Summary of Impact AES-2 by Component

Component	Level of Significance before Mitigation	Mitigation Measures Required	Level of Significance after Mitigation
Make-ready projects	S	LRDP-AES-2a LRDP-AES-2b LRDP-AES-2c LRDP-AES-2d AES-2e AES-2f	LTS
California Tower construction, Surgery and Emergency Services Pavilion interior renovation, Central Utility Plant upgrades	S	LRDP-AES-2a LRDP-AES-2b LRDP-AES-2c LRDP-AES-2d AES-2e AES-2f	SU
Parking Structure 5 construction	S	LRDP-AES-2a LRDP-AES-2b LRDP-AES-2c LRDP-AES-2d AES-2e AES-2f	LTS
East Main Hospital Wing demolition	S	LRDP-AES-2a LRDP-AES-2b LRDP-AES-2c LRDP-AES-2d AES-2e AES-2f	LTS
Whole project	S	LRDP-AES-2a LRDP-AES-2b LRDP-AES-2c LRDP-AES-2d AES-2e AES-2f	SU

NI = no impact; LTS = less than significant; S = significant; SU = significant and unavoidable.

Construction

Daytime light source impacts that may occur during construction or demolition involve the use of welding or cutting tools, which may cause a very bright light or sparking to occur. Although this may be an annoyance because this would occur at a distance from offsite viewers, impacts would be less than significant.

It is possible that some construction activities may occur at night. Light from nighttime activities could spill over into adjacent areas, especially into the V Street residential neighborhood. This would result in a significant impact. Mitigation Measure AES-2e would reduce this impact to less-than-significant levels.

Operation

Daytime Light and Glare

Vegetation removal would result in a short-term increase in daytime glare. However, new landscape plantings would mature and replace shade removed through construction of the project and reduce this short-term increase in glare. It is not anticipated that daytime light and glare effects would be significant. The California Tower would contain high-performance glass with low emissivity coatings that would prevent significant reflectivity and high glare. In addition, because the style of the California Tower and PS5 would be compatible with the existing buildings that are located elsewhere on the campus and adjacent to these project sites, the surfaces of these buildings are not expected to include large surfaces that would reflect sunlight onto adjacent properties. Mitigation Measure LRDP-AES-2a would ensure that the proposed project uses non-reflective exterior surfaces and non-reflective glass. Therefore, impacts from daytime light and glare would be less than significant.

Nighttime Light and Glare

Nighttime glare from headlights in the parking garage, which would be adjacent to V Street homes, was expressed as a concern by residents in this area. For two reasons this impact is expected to be less than significant. First, the design of the structure is anticipated to be similar to the other parking structures in the hospital district, with high sides on each level, or a louvered exterior allowing air circulation but not headlight overspill. Second, the 40-foot-wide landscape buffer would filter out most light from the structure, whether from headlights or other sources.

Because lighting of the two buildings would follow Section 26.51.10, *Exterior Lighting,* of the Design Guidelines that contains measures to prevent spillover light from affecting adjacent areas, impacts related to nighttime lighting would be minimized. Lighting at the California Tower is not likely to affect future residents at the housing/community building associated with the proposed Aggie Square project, due to distance from the housing facility and intervening features. However, lighting would affect viewers immediately adjacent to the California Tower. The California Tower may include decorative lighting features on the southern side of the structure, facing X Street, that would be inset within the architectural exterior. The lighting would not radiate out toward the landscape but, if included in the final design, could be turned on to illuminate portions of the façade using different colors in recognition of certain occasions. For example, the lighting may illuminate the façade in pink for Breast Cancer Awareness Month. This lighting would not affect residents along V Street because it would be located on the southern side of the structure, away from their view. In addition, it would not negatively affect viewers to the south of the structure because the lighting would be directed to illuminate the structure, and the bulbs would not be exposed to shine on viewers or create nuisance glare. In addition, the minimum amount of required lighting is proposed to achieve the desired nighttime emphasis, and the proposed illumination creates no adverse effect on nighttime views; replacement of older lights follows these design standards when they are switched out. However, Section 26.51.10 also specifies that exterior lighting fixtures shall be light-emitting diode (LED) type with a color temperature of 4,000 K.

LED lighting can negatively affect humans by increasing nuisance light and glare, in addition to increasing ambient light glow, if blue-rich white light lamps (BRWL)are used (American Medical Association 2016; International Dark-Sky Association 2010a, 2010b, 2015). BRWL lamps are lamps that have a color temperature of 4,000 K or higher, and 4,000 K LED lamps are currently the campus standard. Studies have found that a 4,000 K white LED light causes approximately 2.5 times more pollution than high-pressure sodium lighting with the same lumen output, which would affect sensitive receptors and more than double the perceived brightness of the night sky (Aubé et al. 2013; Falchi et al. 2011, 2016). Using BRWL LED lighting would result in a substantial source of nighttime light and glare that would adversely affect nighttime views and sensitive residential receptors in the area. Such lighting could result in significant impacts if the lighting spills outside the site boundaries, creating a new source of nuisance lighting or glare for adjacent sensitive viewers.

The greatest potential for impact resulting from the use of BRWL LED lighting would come from overhead lighting that would be installed within 200 feet of residences along V Street. The area falling within 200 feet of residences includes overhead parking lot lighting that would come from the emergency department parking area and lighting associated with PS5. A solid barrier fence would be constructed between the emergency department parking area and V Street which would limit views of ambulances. However, parking lot lighting is likely to be taller than this fencing so that residences along V Street would still be exposed to lights shining above the fence line. The barrier fencing would also not limit views that are available from east of 45th Street. In addition, this lighting would not be filtered by the 40-foot landscape buffer until trees mature to a height to block such lighting and, unless the trees are evergreen, the landscape buffer would not provide year-round screening even when trees mature. Therefore, nearby residences would be affected by BRWL LED lighting if it is installed within the emergency department parking area.

Residences along V Street could also be impacted by light coming from PS5. The parking garage's interior lighting could disturb nearby residences due to ambient light spill coming from the upper levels of the parking garage that would not be filtered by the 40-foot landscape buffer. Glare could result where vegetation removal decreases shading, resulting in increased glare, or where a new structure would be built that would introduce a surface to reflect sunlight and potentially increase glare. However, the remaining trees and shrubs and the proposed 40-foot landscape buffer would help offset the effects of glare once trees mature.

Mitigation Measures LRDP-AES-2a, LRDP-AES-2b, LRDP-AES-2c, and LRDP-AES-2d would ensure that the proposed project uses non-reflective exterior surfaces and non-reflective glass as well as directional lighting methods with shielded and cutoff-type light fixtures to minimize glare and upward-directed lighting. However, these measures would not offset the impacts associated with BRWL LED lighting used near residences or the potential for light and glare coming from PS5 to impact nearby residential viewers. Implementation of Mitigation Measure AES-2a would ensure that BRWL LED lighting is not used near residences, that lighting coming from the interior of the parking structure does not result in nuisance light spill, and that PS5 does not result in nuisance-reflected glare.

Shade and Shadowing

Due to the height of the California Tower, shade and shadowing of the residential areas north of V Street is a concern. A shade and shadow analysis was conducted to determine whether or not the California Tower would shadow residential areas. Shadow modeling, included in Appendix D, assumes worst-case scenarios using the winter and summer solstices and vernal and autumnal equinoxes. These seasonal benchmarks are the times when shade and shadowing are at their minimums (the summer solstice, when the sun is most directly overhead, casting very little shadow) and maximums (the winter solstice, when the sun is at its lowest angle, casting the greatest shadow) and provide an understanding of the in-between times.

The shade and shadow analysis was prepared for when the building would start to produce shade, which would be in 2026 when the superstructure would be completed. Therefore, the modeling for the solstices was prepared for June 21 and December 21, 2026, and modeling for the equinoxes was prepared for March 20 and September 22, 2026. Because the modeling does not show all residential structures located along V Street, the modeling includes a demarcation line identifying the typical front of structures along the block: this provides the reference point for understanding if structures would be shaded by the California Tower. The modeling shows an hourly progression of the shade and shadowing created by the tower for the vernal equinox, autumnal equinox, and winter solstice. This analysis allows for a thorough understanding of the impacts of shading that would result from the California Tower. An hourly progression was not needed for the summer solstice because the shadows would never be cast long enough to impact adjacent residents. Therefore, there would be no shading impacts associated with the summer solstice. In addition, modeling was prepared for the winter solstice to show the shadowing created under existing conditions, without the California Tower, so that it could be discerned whether or not the California Tower created additional shading of affected areas.

The modeling does not account for existing shade and shadowing created by existing trees. However, existing trees create a range of shading from dappled shading (where tree cover is sparse) to solid shading (where tree cover is dense) when trees are in leaf. Because most of the trees along V Street are deciduous, it was assumed that trees would lose their leaves in the late fall so that there would be no shading created by tree cover in the winter. Therefore, although the modeling does not model tree shade, the analysis evaluated locations affected by shade and shadowing caused by the California Tower by also factoring the presence or absence of existing trees at those locations and the presence or absence of foliage to create shade by season.

The City of Sacramento does not have any methods or guidelines for preparing a shadow analysis. The City of San Francisco has methods for analyzing shade and shadow impacts; however, its methodology is more intensive to meet the needs of analyzing impacts in a highly urbanized setting. The City of Los Angeles also has methods for analyzing shade and shadow impacts that are commonly used methods for cities in California lacking their own methodology. Although the City of Los Angeles has adopted the updated CEQA thresholds, its old *L.A. CEQA Thresholds Guide* contains significance thresholds for shading impacts (City of Los Angeles Planning Department 2020). Their threshold establishes that a "project impact would normally be considered significant if shadow-sensitive uses would be shaded by project-related structures for more than 3 hours between the hours of 9:00 a.m. and 3:00 p.m. Pacific Standard Time (between late October and early April), or for more than 4 hours between the hours of 9:00 a.m. and 5:00 p.m. Pacific Daylight Time (between early April and late October) (City of Los Angeles 2006). However, these thresholds do not establish the reasoning behind the determined time limits and are applied across a variety of land use types and affected viewer groups. This project has established its own thresholds, factoring that shading caused by the proposed project, which would affect the enjoyment of sunlight in one's home and yard, has the ability to impact sensitive residential receptors along V Street. These impacts are more pronounced in the winter when the amount of daylight is limited and when atmospheric weather patterns reduce the amount of available sunlight in homes and yards throughout the winter season. Therefore, the project is considered to cause significant shading if residential structures would be shaded by the California Tower for more than 2 hours where there is no existing tree cover that also shades the structures. The threshold of 2 hours was selected because this represents a timeframe when residential viewers would experience a prolonged effect lasting close to a quarter of the day during the winter solstice, which would be a substantial loss of sunlight, when there is approximately 9.5 hours of daylight and only several hours of full sunlight.[1] Table 3.1-1 summarizes the results of the shade and shadow analysis.

Table 3.1-1. Shade and Shadowing Results Summary

Season	Timeframes	Residential Structures Shaded (Y/N)	Notes on Shading	Significant Shading (Y/N)
Vernal equinox (March)	7 a.m.–4 p.m.	N	Shading crosses V Street but barely reaches edge of property until 3 p.m., when shading from California Tower enters front yards of a limited number of residences. Shadow of California Tower is same length as the adjacent water tower's shadow. However, shading would not likely be notable due to existing dense tree cover that already casts shadows on these residences at this time of day.	N
	5 p.m.–6 p.m.	Y	Shading occurs at dusk and shadows extend slightly further onto residences front yards and onto a few residences located mid-block between 45th and 48th Streets at 4 p.m. However, the cast shadow would move eastward as the day progresses so that these residences would be shaded no longer than an hour. Similarly, shading at 5 p.m. would be slightly increased for residences east of 49th Street. However, short-term shading at these locations would likely not be very noticeable due to existing tree cover that already casts shadows on these residences at this time of day.	N
Summer solstice (June)	7 a.m.–4 p.m.	N	The California Tower would not cast shadows on adjacent residences throughout the whole day.	N

[1] Total hours of daylight for December 21, 2026, were calculated using the Sunrise and Sunset Times Calendar that establishes sunrise at 7:20 a.m. and sunset at 4:48 p.m. (Sunrise Sunset 2021). This equates to 9.47 hours of daylight. This number was divided by four, which results in a quarter of a day being 2.37 hours. The threshold was rounded down to 2 hours to account for the fact that hours of full sun are fewer in the winter, even after sunrise and closer to sunset, due to low sun angles.

Season	Timeframes	Residential Structures Shaded (Y/N)	Notes on Shading	Significant Shading (Y/N)
Autumnal equinox (September)	7 a.m.–4 p.m.	N	Shading crosses V Street but barely reaches edge of property until 2 p.m., when shading from California Tower enters front yards of a limited number of residences. Shadow of California Tower is same length as the adjacent water tower's shadow at 3 p.m., causing similar shading. However, shading would not likely be notable due to existing tree cover that already casts shadows on these residential front yards at this time of day and because shading would only affect impacted residences for less than an hour.	N
	5 p.m.–6 p.m.	Y	Shading occurs at dusk and shadows extend slightly further onto residential properties, impacting front yards and residential structures. However, at 4 p.m., the shadow impacts residences in proximity to 49th Street. Shading would likely not be very noticeable to locations east of 49th Street due to existing dense tree cover that already casts shadows on these residences at this time of day. Solid shading cause by the California Tower west of 49th Street would be more noticeable because tree cover is not as dense, resulting in dappled shading under existing conditions. However, because this area would be fully shaded at 6 p.m. under existing conditions, shading cause by the California Tower would only affect these areas for less than an hour.	N
Winter solstice (December)	8 a.m.–4 p.m.	Y	Residential structures would be shaded by the California Tower for longer than 2 hours but under 3 hours compared to existing conditions. These impacts would affect residences located mid-block between 42nd and 45th Streets and transition eastward to residences located closer to 49th Street, as the day progresses. In addition, many of these residences receive shading earlier in the day from the water tower and would then fall into shadow, again, by the California Tower as the day progresses. This would compound the impacts of shading. Although street trees are densely planted here, the trees would not be in leaf during the winter and residences would not be shaded by the trees. Therefore, these residences would be fully impacted by the solid shading caused by the California Tower compared to existing conditions.	Y

As summarized in Table 3.1-1, the shadows cast by the California Tower would not impact adjacent residential structures for the majority of the year. There would be no shading of residences by the California Tower in the summer. In the spring and fall, residences near 49th Street would experience shading that lasts no longer than an hour close to dark. However, in the winter, residences would be more affected by the shadows cast by the California Tower. Although the shading would not last longer than 3 hours compared to existing conditions, residential structures would be shaded by the California Tower for longer than 2 hours. These impacts would affect residences located mid-block between 42nd and 45th Streets and transition eastward to residences located closer to 49th Street, as the day progresses. In addition, as identified in Table 3.1-1, many of these residences receive shading earlier in the day from the water tower and would then fall into shadow, again, by the California Tower as the day progresses. This would compound the impacts of shading created by the California Tower. Although street trees are densely planted here, the trees would be bare during the winter and residences would not be shaded by the trees. Therefore, these residences would be fully impacted by the solid shading caused by the California Tower compared to existing conditions. There is no feasible mitigation to offset this impact, and impacts related to shade and shadow would be significant and unavoidable.

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

Design for specific projects shall provide for the use of textured non-reflective exterior surfaces and non-reflective glass.

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

Except as provided in LRDP Mitigation Measure AES-2c, all new outdoor lighting shall utilize directional lighting methods with shielded and cutoff type light fixtures to minimize glare and upward-directed lighting.

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

Non-cutoff, non-shielded lighting fixtures used to enhance nighttime views of walking paths, specific landscape features, or specific architectural features shall be reviewed by the Campus Facilities Planning, Design and Construction staff prior to installation to ensure that (1) the minimum amount of required lighting is proposed to achieve the desired nighttime emphasis, and (2) the proposed illumination creates no adverse effect on nighttime views.

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

The University will implement the use of the specific lighting design and equipment when older lighting fixtures and designs are replaced over time.

Mitigation Measure AES-2a: Reduce Construction Nighttime Lighting Impacts

Construction activities scheduled to occur after 6:00 p.m. or on weekends should not continue past daylight hours (which varies according to season) as much as possible. If nighttime construction is necessary, the contractor will minimize project-related light and glare using the following methods:

- Minimize the number of nighttime lights used and illuminate only areas necessary for the nighttime work.
- Avoid the use of flood lamps illuminating a large area, instead focusing light only on areas where work is occurring.
- Screen individual lights and direct them downward toward specific work sites and away from offsite areas, especially residential areas.

- Hang tarps or use other barriers to shield light from being visible from offsite areas, especially from construction on upper floors.
- Use color-corrected halide lights where possible.
- Operate portable lights at the lowest allowable wattage, with heights as low as possible.
- Exterior security lighting will be hooded, with lights directed downward and toward the area to be illuminated. Use only the amount of light necessary for safety and security. Do not use security lighting on upper floors visible above the visual barriers around the construction site or construction staging site.

Mitigation Measure AES-2b: Additional Light and Glare Minimization Measures

All LED lighting will avoid the use of blue-rich white light lamps and use a correlated color temperature that is no higher than 3,000 Kelvin (International Dark-Sky Association 2010a, 2010b, 2015) within 200 feet of residences along V Street. Interior lighting within the parking structure will be allowed for safety. However, unnecessary interior nighttime lighting within the parking structure will be prevented by requiring that interior spaces within the parking structure utilize motion-sensor lighting that is programmed for early-morning and late-night use, beyond the hours of typical high-use. This would ensure that the parking structure's interior is not over-lit because lighting would be turned off or lowered during off-peak hours. It would also maintain safety during off-peak hours by ensuring that pedestrian activity triggers the lighting levels to increase when motion is sensed.

Furthermore, the walls of the parking garage will be high enough to prevent vehicle headlights from shining into nearby residences as vehicles travel through the garage. In addition, ornamental design techniques will be used on the garage façade along 45th Street, 48th Street, and V Street: this façade will have an aesthetic treatment and shield the structure's interior lighting from residents along V Street. The slatted panels of PS3 facing Stockton Boulevard and X Street represent an example of such a treatment. The exterior of PS5, however, will not be as lightly colored as PS3 in order to reduce reflective glare.

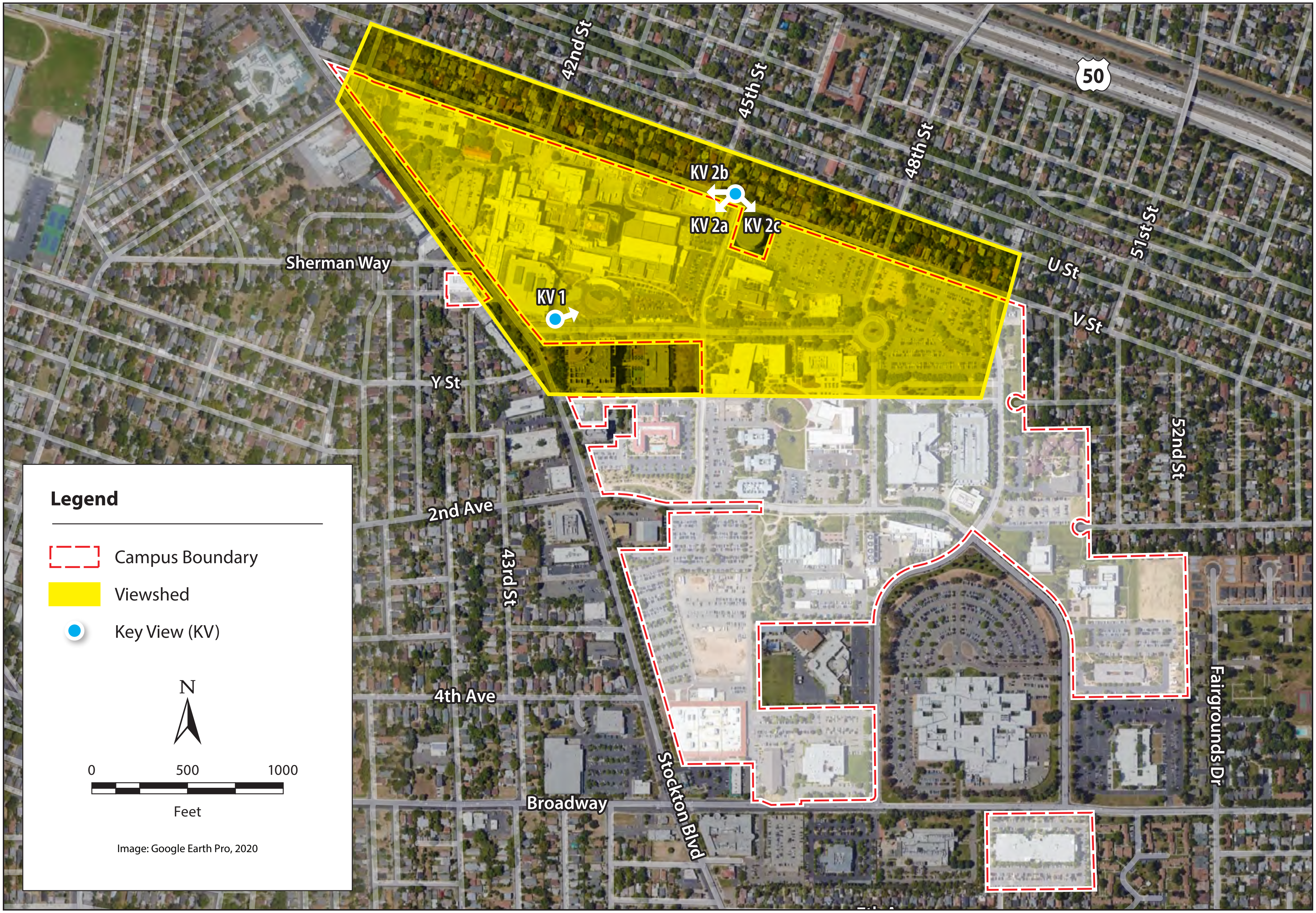


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Figure 3.1-1
Key View Location Map

Key View 1. View looking northeast towards the California Tower from the north side of X Street, near Stockton Boulevard.

Key View 2a. View looking southwest towards the California Tower from the north side of V Street, near the intersection with 45th Street.

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Figure 3.1-2
Key Views

Key View 2b. View looking west towards the California Tower and Building 35 from the north side of V Street, near the intersection with 45th Street.

Key View 2c. View looking southeast towards Parking Structure 5 from the north side of V Street, near the intersection with 45th Street.

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Figure 3.1-3
Key Views

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Figure 3.1-4
Aerial Perspective showing California Tower

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Figure 3.1-5
Perspective showing California Tower from X Street near its intersection with 45th Street

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Figure 3.1-6
Perspective showing California Tower from X Street

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Figure 3.1-7
Perspective showing California Tower from V Street near the water tower

3.2 Air Quality

The air quality environmental impact analysis area encompasses the areas directly and indirectly affected by implementation of the project. Two geographic scales define the study area, as defined below.

- The regional impact analysis area is the affected air basin, which is the Sacramento Valley Air Basin (SVAB).
- Within the regional study area is the local impact analysis area, which encompasses areas within 1,000 feet of new or modified emissions generating sources proposed under the project. The 1,000-foot screening distance represents an industry standard for analyzing localized air quality impacts and is commonly utilized in EIRs to disclose the potential air quality impacts close to the project site (California Air Resources Board 2005:14; Bay Area Air Quality Management District 2017:2-2). These sources and areas include the future California Tower site (including make-ready projects and Parking Structure 5 [PS5]), the existing Central Utility Plant (CUP), the existing East Tower, and the existing Davis Tower helipad.

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

In response to the Notice of Preparation for this EIR, commenters expressed concerns related to emissions from construction and demolition activities. Commenters also submitted requests to consider sustainable design features and suggestions for types of sustainable design features.

3.2.1 Existing Conditions

Regulatory Setting

Air quality in the study area is regulated by the U.S. Environmental Protection Agency (EPA), the California Air Resources Board (CARB), and Sacramento Metropolitan Air Quality Management District (SMAQMD). Each of these agencies develops rules, regulations, policies, and/or goals to comply with applicable legislation and maintain or improve air quality.

University of California

As noted in Section 3.0.2, *University of California Autonomy*, the University, a constitutionally created state entity, is not subject to municipal regulations of surrounding local governments for uses on property owned or controlled by the UC that are in furtherance of its educational purposes. However, UC Davis may consider, for coordination purposes, aspects of local plans and policies for the communities surrounding the Sacramento Campus when it is appropriate and feasible, but it is not bound by those plans and policies in its planning efforts. The Board of Regents of the UC adopted the UC Sustainable Practices Policy in 2006. Most recently updated in 2020, the policy goals encompass nine areas of sustainable practices: green building design, clean energy, climate protection, sustainable transportation, sustainable building operations for campuses, zero waste, sustainable procurement, sustainable foodservices, and sustainable water systems. Also addressed by this policy is sustainability at UC Health facilities. This policy is further described in Section 3.7, *Greenhouse Gas Emissions*.

Federal

Clean Air Act and National Ambient Air Quality Standards

The federal Clean Air Act (CAA) and its subsequent amendments form the basis for the nation's air pollution control effort. The EPA is responsible for implementing most aspects of the CAA and has established National Ambient Air Quality Standards (NAAQS) for six criteria pollutants—ozone, particulate matter (PM; specifically, PM10 and PM2.5), carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), and lead. The NAAQS identify levels of air quality that are considered the maximum safe levels of ambient (background) air pollutants, within an adequate margin of safety, to protect public health and welfare. Table 3.2-1 shows the NAAQS currently in effect for each criteria pollutant, as well as the California ambient air quality standards (CAAQS) (discussed below under *State*).

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

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

National Corporate Average Fuel Economy Standards

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

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

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

			National Standards[a]	
Criteria Pollutant	Average Time	California Standards	Primary	Secondary
Ozone	1-hour	0.09 ppm	None[b]	None[b]
	8-hour	0.070 ppm	0.070 ppm	0.070 ppm
Particulate matter (PM10)	24-hour	50 μg/m^3	150 μg/m^3	150 μg/m^3
	Annual mean	20 μg/m^3	None	None
Fine particulate matter (PM2.5)	24-hour	None	35 μg/m^3	35 μg/m^3
	Annual mean	12 μg/m^3	12.0 μg/m^3	15 μg/m^3
Carbon monoxide	8-hour	9.0 ppm	9 ppm	None
	1-hour	20 ppm	35 ppm	None
Nitrogen dioxide	Annual mean	0.030 ppm	0.053 ppm	0.053 ppm
	1-hour	0.18 ppm	0.100 ppm	None
Sulfur dioxide[c]	Annual mean	None	0.030 ppm	None
	24-hour	0.04 ppm	0.014 ppm	None
	3-hour	None	None	0.5 ppm
	1-hour	0.25 ppm	0.075 ppm	None
Lead	30-day Average	1.5 μg/m^3	None	None
	Calendar quarter	None	1.5 μg/m^3	1.5 μg/m^3
	3-month average	None	0.15 μg/m^3	0.15 μg/m^3
Sulfates	24-hour	25 μg/m^3	None	None
Visibility-reducing particles	8-hour	–[d]	None	None
Hydrogen sulfide	1-hour	0.03 ppm	None	None
Vinyl chloride	24-hour	0.01 ppm	None	None

Source: California Air Resources Board 2016.

ppm= parts per million; μg/m^3 = micrograms per cubic meter; NAAQS = National Ambient Air Quality Standard; SO_2 = sulfur dioxide; CAAQS = California Ambient Air Quality Standard.

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

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

[c] The annual and 24-hour NAAQS for SO_2 only apply for 1 year after designation of the new 1-hour standard to those areas that were previously in nonattainment for 24-hour and annual NAAQS.

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

The EPA and NHTSA published final rules to amend and establish national CO_2 and fuel economy standards on April 30, 2020 (Part Two of the SAFE Vehicles Rule) (85 *Federal Register* 24174). The revised rule changes the national fuel economy standards for light duty vehicles from 50.4 miles per gallon to 40.5 miles per gallon in future years. California, 22 other states, and the District of Columbia filed a petition for review of the final rule on May 27, 2020.

On January 20, 2021, President Joseph Biden issued an executive order directing the EPA and NHTSA to review the SAFE Vehicles Rule and propose a new rule suspending, revising, or rescinding it. On April 22, 2021, NHTSA issued a notice of proposed rulemaking to repeal the SAFE Vehicles Rule (49 Code of Federal Regulations [CFR] Parts 531 and 533).

State

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

California Clean Air Act and California Ambient Air Quality Standards

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

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

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

California Air Resources Board Advanced Clean Truck Regulation

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

California Air Resources Board Truck and Bus Regulation

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

California Air Resources Board Tailpipe Emission Standards

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

Carl Moyer Program

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

Toxic Air Containment Identification and Control Act

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

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

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

The Tanner Act sets forth a formal procedure for CARB to designate substances as TACs. This includes research, public participation, and scientific peer review before the CARB designates a substance as a TAC. To date, CARB has identified 21 TACs and has also adopted the EPA's list of hazardous air pollutants (HAPs) as TACs.

In September 2000, CARB approved a comprehensive diesel risk reduction plan to reduce emissions from both new and existing diesel-fueled engines and vehicles (California Air Resources Board 2000). The goal of the plan was to reduce diesel particulate matter (DPM) emissions and the associated health threat by 75 percent in 2010 and by 85 percent by 2020. The plan identifies 14 measures that target new and existing on-road vehicles (e.g., heavy-duty trucks and buses), off-road equipment (e.g., graders, tractors, forklifts, sweepers, and boats), portable equipment (e.g., pumps), and stationary engines (e.g., stand-by power generators).

CARB has adopted several regulations that will reduce diesel emissions from in-use vehicles and engines throughout California. For example, CARB adopted an idling regulation for on-road diesel-fueled commercial vehicles in July 2004 and updated it in October 2005. The regulation applies to public and privately owned trucks with a gross vehicle weight rating greater than 10,000 pounds. Vehicles subject to the regulation are prohibited from idling for more than 5 minutes in any one location. CARB also adopted a regulation for operation of diesel-powered construction and mining vehicles. Fleet owners are subject to retrofit or accelerated replacement/repower requirements for which CARB must obtain authorization from the EPA prior to enforcement. The regulation also imposes a 5-minute idling limitation on owners, operators, and renters or lessees of off-road diesel vehicles. In some cases, the PM reduction strategies also reduce smog-forming emissions such as nitrogen oxides (NO_X). As an ongoing process, the CARB reviews air contaminants and identifies those that are classified as TACs. CARB also continues to establish new programs and regulations for the control of TACs, including DPM, as appropriate.

Regional and Local

Sacramento Air Quality Management District

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

SMAQMD is required to prepare air quality attainment plans that outline specific strategies and programs for ensuring that NAAQS and CAAQS are met. SMAQMD has prepared several air quality plans, including the *2017 Sacramento Regional 8-Hour Ozone Attainment and Reasonable Further Progress Plan* (Sacramento Regional OAP), *PM2.5 Maintenance Plan and Redesignation Request*, and *PM10 Implementation/Maintenance Plan and Redesignation Request for Sacramento County*. These plans respond to federal and state air quality planning requirements and outline strategies for attaining the ambient air quality standards for ozone and PM.

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

- **Rule 201 (General Permit Requirements).** This rule requires that any project constructing, altering, replacing, or operating any stationary source operation, the use of which emits, may emit, or may reduce emissions, to obtain an Authority to Construct (ATC) and a Permit to Operate (PTO).

- **Rule 202 (New Source Review).** This rule provides mechanisms by which an ATC can be granted without interfering with the basin's attainment with ambient air quality standards. These mechanisms offer methods to generate no net increases in emissions of nonattainment pollutants over specific thresholds as detailed in the rule.
- **Rule 207 (Title V Federal Operating Permit Program).** This rule establishes an operating permitting system consistent with the requirements of 42 United States Code Section 7661 *et seq*. (Title V) and pursuant to 40 CFR Part 70.
- **Rule 401 (Ringelmann Chart/Opacity).** This rule limits the discharge of air contaminants (i.e., fugitive dust, diesel exhaust) into the atmosphere through visible emissions and opacity.
- **Rule 402 (Nuisance).** This rule prevents criteria pollutants from creating a nuisance to surrounding properties.
- **Rule 403 (Fugitive Dust).** This rule controls fugitive dust emissions through implementation of best management practices (BMPs).
- **Rule 404 (Particulate Matter).** This rule restricts emissions of PM greater than 0.23 gram per cubic meter.
- **Rule 405 (Dust and Condensed Fumes).** This rule limits the discharge of dust and condensed fumes into the atmosphere by establishing emission rates based on process weight.
- **Rule 406 (Specific Contaminants).** This rule limits the emission of sulfur compounds and combustion contaminants through establishment of emission concentrations.
- **Ruel 411 (NO_X from Boilers, Process Heaters, and Steam Generators).** This rule limits the emission of NO_X and CO from boilers, steam generators, and process heaters.
- **Rule 412 (Stationary Internal Combustion Engines).** This rule controls emissions of NO_X, CO, and non-methane hydrocarbons from stationary internal combustion engines greater than 50 brake horsepower.
- **Rule 413 (Stationary Gas Turbines).** This rule limits emissions of nitrogen oxides to the atmosphere from the operation of stationary gas turbines.
- **Rule 414 (Water Heaters, Boilers and Process Heaters Rated Less than 1,000,000 British Thermal Units per Hour).** This rule limits emissions of NO_X from natural gas-fired water heaters, boilers, and process heaters.
- **Rule 420 (Sulfur Content of Fuels).** This rule limits the emission of compounds of sulfur from combustion of fuels.
- **Rule 442 (Architectural Coatings).** This rule limits the quantity of volatile organic compounds (VOCs) in architectural coatings supplied, sold, offered for sale, applied, solicited for application, or manufactured for use within SMAQMD.
- **Rule 453 (Cutback and Emulsified Asphalt Paving).** This rule limits the application of cutback and emulsified asphalt.
- **Rule 902 (Asbestos).** This rule implements the EPA's National Emission Standard for Hazardous Air Pollutants (NESHAP) for Asbestos (40 CFR Section 61.140 *et seq*.) to limit the emission of asbestos to the atmosphere. The NESHAP requires that all buildings be properly inspected for the presence of asbestos prior to demolition and renovation and that the SMAQMD be notified before any demolition or renovation activity occurs.

Sacramento Area Council of Governments

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

Environmental Setting

"Air quality" describes the amount of air pollution to which the public is exposed. Air quality is an important consideration for the project because of current regional air quality conditions, which exceed certain federal and state ambient air quality standards. This section provides information on existing air quality conditions relevant to the impact analysis.

Climate, Meteorology, and Topography

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

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

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

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

Criteria Pollutants

Sources and Health Effects

Criteria air pollutants are a group of six air pollutants for which the EPA and CARB have set ambient air quality standards (see Table 3.2-1). Ozone is considered a regional pollutant because its precursors affect air quality on a regional scale. CO, NO_2, SO_2, and lead are considered local pollutants that tend to accumulate in the air locally. PM is both a regional and local pollutant.

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

Table 3.2-2 provides a brief description of sources and health effects of the six criteria pollutants. The primary criteria pollutants of concern generated by implementation of the project are ozone precursors (NO_X and reactive organic gases [ROG]) and PM.[1] Additional narrative on sources and health effects of these pollutants follows the table.

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

Pollutant	Primary Sources	Potential Effects
Ozone	Formed by a chemical reaction between ROG and NO_X in the presence of sunlight. Primary sources of ROG and NO_X are vehicle exhaust, industrial combustion, gasoline storage and transport, solvents, paints, and landfills.	Inflammation of the mucous membranes and lung airways; wheezing; coughing and pain when inhaling deeply; decreased lung capacity; aggravation of lung and heart problems. Reduced crop yield and damage to plants, rubber, some textiles, and dyes.

[1] Minor amounts of CO, NO_2, and SO_2 may be generated by construction and certain operational sources. But these emissions are of less concern because nether construction nor operational activities associated with land use development projects are likely to generate substantial quantities of these criteria pollutants (Sacramento Metropolitan Air Quality Management District 2020a). Lead emissions are typically associated with industrial sources, which are not included as part of the project. Sacramento County also currently attains the CAAQS and NAAQS for CO, NO_2, SO_2, and lead.

Pollutant	Primary Sources	Potential Effects
Particulate matter	Power plants, steel mills, chemical plants, unpaved roads and parking lots, wood-burning stoves and fireplaces, and automobiles.	Irritation of the airways, coughing, or difficulty breathing; aggravated asthma; development of chronic bronchitis; irregular heartbeat; nonfatal heart attacks; and premature death in people with heart or lung disease. Impairs visibility (haze).
Carbon monoxide	A component of motor vehicle exhaust that is formed when carbon in fuel is not burned completely.	Reduced ability of blood to deliver oxygen to vital tissues, effecting the cardiovascular and nervous system. Impaired vision and dizziness that can lead to unconsciousness or death.
Nitrogen dioxide	Motor vehicles, electric utilities, and other sources that burn fuel.	Aggravation of lung and heart problems. Precursor to ozone and acid rain. Contributes to global warming and nutrient overloading, which deteriorates water quality. Brown discoloration of the atmosphere.
Sulfur dioxide	Petroleum refineries, cement manufacturing, metal processing facilities, locomotives, large ships, and fuel combustion in diesel engines.	Aggravation of lung and heart problems. Converts to sulfuric acid, which can damage marble, iron, and steel. Damage to crops and natural vegetation. Impaired visibility.
Lead	Metal refineries, smelters, battery manufacturers, iron and steel producers, use of leaded fuels by racing and aircraft industries.	Anemia; damage to the kidneys, liver, brain, reproductive, nerves, and other organs; and neurological problems, including learning deficits and lowered IQ. Affects animals, plants, and aquatic ecosystems.

Source: California Air Pollution Control Officers Association n.d.
ROG = reactive organic gases; NO_X = nitrogen oxides; IQ = intelligence quotient.

Ozone

Ozone, or smog, is photochemical oxidant that is formed when ROGs and NO_X (both by-products of the internal combustion engine) react with sunlight. ROGs are compounds made up primarily of hydrogen and carbon atoms. Internal combustion associated with motor vehicle usage is the major source of hydrocarbons. Other sources of ROGs are emissions associated with the use of paints and solvents, the application of asphalt paving, and the use of household consumer products such as aerosols. The two major forms of NO_X are nitric oxide (NO) and NO_2. NO is a colorless, odorless gas formed from atmospheric nitrogen and oxygen when combustion takes place under high temperature and/or high pressure. NO_2 is a reddish-brown irritating gas formed by the combination of NO and oxygen. In addition to serving as an integral participant in ozone formation, NO_X also directly acts as an acute respiratory irritant and increases susceptibility to respiratory pathogens by impairing the immune system.

Ozone poses a higher risk to those who already suffer from respiratory diseases (e.g., asthma), children, older adults, and people who are active outdoors. Exposure to ozone at certain concentrations can make breathing more difficult, cause shortness of breath and coughing, inflame and damage the airways, aggregate lung diseases, increase the frequency of asthma attacks, and cause chronic obstructive pulmonary disease. Studies show associations between short-term ozone exposure and nonaccidental mortality, including deaths from respiratory issues. Studies also suggest long-term exposure to ozone may increase the risk of respiratory-related deaths (U.S.

Environmental Protection Agency 2021a). The concentration of ozone at which health effects are observed depends on an individual's sensitivity, level of exertion (i.e., breathing rate), and duration of exposure. Studies show large individual differences in the intensity of symptomatic responses, with one study finding no symptoms to the least responsive individual after a 2-hour exposure to 400 parts per billion of ozone and a 50 percent decrement in forced airway volume in the most responsive individual. Although the results vary, evidence suggests that sensitive populations (e.g., asthmatics) may be affected on days when the 8-hour maximum ozone concentration reaches 80 parts per billion (U.S. Environmental Protection Agency 2016).

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

Particulate Matter

PM pollution consists of very small liquid and solid particles floating in the air, which can include smoke, soot, dust, salts, acids, and metals. PM that is less than 10 microns in diameter, about 1/7th the thickness of a human hair, is referred to as PM10. PM that is 2.5 microns or less in diameter, roughly 1/28th the diameter of a human hair, is referred to as PM2.5. Major sources of PM10 include motor vehicles; wood burning stoves and fireplaces; dust from construction, landfills, and agriculture; wildfires and brush/waste burning; industrial sources; windblown dust from open lands; and atmospheric chemical and photochemical reactions. PM2.5 results from fuel combustion (from motor vehicles, power generation, and industrial facilities), residential fireplaces, and wood stoves. PM also forms when gases emitted from industries and motor vehicles, such as SO_2, NO_X, and ROG, undergo chemical reactions in the atmosphere.

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

Ambient Concentrations

Ambient air quality refers to the concentration of pollutants in the air. CARB collects ambient air quality data through a network of air monitoring stations throughout the state. Table 3.2-3 summarizes data for criteria pollutant levels from the T Street Station monitoring station for the last 3 years for which complete data was available (2017 through 2019). The T Street Station is approximately 2.6 miles northwest of the California Tower.

[2] Sacramento metropolitan area includes Sacramento and Yolo Counties and portions of Placer, Solano, and El Dorado Counties.

Table 3.2-3 shows the T Street Station monitoring station experienced violations of the state and federal ozone, PM10, and PM2.5 standards. The state standard for CO and NO_2 were not exceeded. Existing violations of the ozone and PM ambient air quality standards indicate that certain individuals exposed to this pollutant may experience certain health effects, including increased incidence of cardiovascular and respiratory ailments.

Table 3.2-3. Ambient Criteria Air Pollutant Monitoring Data (2017–2019) from the T Street Station

Pollutant Standards	2017	2018	2019
Ozone (O_3)			
Maximum 1-hour concentration (ppm)	0.107	0.097	0.100
Maximum 8-hour concentration (ppm)	0.077	0.084	0.074
Number of days standard exceeded[a]			
CAAQS 1-hour standard (> 0.09 ppm)	1	1	1
NAAQS/CAAQS 8-hour standard (> 0.070 ppm)	3	1	1
Carbon Monoxide (CO) (data from the Bercut Drive Station)			
Maximum 8-hour concentration (ppm)	1.2	3.0	1.3
Maximum 1-hour concentration (ppm)	1.8	3.2	1.4
Number of days standard exceeded[a]			
NAAQS/CAAQS 8-hour standard (≥ 9 ppm/≥ 9.0 ppm)	0	0	0
NAAQS/CAAQS 1-hour standard (≥ 35 ppm/≥ 20 ppm)	0	0	0
Nitrogen Dioxide (NO_2)			
State maximum 1-hour concentration (ppb)	58.7	66.3	61.9
State second-highest 1-hour concentration (ppb)	58	66	61
Annual average concentration (ppb)	9	9	9
Number of days standard exceeded			
CAAQS 1-hour standard (0.18 ppm)	0	0	0
Particulate Matter (PM10)			
National[b] maximum 24-hour concentration (μg/m^3)	149.9	292.6	174.7
National[b] second-highest 24-hour concentration (μg/m^3)	88.4	252.7	90.7
State[c] maximum 24-hour concentration (μg/m^3)	150.3	309.5	179.1
State[c] second-highest 24-hour concentration (μg/m^3)	89.8	267.2	92.9
National annual average concentration (μg/m^3)	23.8	29.2	20.2
State annual average concentration (μg/m^3)[d]	149.9	292.6	174.7
Number of days standard exceeded[e]			
NAAQS 24-hour standard (>150 μg/m^3)	0	6	1
CAAQS 24-hour standard (>50 μg/m^3)	21	22	25
Particulate Matter (PM2.5)			
National[b] maximum 24-hour concentration (μg/m^3)	44.5	149.9	32.2
National[b] second-highest 24-hour concentration (μg/m^3)	35.9	108.8	31.1
State[c] maximum 24-hour concentration (μg/m^3)	46.0	263.3	37.1
State[c] second-highest 24-hour concentration (μg/m^3)	37.1	225.1	32.3
State annual average concentration (μg/m^3)[d]	9.2	12.8	7.7
Number of days standard exceeded[e]			

Pollutant Standards	2017	2018	2019
NAAQS 24-hour standard (> 35 μg/m³)	6	3	0
Sulfur Dioxide (SO_2)			
No data			

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

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

[a] An exceedance is not necessarily a violation.

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

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

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

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

Regional Attainment Status

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

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

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

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

Criteria Pollutant	Federal Designation	State Designation
O_3 (8-hour)	Severe 15 Nonattainment[a]	Nonattainment
CO	Attainment	Attainment
PM10	Moderate Maintenance	Nonattainment
PM2.5	Moderate Nonattainment	Attainment
NO_2	Attainment	Attainment
SO_2	Attainment	Attainment
Lead	Attainment	Attainment

Sources: California Air Resources Board 2020b; U.S. Environmental Protection Agency 2021b.

CO = carbon monoxide; PM10 = particulate matter less than 10 microns in diameter; PM2.5 = particulate matter less than 2.5 microns in diameter; NO_2 = nitrogen dioxide; SO_2 = sulfur dioxide.

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

Emissions Inventory

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

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

CARB maintains an annual emission inventory for each county and air basin in the state. The inventory for Sacramento County consists of data submitted to CARB by SMAQMD, plus estimates for certain source categories, which are provided by CARB staff. Based on CARB's 2016 SIP Emissions Projection Data, mobile source emissions represent most of the ROG, NO_X, and CO emissions in the county. Area sources represent the majority of PM10 and PM2.5 emissions (California Air Resources Board 2019).

Toxic Air Contaminants

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

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

may pose a hazard that is many times greater than another. TACs are identified and their toxicity is studied by the California Office of Environmental Health Hazard Assessment (OEHHA).

Major sources of TACs in the vicinity of the study area include roadways, railways, and stationary sources. U.S. Route 50 is a heavily traveled freeway located about a quarter mile from the California Hospital Tower Project site. The annual average daily traffic volume on this segment of U.S. Route 50 is about 210,000 vehicles per day (California Department of Transportation 2017). Union Pacific Railroad freight lines run to the east and west of the local study area, the closest of which is more than 2 miles away from the UC Davis Sacramento Campus. According to SMAQMD's risk mapping tool, ambient cancer risk and PM2.5 concentrations at the California Tower site from vehicle emissions on U.S. Route 50 and regional railways are 48 cases per million and 1.4 micrograms per cubic meter, respectively (Sacramento Metropolitan Air Quality Management District 2021a).

As discussed further below in Section 3.2.2, *Environmental Impacts*, there are several existing stationary sources currently operating on the UC Davis Sacramento Campus. These include emergency diesel generators, natural gas-fired boilers, a natural gas-fired turbine, and a gasoline dispensing facility. Criteria pollutants and TAC emissions from these stationary sources are controlled through SMAQMD's permitting process (Regulation 2). There are also three permitted emergency diesel generators operated by the County of Sacramento within 1,000 feet of the study area, as well as a printing and lithograph shop (Sacramento Metropolitan Air Quality Management District 2021b). These sources contribute to existing ambient risks from TAC emissions.

Odors

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

The project does not include any of the land use types identified by SMAQMD as odor sources. The nearest potentially odorous source is the Naked Lounge Coffee Roaster, which is about 0.8 mile from the project site. The coffee roaster has not received any odor complaints in the past 3 years (Muller pers. comm.). Sacramento County landfills and the regional wastewater treatment plant, as well as various recycling centers, are all more than 3-mile from the study area, which is beyond SMAQMD screening distance.

Sensitive Receptors

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

The project site is bound by V Street on the north, the main hospital to the west, 2nd street to the south, and 45th Street to the east. Residential receptors are just north of V Street and less than 100 feet from the new temporary ambulance area. The main hospital is adjacent to the project site, and the existing Shriners Children's Hospital is approximately 160 feet south of the project site. The Language Academy of Sacramento is approximately 400 feet southeast of the CUP. There are other various existing and future residential and recreational receptors within 1,000 feet of the new or modified emissions generating sources proposed under the project. Figure 3.2-2 shows these sensitive receptors.

3.2.2 Environmental Impacts

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

Methods for Analysis

Criteria pollutants and precursors resulting from construction and operation of the project were quantified using standard and accepted software tools, techniques, and emission factors as described in detail below. A full list of assumptions and model outputs can be found in Appendix E.

Construction Criteria Pollutants and Precursors

Construction emissions would originate from off-road equipment exhaust, vehicle exhaust (on-road vehicles), site grading and earth movement, demolition, application of architectural coatings, and paving. Each of these sources was considered in the construction analysis. Construction emissions from all sources except vehicle exhaust (on-road vehicles) were calculated using the California Emissions Estimator Model (CalEEMod) Version 2016.3.2, as recommended by SMAQMD (2020a). Construction emissions from vehicle exhaust were modeled using emission factors from CARB's EMFAC2021 model, which is the latest tool for quantifying emission from on-road mobile sources.

Project components, as described in Chapter 2, Project Description, include construction of PS5, construction of the California Tower make-ready projects, and demolition of the existing East Wing of the main hospital. Construction of PS5 would occur over six phases between March 2022 and May 2023. Construction of the California Tower and make-ready projects would require 13 phases between November 2021 and November 2030. The existing East Wing would be demolished in 2031. UC Davis provided the anticipated construction schedule, off-road equipment inventory, number of daily construction personnel, number of vendor and haul truck trips, acres to be graded and paved, and the amount of exported and imported material for each phase (Sebright pers. comm. [a]; Davis pers. comm.). These assumptions were input into CalEEMod and used to support the EMFAC2021 modeling.

Operational Criteria Pollutant and Precursor Inventory

The operational air quality analysis evaluates criteria pollutant and precursor emissions generated by existing sources that would either be removed or modified with implementation of the project, as well as new emission sources that would be installed by the project. Specifically:

- **Sources Removed**: The East Wing would be demolished by the project, and therefore all operational emissions generated by the building would cease following building demolition in 2031. Building 35 will also be removed by the project, but this building is not a material source of existing emissions (it is unoccupied trailers).
- **Sources Modified:** Emissions generated by the existing CUP and medical helicopter transport services would be modified by the project. The project includes upgrades to the CUP needed to directly support the California Tower, as well as other planned campus growth through 2030. Likewise, helicopter activity would not only increase with the California Tower and other campus growth, but landings will be split between the existing Davis Tower heliport and the new California Tower heliport. Finally, the project would move or replace existing medical beds at the East Wing, University Tower, Davis Tower, and Surgery and Emergency Services Pavilion. Accordingly, total emissions generated by the CUP, helicopter activity, and patients in existing medical beds at impacted facilities under existing and 2030 operating conditions are included in the air quality analysis.
- **New Sources***:* The California Tower, make-ready projects, and PS5 would generate additional vehicle trips to the campus, result in area source emissions (e.g., cleaning supplies), and require installation of new stationary sources (e.g., generators) at the CUP.

The net change in emissions among these sources between existing conditions and 2030 operating conditions represents the air quality impact analyzed in this section. Quantification methods for the sources and scenarios are further described below.

Existing Conditions

The project includes demolition of the existing 120,000 square foot East Wing of the main hospital. The East Wing does not operate any stationary sources, but it currently generates criteria pollutant and precursor emissions from mobile, energy, and area sources. Mobile source emissions are also generated by patients in existing medical beds at the University Tower, Davis Tower, and Surgery and Emergency Services Pavilion, which will be moved or replaced by the project.

Fehr & Peers provided the estimated existing daily trips and vehicle miles traveled (VMT) for existing conditions (625 medical beds) (Behrens pers. comm.). Emissions resulting from these trips were estimated using emission factors from CARB's EMFAC2021. UC Davis provided the amount of natural gas purchased from Pacific Gas & Electric Company (PG&E) for the East Wing, which was input into CalEEMod to estimate criteria pollutants and precursors generated by the combustion of the gas (Sebright pers. comm. [b]). CalEEMod was likewise used to estimate area source emissions generated by the existing East Wing.

The CUP operates five diesel emergency generators, five steam boilers, eight hot water boilers, one gas turbine, and four induced draft cooling towers. Criteria pollutants and precursors generated by these existing stationary sources at the CUP were obtained from the UC Davis 2018 Emissions Inventory Verification Statement (UC Davis Health 2019).

REACH Air Medical Services provides medical helicopter transport services to the UC Davis Sacramento Campus. The number of existing helicopter landings and take-offs (LTO) at the Davis Tower heliport were provided by UC Davis (Sebright pers. comm. [b]). UC Davis also provided existing helicopter fuel consumption logs, which reflect fuel burned during LTO and flying (Sebright pers. comm. [c]). Emission and fuel consumption factors per LTO cycle for a Eurocopter EC135, which is a similar type of helicopter operated by REACH Air Medical Services, were obtained from the Federal Office of Civil Aviation (FOCA) (2015). Criteria pollutants and precursors and fuel consumption generated by LTO at the Davis Tower heliport were quantified by multiplying the FOCA factors by the LTO inventory provided by UC Davis. Emissions from cruising were quantified by subtracting the calculated LTO fuel use from total fuel consumption provided by UC Davis, and then multiplying the resulting fuel use by cruising emission factors from the FOCA (2015). All cruising emissions were conservatively assumed to occur in Sacramento County.

Project Analysis (2030 Conditions)

Operation of the project would generate criteria pollutant and precursor emissions from mobile sources (e.g., patient trips) and area sources (e.g., landscaping equipment). Operation of the California Tower would not involve direct purchase of any natural gas from PG&E but would increase fuel consumption at the CUP, as discussed further below, as well as require new stationary sources (e.g., emergency diesel generator) at the CUP. Helicopter activity is likewise expected to increase.

Fehr & Peers conducted the transportation environmental impact analysis for the proposed project. Details of the methodology are provided and referenced in Section 3.15, *Transportation*. Fehr & Peers supported the air quality analysis by calculating the forecasted daily trips and VMT resulting from implementation of the project (Behrens pers. comm.). The CARB's EMFAC2021 was used to obtain emission factors based on aggregated-speed emission rates for all vehicle types operating in Sacramento County in 2030 (which is the first operational year for the project). The resulting criteria pollutants and precursors were quantified by multiplying the EMFAC2021 emission factors by the trip and VMT inventory provided by Fehr & Peers.

CalEEMod was used to estimate area source emissions. Area sources include landscaping equipment, consumer products, and the routine application of architectural coatings. CalEEMod default values for a 890,000 square foot hospital were assumed.

The CUP will provide normal and emergency electrical power, chilled and hot water for heating and cooling, and process steam to the California Tower. All existing fossil fuel–powered stationary equipment at the CUP would be maintained and continue to operate with full implementation of the California Tower and other projected growth on the UC Davis Sacramento Campus through 2030. There would be no change in existing generator or cooling tower activity, and emissions from these sources were therefore obtained from the existing emission inventory, as described above.

One new 3-megawatt (3,451 horsepower) and two new 2.5-megawatt (3,353 horsepower) Tier 4 emergency diesel generator would be installed at the CUP by 2030 to support the California Tower and other campus growth. Future runtime for the new generators is unknown because their operations would be dictated by emergency power needs. Assumptions for the maximum daily and annual operating hours for the new generator were therefore informed by runtime logs for existing generators at the CUP (Panoushek pers. comm.; UC Davis Health 2019). Based on this information, it was assumed the new generators would operate a maximum of 1 hour per day on a day they were operated, and a total of 33 hours per year. Emissions generated by these generators were estimated using emission factors from CalEEMod, as reported in the CalEEMod User Guide (Trinity Consultants 2017).

The existing turbine and boilers at the CUP use natural gas provided by PG&E. Electric power load served by the CUP is expected to grow commensurate with campus growth, including the California Tower. UC Davis provided expected fuel consumption for the boilers and turbine needed to serve the campus load in 2030, which is the first operational year for the California Tower. UC Davis also provided fuel consumption estimates for 2031 when the East Wing would be decommissioned. The projections account for planned campus growth and energy benefits achieved by demand-side load reduction measures, pursuant to the UC Sustainable Practices Policy. Criteria pollutant and precursor emissions generated by the boilers and turbine were quantified by scaling existing emissions by the projected increase in fuel consumption (Sebright pers. comm. [b]).

Future helicopter landings at the new California Tower heliport and the Davis heliport were assumed to increase commensurate with growth in expected inpatient population on the UC Davis Sacramento Campus. Specifically, inpatient population served by UC Davis Medical Center would be approximately 9.2 percent greater under future conditions. Accordingly, future helicopter operations were assumed to be 9.2 percent greater than existing helicopter operations (Aubert pers. comm.). Criteria pollutants and precursors generated by future helicopter activity were quantified by multiplying existing helicopter emissions by the expected growth in inpatient population served by the UC Davis Medical Center, which is approximately 9.2 percent (Aubert pers. comm.). Emissions from LTO were apportioned between the California Tower heliport and the Davis heliport, assuming 85 percent of landings would occur at the California Tower heliport and 15 percent at the Davis heliport (Davis pers. comm.). This ratio is based on the types of services provided by each building and the expected helicopter usage associated with those services.

Human Health Risk Assessment from Exposure to Toxic Air Contaminants

Construction

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

Diesel Particulate Matter Inventory

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

Air Dispersion Modeling

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

Construction equipment emissions were characterized as an area source (AREAPOLY), with a release height of 5.0 meters (Sacramento Metropolitan Air Quality Management District 2013). Haul truck emissions were characterized as a line/area source (LINEAREA) with a release height of 3.4 meters (U.S. Environmental Protection Agency 2015). Emissions from off-road equipment and onsite trucks were assumed to be onsite throughout the construction footprint. Emissions from off-site haul trucks were modeled along Stockton Blvd, X Street, 45th Street, and Colonial Way.

Analysts assumed construction hours of 7:00 a.m. to 6:00 p.m. 6 days per week over the duration of construction. To account for plume rise associated with mechanically generated construction emissions sources, the initial vertical dimension of area sources was modeled at 4.65 meters; for the line/area sources, it was modeled at 3.16 meters (U.S. Environmental Protection Agency 2011). The urban dispersion option with a Sacramento County population of 1,531,000 was also assumed.

Sensitive receptors were placed north of V Street, west of Stockton Boulevard, at the Main Hospital, at the Shriners Hospital, and at the recreation area immediately northwest of Parking Lot 17. Future residential and recreational receptors were also added for Aggie Square Phase I and future on-campus residential proposed under the 2020 LRDP Update. A receptor height of 1.8 meters was assumed. Refer to Figure 3.2-1.

Risk Calculations

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

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

Operation

Diesel-powered emergency generators at the CUP would emit DPM. CUP boilers and the natural gas turbine, as well as helicopter LTOs, would emit toxic metals and ROG that could expose nearby sensitive receptors to increased cancer and non-cancer risks. While operation of the California Tower would not increase diesel haul truck activity at the building loading dock, it will re-route a portion of the operational loading dock traffic from 45th Street and Doctors Way to Stockton Boulevard. This redistribution of traffic could reduce receptor exposure to DPM along existing travel routes but increase DPM exposure for receptors along Stockton Boulevard. A HRA was performed to analyze these sources using the EPA's AERMOD (version 19191) and OEHHA (2015) guidance. The operational HRA consists of five parts: a DPM inventory, a toxic metals inventory, a ROG inventory, air dispersion modeling, and risk calculations. A description of each of these parts follows.

Diesel Particulate Matter Inventory

The operational DPM inventory is based on the emissions calculations for diesel PM10 generated by the onsite generators and diesel-fueled loading dock trucks. Diesel PM10 from the movement of loading dock trucks was calculated by multiplying annual operational VMT by the appropriate PM10 exhaust emission factor.

Toxic Metals Inventory

The operational toxic metals inventory is based on the emissions calculations for PM10 generated by CUP boilers and the natural gas turbine (described above). Toxic metals embedded within the PM10 compounds from boilers and the natural gas turbine were speciated using PM speciation profiles for natural gas-fired boilers and gaseous material combustion, respectively (California Air Resources Board 2020c).

Reactive Organic Gas Inventory

The operational ROG inventory is based on the emissions calculations for ROG generated by the CUP boilers and natural gas turbine (described above), and at the helipads. Carcinogenic organics from boilers and the natural gas turbine were speciated from the ROG output using organic gas speciation profiles for external combustion boilers—natural gas (California Air Resources Board 2020c). Carcinogenic organics from helicopter exhaust were speciated from the ROG output using organic gas speciation profiles for aircraft exhaust—jet fuel (California Air Resources Board 2020c).

Air Dispersion Modeling

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

Boiler, generator, and turbine emissions were characterized as point sources (POINT). Helicopter LTO emissions were characterized as volume sources (VOLUME). Offsite mobile emissions from loading dock trucks were characterized as a line/area source (LINEAREA) with a release height of 3.4 meters (U.S. Environmental Protection Agency 2015). Emissions were modeled along Stockton Boulevard.

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

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

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

Risk Calculations

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

Correlation of Criteria Pollutants to Potential Human Health Consequences

The California Supreme Court's decision in *Sierra Club v. County of Fresno* (6 Cal. 5th 502) (hereafter referred to as the "Friant Ranch Decision") reviewed the long-term, regional air quality analysis contained in the EIR for the proposed *Community Plan Update* and *Friant Ranch Specific Plan* (Friant Ranch Project). The Friant Ranch Project is a 942-acre master-plan development in unincorporated Fresno County within the San Joaquin Valley Air Basin, an air basin currently in nonattainment under the NAAQS and CAAQS for ozone and PM2.5. The Court found that the EIR's air quality analysis was inadequate because it failed to provide enough detail "for the public to translate the bare [criteria pollutant emissions] numbers provided into adverse health impacts or to understand why such a translation is not possible at this time." The Court's decision clarifies that environmental documents must attempt to connect a project's regional air quality impacts to specific health effects or explain why it is not technically feasible to perform such an analysis.

Potential health effects associated with construction and operational criteria pollutants generated by the project were estimated using SMAQMD's *Guidance to Address the Friant Ranch Ruling for CEQA Projects in the Sac Metro Air District* (Ramboll 2020). The guidance provides two Excel calculators that were developed from photochemical and health effects modeling of hypothetical projects throughout the Sacramento Federal Nonattainment Area (SFNA). The Minor Project Health Screening Tool provides insights on the health effects that may result from projects emitting NO_X, ROG, and PM2.5 at levels at or below 82 pounds per day, which corresponds to the highest daily emissions threshold of all SFNA air districts. The Strategic Area Project Health Screening Tool estimates health effects that may result from projects emitting NO_X, ROG, and PM2.5 at levels between 164 and 656 pounds per day and located within one of five strategic growth areas.

Importantly, outputs from SMAQMD's tools only include health effects of NO_X, ROG, and PM2.5 that have been researched sufficiently to be quantifiable (Ramboll 2020). These include the following health endpoints.

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

As noted in SMAQMD's guidance, research has identified other health effects for both PM2.5 and ozone precursors (ROG and NO_X) (Ramboll 2020). For example, exposure to PM2.5 at certain concentrations can alter metabolism, leading to weight gain and diabetes; cause cognitive decline, brain inflammation, or reduced brain volume; and affect gestation, resulting in low birthweight or preterm birth (Ramboll 2020). Likewise, at high enough doses, exposure to ozone can increase lung permeability, increasing susceptibility to toxins and microorganisms (Ramboll 2020). These and other effects have been documented, but a quantitative correlation to project-generated emissions cannot be accurately established based on published studies (Ramboll 2020). Accordingly, these *potential* health effects of project-generated air pollution are qualitatively documented and disclosed in this section, and under Impact AQ-3.

Thresholds of Significance

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

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

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

Plan Consistency

Projects that propose development that is consistent with the growth anticipated by SACOG's MTP/SCS and local plans, including the current 2020 LRDP Update, would be consistent with SMAQMD's Sacramento Regional OAP. SMAQMD's (2020a) CEQA Guide further notes that "by exceeding the District's mass emission thresholds for operational emissions of ROG, NO_X, PM10 or PM2.5, the project will be considered to conflict with or obstruct implementation of the District's air quality planning efforts." SMAQMD's mass emission thresholds are discussed further below.

Cumulatively Considerable Net Increase in Criteria Pollutants

This analysis evaluates the impacts of criteria pollutants generated by the project by comparing emissions to SMAQMD's thresholds. SMAQMD thresholds consider whether a project's emissions would result in a cumulatively considerable adverse contribution to existing air quality conditions, which do not currently attain the federal ozone, PM2.5, or PM10 standards. If a project's emissions would be less than these levels, the project would not be expected to result in a cumulatively considerable contribution to the significant cumulative impact. Accordingly, emissions generated by the project would result in a significant impact if any of the thresholds summarized in Table 3.2-5 are exceeded.

Table 3.2-5. SMAQMD's Cumulative Criteria Pollutant Mass Emission Thresholds

Pollutant	Construction	Operation
ROG	None	65 pounds per day
NO_X	85 pounds per day	65 pounds per day
PM10	80 pounds per day and 14.6 tons per year if all feasible BACT and BMPs are applied	Same as construction
PM2.5	82 pounds per day and 15.0 tons per year if all feasible BACT and BMPs are applied	Same as construction

Source: Sacramento Metropolitan Air Quality Management District 2020a.

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

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

Receptor Exposure to Substantial Pollutant Concentrations

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

Regional Pollutants (Ozone Precursors and Regional Particulate Matter)

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

Nonetheless, emissions generated by the project could increase photochemical reactions and the formation of tropospheric ozone and secondary PM, which at certain concentrations, could lead to increased incidence of specific health consequences, such as various respiratory and cardiovascular ailments. As discussed previously, air districts develop region-specific CEQA thresholds of significance in consideration of existing air quality concentrations and attainment designations under the NAAQS and CAAQS. The NAAQS and CAAQS are informed by a wide range of scientific evidence that demonstrates there are known safe concentrations of criteria pollutants. Accordingly, the project would expose receptors to substantial regional pollution if any of the thresholds summarized in Table 3.2-5 are exceeded.

Localized Pollutants (Particulate Matter and Toxic Air Contaminants)

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

Particulate Matter

As shown in Table 3.2-5, SMAQMD has adopted PM thresholds of significance to evaluate whether construction- and operations-generated PM would result in an air quality impact. SMAQMD (2020a) also recommends implementation of BMPs to reduce dust emissions and associated localized health impacts.

Asbestos

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

Other Toxic Air Contaminants

SMAQMD has adopted incremental cancer and hazard thresholds to evaluate receptor exposure to single sources of TACs. The "substantial" TAC threshold defined by SMAQMD is any exposure of a sensitive receptor to an individual emissions source resulting in an excess cancer risk level of more than 10 in 1 million or a non-cancer (i.e., chronic or acute) hazard index (HI) greater than 1.0. These threshold levels should be used to determine whether a project's TAC emissions are cumulatively considerable (Sacramento Metropolitan Air Quality Management District 2020a).

Odors Emissions

SMAQMD (2020a) does not have an explicit odor threshold but has established recommended odor screening distances. The air district recommends odor analyses consider the types of odors associated with a project, general locations of sensitive receptors, site meteorology, and prior odor complaints.

Impacts and Mitigation Measures

Impact AQ-1: Conflict with or obstruction of implementation of the applicable air quality plan (less than significant)

Summary of Impact AQ-1 by Component

Component	Level of Significance before Mitigation	Mitigation Measures Required	Level of Significance after Mitigation
Make-ready projects	LTS	None	–
California Tower construction, Surgery and Emergency Services Pavilion interior renovation, Central Utility Plant upgrades	LTS	None	–
Parking Structure 5 construction	LTS	None	–
East Main Hospital Wing demolition	LTS	None	–
Whole project	LTS	None	–

NI = no impact; LTS = less than significant; S = significant; SU = significant and unavoidable.

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

SACOG's current MTP/SCS, the 2020 MTP/SCS, was adopted in November 2019. While the 2020 MTP/SCS is SACOG's most current planning document, the Sacramento Regional OAP, which was prepared in 2017, was informed by SACOG's prior 2016 MTP/SCS. Growth projections for SACOG's 2016 MTP/SCS were based on state-of-the-art data, analysis, and local planning data that were available at the time of the 2016 MTP/SCS, including the 2010 LRDP for the UC Davis Sacramento Campus. SMAQMD is required to prepare an air quality attainment plan to address the EPA's 2015 ozone NAAQS by August 2022. Once adopted, this plan will guide future ozone attainment planning efforts in the Sacramento region.

The additional growth supported by the proposed project represents an intensification of existing hospital-related uses at the Sacramento Campus. This intensification was envisioned in the 2010 LRDP. The project neither requires expansion of the existing campus boundary nor redesignation of the existing land use category (Hospital). The population increase associated with the California Hospital Tower Project is within the overall planning scenario of the 2020 LRDP Update. Thus, the project is consistent with the growth planning and development characteristics of the 2010 LRDP, and thus the 2016 MTP/SCS. Also, as discussed below under Impact AQ-2, neither construction nor operation of the project would exceed SMAQMD's threshold of significance with implementation of LRDP mitigation. Accordingly, the project would not conflict with SMAQMD's air quality attainment plan, and this impact is **less than significant**.

Mitigation Measures

No mitigation measures are necessary.

Impact AQ-2: Cumulatively considerable net increase of any criteria pollutant for which the project region is a nonattainment area for an applicable federal or state ambient air quality standard (less than significant with mitigation)

Summary of Impact AQ-2 by Component

Component	Level of Significance before Mitigation	Mitigation Measures Required	Level of Significance after Mitigation
Make-ready projects	S	LRDP-AQ-2a LRDP-AQ-2b LRDP-AQ-2c LRDP-AQ-3a AQ-2a AQ-2b	LTS
California Tower construction, Surgery and Emergency Services Pavilion interior renovation, Central Utility Plant upgrades	S	LRDP-AQ-2a LRDP-AQ-2b LRDP-AQ-2c LRDP-AQ-3a AQ-2a AQ-2b	LTS
Parking Structure 5 construction	S	LRDP-AQ-2a LRDP-AQ-2b LRDP-AQ-2c LRDP-AQ-3a AQ-2a AQ-2b	LTS
East Main Hospital Wing demolition	LTS	None	–
Whole project	S	LRDP-AQ-2a LRDP-AQ-2b LRDP-AQ-2c LRDP-AQ-3a AQ-2a AQ-2b	LTS

NI = no impact; LTS = less than significant; S = significant; SU = significant and unavoidable.

Construction

Criteria pollutants and precursors generated by construction of the project were quantified using CalEEMod and EMFAC2021, as described above. Construction activities would occur between November 2021 and December 2030. Additional emissions would be generated in 2031 during demolition of the existing East Wing of the main hospital. Table 3.2-6 summarizes the results of the emissions modeling. The table compares maximum daily and annual emissions to SMAQMD's NOx, PM10, and PM2.5 thresholds. Although SMAQMD does not recommend ROG thresholds, estimates of construction-generated ROG emissions, which are an ozone precursor, are shown for information purposes only. Refer to Appendix E for model outputs.

Table 3.2-6. Estimated Unmitigated Construction Criteria Pollutants and Precursors for the Project

	Maximum Daily Emissions (lb/day)				Annual Emissions (tpy)	
Year	ROG[a]	NOx	PM10	PM2.5	PM10	PM2.5
2021	5	47	3	2	0.1	<0.1
2022	13	**124***	17	7	1.4	0.6
2023	15	**113***	18	7	1.6	0.6
2024	16	**153***	35	15	2.3	1.0
2025	62	**318***	50	23	5.3	2.2
2026	61	**316***	48	20	4.5	1.6
2027	31	**111***	25	9	3.5	1.2
2028	33	**113***	31	10	3.9	1.2
2029	12	61	20	6	2.3	0.6
2030	4	6	10	3	1.0	0.3
2031[b]	2	11	3	1	0.3	0.1
SMAQMD threshold[c]	–	85	80[d]	82[d]	14.6[d]	15.0[d]

Source: ICF modeling (Appendix E).

Note: **Bold underline** with an asterisk (*) indicates an exceedance of SMAQMD's threshold.

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

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

[b] Demolition of the existing East Wing of the main hospital.

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

[d] With application of best management practices.

As shown in Table 3.2-6, construction of the project would result an exceedance of SMAQMD's maximum daily NO_X threshold between 2022 and 2028. The exceedance of NO_X thresholds is primarily due to exhaust from the combustion of fuel in off-road construction equipment and on-road vehicles during simultaneous construction of multiple phases. This is a significant impact.

Implementation of Mitigation Measure LRDP-AQ-2a is required to reduce fugitive dust emissions, consistent with SMAQMD's basic and enhanced construction emission control practices. Mitigation Measure LRDP-AQ-2b requires all off-road equipment to use renewable diesel and meet EPA-approved Tier 3 or 4 final emissions standards, depending on when construction occurs. As stated in Chapter 2, *Project Description*, UC Davis has committed to Tier 4 engines for construction of the project. The mitigation also requires construction equipment be maintained in proper working condition and to minimize idling time, consistent with SMAQMD best practices. While there is no threshold for ROG, Mitigation Measure LRDP-AQ-2c is required to reduce ROG emissions (which are precursors to ozone formation) from architectural coatings. Table 3.2-7 shows modeled emissions with Mitigation Measures LRDP-AQ-2a through LRDP-AQ-2c.

Table 3.2-7. Estimated Construction Criteria Pollutants and Precursors for the Project with Implementation of Mitigation Measures LRDP-AQ-2a, LRDP-AQ-2b, and LRDP-AQ-2c

	Maximum Daily Emissions (lb/day)				Annual Emissions (tpy)	
Year	ROG[a]	NOx	PM10	PM2.5	PM10	PM2.5
2021	1	4	<1	<1	<0.1	<0.1
2022	6	37	13	4	1.0	0.3
2023	8	35	15	4	1.3	0.4
2024	8	48	22	7	1.5	0.5
2025	28	**129***	38	10	4.0	1.1
2026	28	**128***	38	10	3.9	1.0
2027	16	57	22	6	3.1	0.8
2028	18	58	28	7	3.6	0.9
2029	7	32	18	5	2.2	0.6
2030	4	4	10	3	1.0	0.3
2031[b]	1	4	2	1	0.2	0.1
SMAQMD threshold[c]	–	85	80[d]	82[d]	14.6[d]	15.0[d]

Source: ICF modeling (Appendix E).

Note: **Bold underline** with an asterisk (*) indicates an exceedance of SMAQMD's threshold.

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

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

[b] Demolition of the existing East Wing of the main hospital.

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

[d] With application of best management practices.

As shown in Table 3.2-7, implementation of Mitigation Measure LRDP-AQ-2b would reduce NOx, but emissions would still exceed SMAQMD's maximum daily threshold of 85 pounds per day in 2025 and 2026. Peak daily violations are projected in the latter half of 2025 and first few months of 2026 during concurrent activities required for concrete and superstructure and exterior skin.

Mitigation Measure LRDP-AQ-3a identifies strategies to reduce receptor exposure to construction generated DPM. Some of these strategies, such as limiting diesel idling and using electric or alternatively fueled equipment, will likewise reduce NOx emissions. Mitigation Measure AQ-2a builds on Mitigation Measure LRDP-AQ-3a by requiring electric-powered cranes be used to construct the proposed project. This electrification requirement was identified based on the expected equipment inventory and current commercialization of electric-powered alternatives. Pursuant to Mitigation Measure LRDP-AQ-3a, additional equipment types may be electrified during construction as cost-effective electric alternatives continue to be developed and commercialized.

Table 3.2-8 presents shows modeled emissions with Mitigation Measure AQ-2a added to the other mitigation measures modeled in Table 3.2-7.

Table 3.2-8. Estimated Construction Criteria Pollutants and Precursors for the Project with Implementation of Mitigation Measures LRDP-AQ-2a, LRDP-AQ-2b, LRDP-AQ-2c, and AQ-2a

	Maximum Daily Emissions (lb/day)				Annual Emissions (tpy)	
Year	ROG[a]	NOx	PM10	PM2.5	PM10	PM2.5
2021	1	4	<1	<1	<0.1	<0.1
2022	6	37	13	4	1.0	0.3
2023	8	34	15	4	1.3	0.4
2024	8	47	22	7	1.5	0.5
2025	28	**<u>128*</u>**	38	10	4.0	1.1
2026	27	**<u>126*</u>**	38	10	3.9	1.0
2027	16	57	22	6	3.1	0.8
2028	18	58	28	7	3.6	0.9
2029	7	32	18	5	2.2	0.6
2030	4	4	10	3	1.0	0.3
2031[b]	1	4	2	1	0.2	0.1
SMAQMD threshold[c]	–	85	80[d]	82[d]	14.6[d]	15.0[d]

Source: ICF modeling (Appendix E).

Note: **<u>Bold underline</u>** with an asterisk (*) indicates an exceedance of SMAQMD's threshold.

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

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

[b] Demolition of the existing East Wing of the main hospital.

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

[d] With application of best management practices.

As shown in Table 3.2-8, implementation of Mitigation Measure AQ-2a would reduce NOx slightly, but emissions would still exceed SMAQMD's threshold in 2025 and 2026. Additional reductions would be achieved by Mitigation Measure LRDP-AQ-3a, but these are not quantifiable because the extent of additional future engine electrification is not currently known. Accordingly, this impact remains significant after implementation of all feasible onsite mitigation measures.

Mitigation Measure LRDP-AQ-2d requires UC Davis to fund offsite projects and programs to offset construction NOx emissions generated by development under the LRDP to below SMAQMD's maximum daily threshold of 85 pounds per day. Mitigation Measure AQ-2b outlines the offset requirement specifically for the proposed project. Implementation of Mitigation Measure AQ-2b will reduce NOx emissions from construction of the proposed project (those emissions remaining after implementation of onsite mitigation measures) to **less than significant with mitigation**.

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

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

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

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

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

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

- For all development except Aggie Square Phase I, use construction equipment with engines meeting EPA Tier 3 or better emission standards prior to 2025 and EPA Tier 4 Final or better emission standards beginning in 2025. For Aggie Square Phase I, all engines must be EPA certified Tier 4 Final or better, regardless of construction year. Equipment requirements may be waived by UC Davis, but only under any of the following unusual circumstances: If a particular piece of off-road equipment with Tier 4 Final standards or Tier 3 standards is technically not feasible, not commercially available, or there is a compelling emergency need to use off-road equipment that does not meet the equipment requirements above. If UC Davis grants the waiver, the contractor will use the next cleanest piece of off-road equipment available, in the following order: Tier 4 Interim, Tier 3, and then Tier 2 engines.
- Use renewable diesel fuel in all heavy-duty off-road diesel-fueled equipment. Renewable diesel must meet the most recent ASTM D975 specification for Ultra Low Sulfur Diesel and have a carbon intensity no greater than 50 percent of diesel with the lowest carbon intensity among petroleum diesel fuels sold in California.
- All diesel on-road trucks used to haul construction materials will use a model year 2010 or newer engine.
- Minimize idling time either by shutting equipment off when not in use or reducing the time of idling to 5 minutes (CCR, Title 13, Sections 2449[d][3] and 2485). Provide clear signage that posts this requirement for workers at the entrances to the site.
- Provide current certificate(s) of compliance for CARB's In-Use Off-Road Diesel-Fueled Fleets Regulation (CCR, Title 13, Sections 2449 and 2449.1).
- Maintain all construction equipment in proper working condition according to manufacturer's specifications. The equipment must be checked by a certified mechanic and determined to be running in proper condition before it is operated.

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

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

Mitigation Measure LRDP-AQ-3a: Reduce receptor exposure to construction generated diesel particulate matter

Land use development projects implemented under the 2020 LRDP Update will require its prime construction contractor to implement the following measures to reduce receptor exposure to DPM concentrations and associated health risks.

- Limit excess equipment idling to no more than 5 minutes (included in Mitigation Measure LRDP-AQ-2b).
- Locate operation of diesel-powered construction equipment as far away from sensitive receptors as possible.
- Use equipment during times when receptors are not present (e.g., when school is not in session or during non-school hours), as feasible.

- Establish staging areas for the construction equipment that are as distant as possible from offsite receptors, including existing residences.
- Where feasible, use equipment with engines meeting EPA Tier 4 Final or better emission standards prior to 2025 (Mitigation Measure LRDP-AQ-2b requires Tier 4 Final engines beginning in 2025 for all development except Aggie Square Phase I, which is required to use EPA Tier 4 Final or better engines regardless of the construction year).
- Where feasible, use haul trucks with on-road engines instead of off-road engines even for onsite hauling.
- Use electric, compressed natural gas, or other alternatively fueled construction equipment instead of the diesel counterparts, where available.
- Coordinate with existing off-campus renters and homeowners where projected cancer risks exceed 10 per million and offer financial assistance to use Minimum Efficiency Reporting Value (MERV) 15 air filters. Financial assistance will be provided for the purchase of up to two filters per year, or per manufacturer recommendations. If a resident's home is not equipped with a heating, ventilation, and air conditioning (HVAC) system that can accept a MERV 15 air filter, UC Davis will purchase a portable home air cleaning device. UC Davis will establish an online procurement system (or similar) to facilitate the purchase and distribution of the filters to residents electing to participate in the program.

Mitigation Measure AQ-2a: Electrify cranes used during construction

All construction contractors working on PS5, California Tower, make-ready projects, and demolition of the East Wing of the main hospital must use electric-powered cranes. Diesel or fossil-fuel powered cranes are prohibited.

Mitigation Measure AQ-2b: Offset construction-generated NO_X emissions in excess of SMAQMD's threshold of significance

Construction-generated emissions of NO_X would exceed the SMAQMD's threshold of significance in 2025 and 2026.

Because construction-generated NOx emissions would exceed SMAQMD's threshold of significance, UC Davis will pay a mitigation fee in the amount of $147,201 and an administrative fee in the amount of $7,360 to SMAQMD to reduce the project impacts from construction NO_X emissions to a less-than-significant level. This fee will be used to fund emissions reduction projects within the SVAB. The types of projects that have been used in the past to achieve such reductions include electrification of stationary internal combustion engines (such as agricultural irrigations pumps); replacing old trucks with new, cleaner, more efficient trucks; and a host of other stationary and mobile source emissions-reducing projects. The fee amount is based on an offset cost of $30,000 per ton of NO_X and the total quantity of NO_X emissions in excess of SMAQMD's NO_X threshold (4.9 tons based on the daily exceedances in 2025 and 2026). The administrative fee is 5 percent of the fee amount.

UC Davis will pay the mitigation and administrative fees in full prior to issuing a demolition or grading permit for the project. For construction occurring during 2025 and 2026, construction contractors will provide annual construction activity monitoring data to estimate actual construction emissions. UC Davis will submit the annual construction activity monitoring data and an estimate of actual annual NOx emissions to SMAQMD for review by February 1 of each year for the prior construction year. The annual report will reconcile paid fees, if any, for the prior year relative to actual emissions. If more emissions were generated than fees paid, UC Davis will submit payment for the deficient amount based on an offset cost of $30,000 per ton of NO_X. If more fees were paid than emissions generated, SMAQMD will either issue UC Davis a refund for the surplus or a credit that can be applied to future fee payments.

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

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

Operation

Operation of the project would generate criteria pollutants and precursors from mobile (e.g., patient trips) and area (e.g., landscaping equipment) sources. Planned upgrades at the CUP would result in stationary source (e.g., emergency diesel generator) emissions. Finally, expansion of helicopter services would result in an increase in aviation-based mobile source emissions. The project includes demolition of the existing East Wing of the main hospital, which currently generates criteria pollutant and precursor emissions from mobile, energy, area, and stationary (at the CUP) sources. Demolition would take place following 1 year of operation of the California Tower, Emissions from each of these sources were calculated using the methods detailed under *Methods for Analysis* above.

Table 3.2-9 summarizes the modeled operation-related emissions of criteria air pollutants and precursors under existing and future conditions with the project. The 2030 buildout analysis includes emissions from East Wing building operations (i.e., landscaping equipment, purchased natural gas). Patient population from the East Wing would be moved to the California Tower, and thus, mobile source emissions for the 2030 buildout analysis are presented under the California Tower. Emissions from East Wing building operations would cease by 2031 and are therefore not included in the 2031 buildout analysis. Demolition of the East Wing would also reduce load on the CUP, resulting in minor reductions in fuel combustion at the CUP under the 2031 buildout analysis. The net change in emissions under both buildout conditions relative to existing conditions, which represents the incremental impact of the project, are compared to SMAQMD thresholds.

Table 3.2-9. Estimated Operational Criteria Pollutants and Precursors for the Project

	Maximum Daily Emissions (lb/day)				Annual Emissions (tpy)	
Source	ROG	NOx	PM10	PM2.5	PM10	PM2.5
Existing (2019)						
East Wing and Campus Beds[a]	50	121	83	22	14.4	3.8
Central Utility Plant	8	179	20	20	2.7	2.7
Helicopters	20	11	<1	<1	0.1	0.1
Total[b]	78	311	103	42	17.2	6.6
2030 Project and East Wing Building Operations						
East Wing[c]	3	0	0	0	0.0	0.0
Parking Structure 5, California Tower, make-ready projects	51	47	87	22	15.1	3.9
Central Utility Plant	12	230	26	26	3.6	3.6
Helicopters	21	12	<1	<1	0.1	0.1
Total[b]	87	288	114	49	18.7	7.5
2031 Project						
Parking Structure 5, California Tower, make-ready projects[d]	51	47	87	22	15.1	3.9
Central Utility Plant	12	227	26	26	3.5	3.5
Helicopters	21	12	<1	<1	0.1	0.1
Total[b]	84	286	113	48	18.7	7.4
Comparison to Thresholds						
Net emissions from existing (2030)[b]	10	-23	10	7	1.6	0.9
Net emissions from existing (2031+)[b]	6	-25	10	6	1.5	0.8
SMAQMD threshold[e]	65	65	80	82	14.6	15.0

Source: ICF modeling (Appendix E).

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

[a] Emissions from East Wing building operations (landscaping equipment and purchased natural gas). Mobile sources based on VMT and trips for the 625 medical beds that would moved to the new California Tower under the project.

[b] Sums may not total correctly due to rounding.

[c] Emissions from building operations (landscaping equipment and purchased natural gas). Patient population from the East Wing, University Tower, Davis Tower, and Surgery and Emergency Services Pavilion would be moved to the California Tower, and thus, mobile source emissions are presented under the California Tower.

[d] Mobile source emissions conservatively modeled using 2030 emission factors.

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

As shown in Table 3.2-9, the net change in operational emissions resulting from implementation of the project under either future condition would not exceed SMAQMD thresholds. NOx emissions are projected to decrease relative to existing conditions. The emissions intensity of vehicles operating in 2031 will be lower than under 2019 conditions because of improvements in engine technology and regulations to reduce combustion emissions. This reduction offsets NOx emissions increases from other sources operating under the project. In 2031, there would be a minor amount of construction emission generated from demolition of the East Wing (see Table 3.2-8). However, even if these emissions were added to operational emissions shown in Table 3.2-9, emissions still would not exceed SMAQMD thresholds. This impact would be **less than significant**.

Impact AQ-3: Exposure of sensitive receptors to substantial pollutant concentrations (significant and unavoidable)

Summary of Impact AQ-3 by Component

Component	Level of Significance before Mitigation	Mitigation Measures Required	Level of Significance after Mitigation
Make-ready projects	S	LRDP-AQ-2a LRDP-AQ-2b LRDP-AQ-2c LRDP-AQ-3a AQ-2a AQ-2b	SU
California Tower construction, Surgery and Emergency Services Pavilion interior renovation, Central Utility Plant upgrades	S	LRDP-AQ-2a LRDP-AQ-2b LRDP-AQ-2c LRDP-AQ-3a AQ-2a AQ-2b	SU
Parking Structure 5 construction	S	LRDP-AQ-2a LRDP-AQ-2b LRDP-AQ-2c LRDP-AQ-3a AQ-2a AQ-2b	SU
East Main Hospital Wing demolition	S	LRDP-AQ-2b LRDP-AQ-3a AQ-2a AQ-2b	SU
Whole project	S	LRDP-AQ-2a LRDP-AQ-2b LRDP-AQ-2c LRDP-AQ-3a AQ-2a AQ-2b	SU

NI = no impact; LTS = less than significant; S = significant; SU = significant and unavoidable.

Regional Criteria Pollutants

SMAQMD develops region-specific CEQA thresholds of significance in consideration of existing air quality concentrations and attainment or nonattainment designations under the NAAQS and CAAQS. Recognizing that air quality is a cumulative problem, SMAQMD typically considers projects that generate criteria pollutants and ozone precursor emissions that are below the thresholds to be minor in nature. Such projects would not adversely affect air quality or exceed the NAAQS or CAAQS.

Moreover, photochemical and health risk modeling conducted by SMAQMD demonstrates that projects generating emissions below SMAQMD thresholds "do not on [their] own lead to sizeable health effects" (Ramboll 2020).

As described under Impact AQ-2, neither construction nor operation of the project would generate criteria pollutants or precursors in excess of SMAQMD thresholds with implementation of Mitigation Measures LRDP-AQ-2a through LRDP-AQ-2c, LRDP-AQ-3a, Mitigation Measure-AQ-2a, and Mitigation Measure-AQ-2b. As such, the project would not be expected to contribute a significant level of air pollution that would degrade regional air quality within the SVAB. This impact is **less than significant with mitigation**.

Consistent with the Friant Ranch Decision, Table 3.2-10 provides a conservative estimate of potential health effects associated with regional criteria pollutants generated by construction and operation of the project. Because construction emissions would not exceed SMAQMD's thresholds with implementation of Mitigation Measures LRDP-AQ-2a through LRDP-AQ-2c, LRDP-AQ-3a, Mitigation Measure AQ-2a, and Mitigation Measure AQ-2b, and the net change in long-term operational emissions are below SMAQMD's thresholds, this analysis was conducted using SMAQMD's Minor Project Health Screening Tool (version 2). The results presented in Table 3.2-10 are conservative because they are based on a source generating 82 pounds per day of ROG, NO_X, and PM2.5 during each day of the year. As shown in Table 3.2-8, maximum daily emissions during most years of construction are well below 82 pounds per day, and NO_X emissions in excess of SMAQMD's threshold would be reduced to below 85 pounds per day with implementation of Mitigation Measure AQ-2b.[4] Likewise, the net change in operational ROG, NO_X, and PM2.5 emissions resulting from implementation of the project are well below 82 pounds per day (and even net negative for NOx emissions, compared to existing conditions). For these reasons, any increase in regional health risks associated with project-generated emissions would be less than those presented in Table 3.2-10, which are already very small increases over the background incident health effect.

While implementation of the project would contribute to existing and future air pollution, it is important to consider the magnitude of project-generated emissions and potential health risks relative to ambient conditions. The increased health effects potentially associated with the project (see Table 3.2-10) are very small relative to the background regional incident health effect. Specific to just Sacramento County, the California Department of Public Health (2019) reported an annual average of 11,551 deaths from all causes between 2015 and 2017. The estimated two deaths for a project with emissions at or below air district thresholds (Table 3.2-10) are less than 0.02 percent of this total.

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

Table 3.2-10. Conservative Estimate of Increased Regional Health Effect Incidence Resulting from Implementation of the Project (cases per year)

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

Source: Sacramento Metropolitan Air Quality Management District 2020b.

Note: Since emissions would be generated by multiple sources, the analysis point at the center of the UC Davis Sacramento Campus was selected (38.552391, -121.451778).

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

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

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

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

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

[e] Less myocardial infarctions.

While the estimated health effects shown in Table 3.2-10 and the proportion of those effects relative to the regional and county background incidence are low, it is important to acknowledge that the model does not take into account population subgroups with greater vulnerabilities to air pollution, except in the analysis of age ranges for certain endpoints. As noted in SMAQMD's guidance, "the health effects of increased air pollution emissions may occur disproportionately in areas where the population is more susceptible to health effects from air pollution" (Ramboll 2020). The five determinants for increased susceptibility, as reported by the Centers for Disease Control and Prevention (2019), are genetics, behavior, environmental and physical influences, medical care, and social factors. The Public Health Alliance of Southern California has developed a Healthy Places Index (HPI) to characterize local community conditions, including several of these determinants. This data can be used to compare the overall relative health vulnerability of geographic areas. Based on the HPI, communities west of Stockton Boulevard have lower levels of health-promoting community conditions and may experience a disproportionate rate of health effects from the project compared to communities east of Stockton Boulevard (Public Health Alliance of Southern California 2020).

Ultimately, Sacramento County also does not attain the ozone, PM2.5, or PM10 NAAQS (Table 3.2-4). Certain individuals residing in areas that do not meet the ambient air quality standards could be exposed to pollutant concentrations that cause or aggravate acute and/or chronic health conditions (e.g., asthma, lost work days, premature mortality), regardless of implementation of the project.

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

Refer to measure description under Impact AQ-2.

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

Refer to measure description under Impact AQ-2.

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

Refer to measure description under Impact AQ-2.

Mitigation Measure LRDP-AQ-3a: Reduce receptor exposure to construction generated diesel particulate matter

Refer to measure description under Impact AQ-2.

Mitigation Measure AQ-2a: Electrify cranes used during construction

Refer to measure description under Impact AQ-2.

Mitigation Measure AQ-2b: Offset construction-generated NO_X emissions in excess of SMAQMD's threshold of significance

Refer to measure description under Impact AQ-2.

Localized Particulate Matter

During earthmoving activities required for construction, localized fugitive dust would be generated. The amount of dust generated by a project is highly variable and dependent on the size of the disturbed area at any given time, the amount of activity, soil conditions, and meteorological conditions. Despite this variability in emissions, SMAQMD (2020a) acknowledges that there are numerous control measures that can be reasonably implemented to significantly reduce construction fugitive dust emissions. Mitigation Measure LRDP-AQ-2a requires regular watering, covering of materials, and other practices that will reduce construction-related fugitive dust emissions by up to 75 percent, depending on the construction year and emissions source. Mitigation Measure LRDP-AQ-2b would also reduce exhaust related PM. With implementation of Mitigation Measures LRDP-AQ-2a and LRDP-AQ-2b, neither PM2.5 nor PM10 emissions would exceed SMAQMD's thresholds of significance (see Table 3.2-7). Accordingly, localized PM emissions would be **less than significant with mitigation** and would not expose receptors to substantial pollutant concentrations or risks.

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

Refer to measure description under Impact AQ-2.

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

Refer to measure description under Impact AQ-2.

Asbestos

According to the California Department of Conservation's *A General Location Guide for Ultramafic Rocks in California*, there are no geologic features normally associated with naturally occurring asbestos (NOA) (i.e., serpentine rock or ultramafic rock near fault zones) in or near the UC Davis Sacramento Campus (California Department of Conservation 2000). As such, there is no potential for impacts related to NOA emissions during construction activities.

Demolition and renovation of existing structures results in particulates that may disperse asbestos-containing materials (ACMs) to adjacent sensitive receptor locations. ACMs were commonly used as fireproofing and insulating agents prior to the 1970s. The U.S. Consumer Product Safety Commission banned use of most ACM in 1977 due to their link to mesothelioma. However, buildings constructed prior to 1977 may have used ACMs and could expose receptors to asbestos, which may become airborne with other particulates during demolition.

All demolition and renovation activities would be subject to the EPA's asbestos NESHAP. Asbestos regulations protect the public by minimizing the release of asbestos fibers during activities involving the processing, handling, and disposal of ACMs. The asbestos NESHAP regulations for demolition and renovation are referenced in SMAQMD Rule 902. Consequently, regulatory mechanisms exist that would ensure that impacts from ACM, if present during demolition and renovation occurring under the project, would be **less than significant**.

Other Toxic Air Contaminants

Construction

Construction of the project has the potential to create inhalation health risks at receptor locations within and adjacent to the UC Davis Sacramento Campus. The potential for project-generated TAC emissions to affect human health is typically assessed in terms of an increase in cancer risk and non-cancer health effects. Cancer risk is expressed as an incremental increase per million individuals. Non-cancer health effects are assessed by use of a HI, which is the sum of the ratios of each chemical's hazard quotient.[5] Based on the emissions sources during construction, cancer and non-cancer risk from exposure to diesel exhaust is much higher than the risk associated with any other TAC from construction. Accordingly, DPM is the focus of the construction health risk assessment.

Construction would result in DPM emissions primarily from diesel-fueled off-road equipment and heavy-duty trucks. Table 3.2-11 presets the maximum estimated health risks at receptor locations from exposure to construction-generated DPM. Receptors includes recreational, residential, educational, and medical facilities, as shown in Figure 3.2-2. The "existing" receptors are those present at the start of construction in 2021 and located within 1,000 feet of construction areas. "Future" receptors are those constructed after 2021, but in place before the end of construction in 2031. Both unmitigated risks and risks with implementation of Mitigation Measures LRDP-AQ-2b and AQ-2a are presented in Table 3.2-11. Mitigation Measures LRDP-AQ-2b and AQ-2a are required to reduce exhaust emissions from construction equipment and vehicles, as described under Impact AQ-2, and therefore will directly reduce associated health risks.

Table 3.2-11. Estimated Maximum Cancer and Chronic Hazard Risks from Construction-Generated DPM for the Project

	Cancer Risk (per million)		HI (unitless)	
Receptor Type	Unmitigated	Mitigated	Unmitigated	Mitigated
Existing Receptors				
Recreational (Shriners playground)	**<u>42*</u>**	3	<1	<1
Recreational (all other)	5	<1	<1	<1
Residential	**<u>353*</u>**	**<u>22*</u>**	<1	<1
Medical	**<u>156*</u>**	**<u>11*</u>**	<1	<1
Future Receptors				
Recreational (Aggie Square Phase I)	2	<1	<1	<1
SMAQMD Threshold	10	10	1	1

Source: ICF modeling (Appendix F). All values have been rounded to the nearest whole number.
Note: **<u>Bold underline</u>** with an asterisk (*) indicates an exceedance of SMAQMD's threshold.
HI = hazard index; AQ = air quality.

As shown in Table 3.2-11, construction activities could expose existing residential, recreational, and medical receptors to a significant increase in cancer risk. Because of the prevailing southerly winds, risks to residential receptors are greatest to those homes along the northern border of the

[5] The hazard quotient is determined for each TAC by comparing the modeled exposure level at a particular receptor location to the acceptable exposure level for that chemical; in other words, a hazard quotient is the fraction of a non-cancer health effects threshold, for a particular contaminant, experienced by a person at a particular location.

Sacramento Campus. Mitigation Measures LRDP-AQ-2b and AQ-2a will reduce DPM and corresponding health risks, as shown in Table 3.2-11, although they would remain above SMAQMD thresholds at residential and medical receptors.

Mitigation Measure LRDP-AQ-3a is required to further reduce receptor exposure to construction generated DPM. The measure includes restrictions on vehicle idling time and requires construction equipment be located as far as possible from receptors or used when adjacent sensitive receptors are present. The measure likewise encourages newer haul trucks and alternatively fueled equipment. Financial assistance for high-efficiency residential HVAC filters, which remove a greater faction of ambient PM2.5 compared to conventional filters, is also a component of the mitigation. MERV 15 air filters can reduce indoor PM10 concentrations by 65–99 percent, depending on installation and other variables (Dillion et al. 2019:Table 11). If all impacted residential receptors were to accept MERV 15 filters, estimated cancer risk at the maximally impacted receptor could be reduced to 2.2–7.7 per million. While this risk is below SMAQMD's threshold, renters and homeowners may not elect to accept financial assistance or install filters. Other actions implemented by UC Davis pursuant to Mitigation Measure LRDP-AQ-3a would reduce health risks, but it is unlikely they would be reduced to levels below SMAQMD thresholds without air filters. Accordingly, this impact is conservatively determined to be **significant and unavoidable.**

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

Refer to measure description under Impact AQ-2.

Mitigation Measure LRDP-AQ-3a: Reduce receptor exposure to construction generated diesel particulate matter

Refer to measure description under Impact AQ-2.

Mitigation Measure AQ-2a: Electrify cranes used during construction

Refer to measure description under Impact AQ-2.

Operation

While the project would not increase diesel haul truck activity at the building loading dock, it will re-route a portion of operational loading dock traffic from 45th Street and Doctors Way to Stockton Boulevard. This redistribution of traffic could reduce receptor exposure to DPM along existing travel routes but increase DPM exposure for receptors along Stockton Boulevard. Additional natural gas and diesel combustion at the CUP, as well as jet fuel combustion during LTO at the two campus helipads, would also emit TAC that could expose nearby sensitive receptors to increased cancer and non-cancer risks. Table 3.2-12 presents the maximum estimated health risks at receptor locations from exposure to operational TAC emissions under existing and project conditions. Like the construction health risk assessment, potential risks were estimated at on- and offsite recreational, residential, educational, and medical receptors, as shown in Figure 3.2-2. The net change in health risk is compared to SMAQMD thresholds.

Table 3.2-12. Estimated Maximum Cancer and Hazard Risks from Operations-Generated TAC under Existing and Project Conditions

	Existing Conditions			Project Conditions			Net Change[a]		
	Cancer	HI (unitless)		Cancer	HI (unitless)		Cancer	HI (unitless)	
Receptor Type	Risk[b]	Acute	Chronic	Risk[b]	Acute	Chronic	Risk[b]	Acute	Chronic
Existing Receptors									
Recreational (Shriners playground)	2	0.01	<0.01	1	<0.01	<0.01	-0.8	<-0.1	<-0.1
Recreational (all other)	1	0.01	<0.01	1	0.01	<0.01	-0.1	<-0.1	<+0.1
Residential	17	0.01	0.01	19	0.01	0.02	+1.4	<-0.1	<+0.1
Medical	1	0.01	<0.01	1	<0.01	<0.01	-0.8	<-0.1	<-0.1
Educational (Language Academy)	1	0.01	<0.01	1	0.01	<0.01	<-0.1	<+0.1	<+0.1
Future Receptors									
Recreational (Aggie Square Phase I)	<1	0.01	<0.01	<1	0.01	<0.01	<-0.1	<-0.1	<-0.1
Residential (Aggie Square Phase I)	1	0.01	<0.01	1	0.01	<0.01	-0.3	<-0.1	<-0.1
Residential (onsite in Plan Area)	16	0.01	0.01	17	0.02	0.01	+0.5	<+0.1	<+0.1
Medical (Rehabilitation Hospital)	<1	0.01	<0.01	<1	0.01	<0.01	<-0.0	<+0.1	<+0.1
Medical (California Tower)	n/a	n/a	n/a	1	0.01	<0.01	+0.9	<+0.1	<+0.1
SMAQMD Threshold	–	–	–	–	–	–	10	1	1

Source: ICF modeling (Appendix F).
Note: **Bold underline** with an asterisk (*) indicates an exceedance of SMAQMD's threshold.
HI = hazard index; n/a = receptor will only be constructed with implementation of the project.
[a] Project minus existing.
[b] Risk per million people.

As shown in Table 3.2-12, receptors would be exposed to varying levels of cancer and non-cancer health hazards under both existing and project conditions. The greatest risks are estimated to occur at existing and future residential receptors because of their proximity to the CUP. Implementation of the project would slightly increase estimated risks at these locations, relative to existing conditions, but the incremental change would be below SMAQMD's thresholds. While implementation of the project would increase emissions and associated health risks from the CUP, it would redistribute other emission sources among multiple locations, thereby reducing the concentration of pollutants at a single location. For example, helicopter activity under the project would be split between the Davis helipad and the new California Tower helipad. The new travel route for certain deliveries to the California Tower is also farther way from many receptor types and the current route. These modifications to existing sources result in a reduction in estimated health risks for many receptors, as shown in Table 3.2-12. Because the project would reduce health risks or result in only minor increases below SMAQMD thresholds, this impact is **less than significant**.

Impact AQ-4: Other emissions (such as those leading to odors) adversely affecting a substantial number of people (less than significant)

Summary of Impact AQ-4 by Component

Component	Level of Significance before Mitigation	Mitigation Measures Required	Level of Significance after Mitigation
Make-ready projects	LTS	None	–
California Tower construction, Surgery and Emergency Services Pavilion interior renovation, Central Utility Plant upgrades	LTS	None	–
Parking Structure 5 construction	LTS	None	–
East Main Hospital Wing demolition	LTS	None	–
Whole project	LTS	None	–

NI = no impact; LTS = less than significant; S = significant; SU = significant and unavoidable.

SMAQMD (2020a) considers wastewater treatment plants, landfills, composting and recycling facilities, petroleum refineries, asphalt batch plants, chemical and fiberglass manufacturing plants, painting/coating operations, rendering plants, coffee roasters, food packaging facilities, dairies, and metal smelting plants as potential odor emitting facilities.

Construction activities would require the use of diesel-fueled equipment, architectural coatings, and asphalt paving, all of which can have an associated odor. However, these odors are generally not pervasive enough to cause objectionable odors affecting a substantial number of people. Operation of the project could likewise result in minor levels of odor emissions from diesel combustion (delivery trucks, generators). However, the project land uses are not considered to be a significant source of odors, per SMAQMD (2020a) guidance. In addition, the project would not be located near any potentially significant sources of odors for which complaints have been rendered. The nearest potential odor-generating facility to the campus is the Naked Coffee Roaster, which has not received any odor complaints in the past 3 years. Likewise, there have been no odor complaints made to SMAQMD against the UC Davis Sacramento Campus in the past 3 years (Muller pers. comm.).

Based on the above analysis, the project would not cause odor effects nor expose receptors to adverse odors. The impact would be **less than significant**.

Mitigation Measures

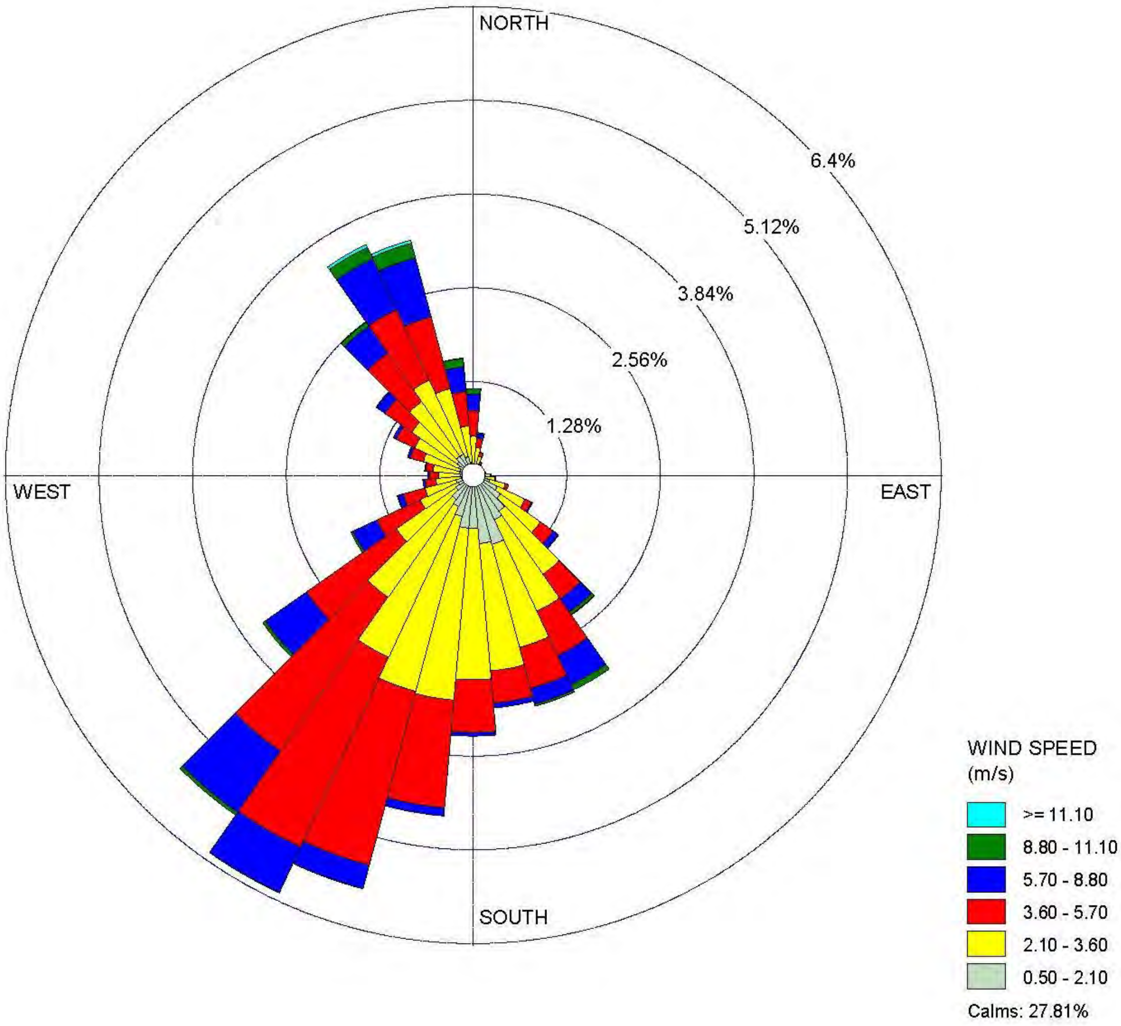
No mitigation measures are necessary.

WIND ROSE PLOT:

Station #23232 - Sacramento Executive Airport 2010-2014

DISPLAY:

Wind Speed
Direction (blowing from)

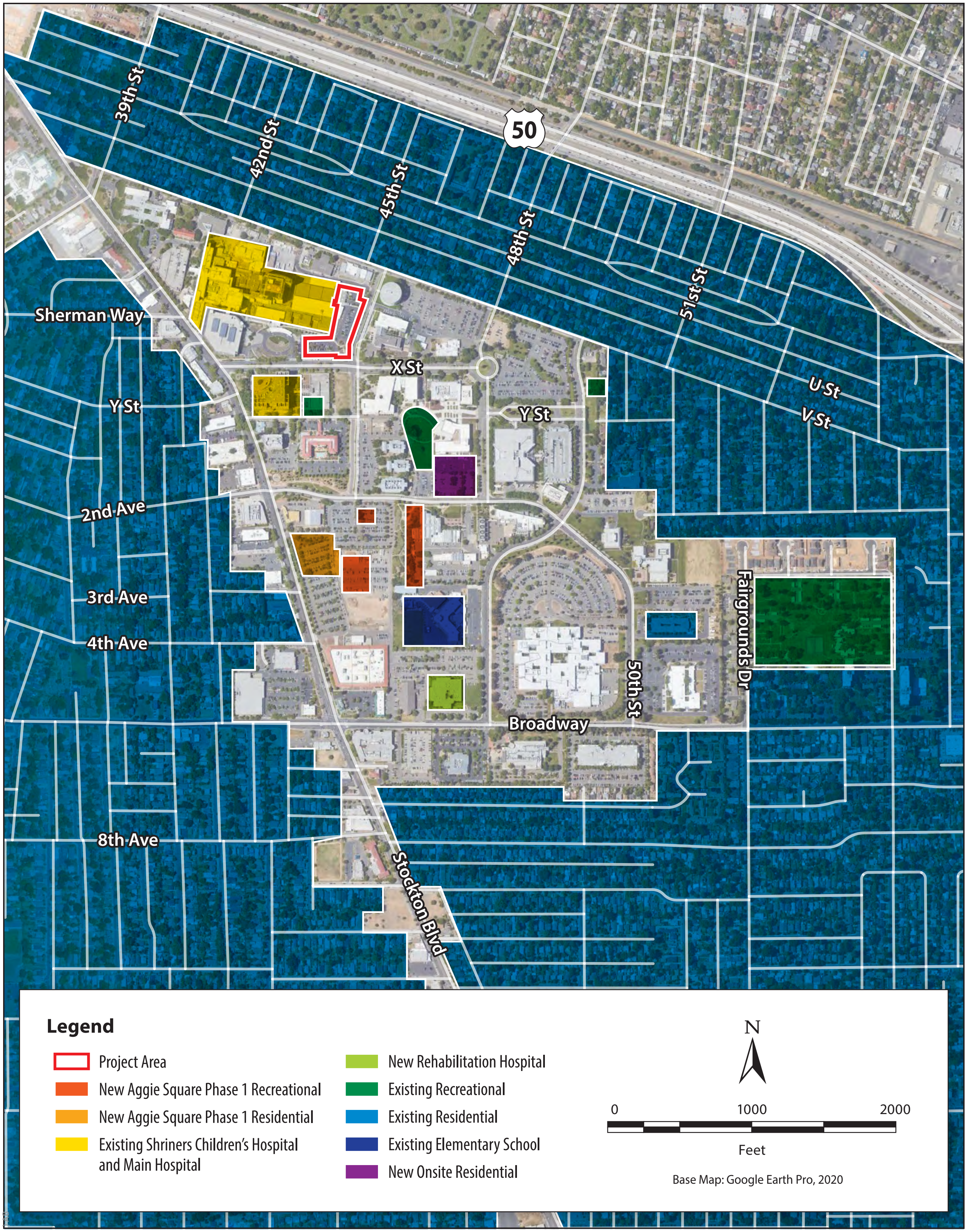


COMMENTS:	DATA PERIOD: **Start Date: 1/1/2010 - 00:00** **End Date: 12/31/2014 - 23:59**	COMPANY NAME:
		MODELER:
	CALM WINDS: **27.81%**	TOTAL COUNT: **41720 hrs.**
	AVG. WIND SPEED: **2.60 m/s**	DATE: **3/16/2020**	PROJECT NO.:

Graphics ... 00683.20 (6/21/21) AB

UC DAVIS

Figure 3.2-1
Prevailing Winds Near the Study Area



Graphics ... 00643.19 (7/8/21) AB

Fig 3.2-2
Sensitive Receptors

3.3 Biological Resources

This section describes the regulatory and environmental setting for biological resources on the project site and in the project vicinity, analyzes effects on biological resources that would result from implementation of the project, and provides mitigation measures, if applicable, to reduce the effects of any significant impacts.

Written comments received on the Notice of Preparation include a letter from California Department of Fish and Wildlife (CDFW) requesting that analysis in the EIR includes assessment of biological resources including habitat types and a recent inventory of rare, threatened, endangered, and other sensitive species, analysis of direct, indirect and cumulative impacts on biological resources, and mitigation measures for impacts to biological resources that consider fully protected species and nesting birds.

3.3.1 Existing Conditions

Regulatory Setting

University of California

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

University of California Davis Tree Protection Standards

The UC Davis main campus has recognized two categories of on-campus trees that meet standards for important trees. Campus development projects avoid removing these trees whenever possible. Important trees include:

- Heritage Trees: Healthy valley oak trees with trunk diameters of 33 inches or greater at a height of 24 inches from the ground.
- Specimen Trees: Healthy trees or stands of trees that are of high value to the campus because of their size, species, extraordinary educational and research value, and other exceptional local importance.

Federal

Federal Endangered Species Act

Pursuant to the federal Endangered Species Act (ESA) (Title 16 of the United States Code Section 1531 et seq.), the U.S. Fish and Wildlife Service (USFWS) and the National Oceanic and Atmospheric Administration, National Marine Fisheries Service (NMFS) regulate the "taking" of species listed in the ESA as threatened or endangered. In general, persons subject to ESA (including public agencies) are prohibited from "taking" endangered or threatened fish and wildlife species, and from "taking" endangered or threatened plants in areas under federal jurisdiction or in violation of state law. Under Section 9 of the ESA, the definition of "take" is to "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." USFWS has also interpreted the definition of "harm" to include significant habitat modification that could result in take.

Two sections of the ESA address take: Section 7 and Section 10. Section 10 regulates take if a non-federal agency is the lead agency for an action that results in take and no other federal agencies are involved in permitting the action. However, if a project would result in take of a federally listed species and federal discretionary action (even if a non-federal agency is the overall lead agency) is involved (i.e., a federal agency must issue a permit), the lead federal agency consults with USFWS under Section 7 of the ESA. Because the California Hospital Tower Project may involve federal permits, interagency cooperation under Section 7 of the ESA may be required. Section 7 of the ESA outlines procedures for federal interagency cooperation to protect and conserve federally listed species and designated critical habitat. Section 7(a)(2) requires federal agencies to consult with USFWS and NMFS to ensure that they are not undertaking, funding, permitting, or authorizing actions likely to jeopardize the continued existence of listed species or destroy or adversely modify designated critical habitat.

Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA), first enacted in 1918, provides for protection of international migratory birds and authorizes the Secretary of the Interior to regulate the taking of migratory birds. The MBTA provides that it is unlawful, except as permitted by regulations, to pursue, take, or kill any migratory bird, or any part, nest, or egg of any such bird. Under the MBTA, "take" is defined as "to pursue, hunt, shoot, wound, kill, trap, capture, or collect, or any attempt to carry out these activities." Take does not include habitat destruction or alteration, if there is not a direct taking of birds, nests, eggs, or parts thereof. The current list of species protected by the MBTA can be found in Title 50 of the Code of Federal Regulations (CFR), Section 10.13. The list includes nearly all birds that are native to the United States.

State

California Endangered Species Act

Pursuant to the California Endangered Species Act (CESA), a permit from CDFW is required for projects that could result in take of a plant or animal species that is listed by the state as threatened or endangered. Under CESA, "take" is defined as an activity that would directly or indirectly kill an individual of a species, but unlike the ESA definition, the CESA definition of take does not include "harm" or "harass." As a result, the threshold for take is higher under CESA than under ESA. Authorization for take of state-listed species can be obtained through a California Fish and Game Code Section 2081 incidental take permit.

California Native Plant Protection Act

State listing of plant species began in 1977 with the passage of the California Native Plant Protection Act (NPPA), which directed the California Department of Fish and Game to carry out the legislature's intent to "preserve, protect, and enhance endangered plants in this state." NPPA gave the California Fish and Game Commission the power to designate native plants as endangered or rare and to require permits for collecting, transporting, or selling such plants. CESA expanded upon the original NPPA and enhanced legal protection for plants. CESA established threatened and endangered species categories and grandfathered all rare animals—but not rare plants—into NPPA as threatened species. Accordingly, there are three listing categories for plants in California: Rare, Threatened, and Endangered.

California Fish and Game Code Sections 3503 and 3503.5

Section 3503 of the California Fish and Game Code states that it is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird. Section 3503.5 of the California Fish and Game Code states that it is unlawful to take, possess, or destroy any raptors (i.e., species in the orders Falconiformes and Strigiformes), including their nests or eggs. Typical violations include destruction of active nests as a result of tree removal or disturbance caused by project construction or other activities that cause the adult birds to abandon the nest, resulting in loss of eggs or young.

Fully Protected Species

Sections 3511, 4700, 5050, and 5515 of the California Fish and Game Code describe the take prohibitions for fully protected birds, mammals, reptiles and amphibians, and fish. Species listed under these statutes may not be taken or possessed at any time, and no incidental take permits can be issued for these species except for scientific research purposes or for relocation to protect livestock.

Regional and Local

City of Sacramento Tree Ordinance

Under the City of Sacramento tree ordinance (Ordinance 2016-0026), a permit is required to perform regulated work on “City Trees” or “Private Protected Trees” (which includes trees formerly referred to as “Heritage Trees”). “City Trees” are characterized as trees partially or completely growing in a City park, on City-owned property, or on a public right-of-way, including any street, road, sidewalk, park strip, mow strip, or alley. A “Private Protected Tree” is a tree designated as having special historical value, special environmental value, or significant community benefit, and is on private property. The following are considered Private Protected Trees.

- All native trees at 12-inch diameter measured at standard height (DSH), which is 4.5 feet above ground level. Native trees include coast, interior, valley, and blue oaks; California sycamore; and buckeye.
- All trees at 32-inch DSH growing on land with an existing single family or duplex dwelling.
- All trees at 24-inch DSH growing on undeveloped land or any other type of property such as commercial, industrial, and apartments.

Environmental Setting

Methods for Documenting Existing Biological Conditions

To evaluate and describe existing biological resources at the project site and identify potential effects of implementation of the California Hospital Tower Project on those resources, ICF biologists reviewed existing databases and species lists for the project vicinity and conducted a reconnaissance-level survey for biological resources on the Sacramento Campus on March 3, 2020

(Appendix G). The reconnaissance-level survey was conducted from roads in and bordering the Sacramento Campus. Biologists walked the open space and other landscaped portions of the campus, as well as the central campus major open space and the perimeter of the Sacramento Campus.

In addition to reviewing the EIRs for the 2010 Long Range Development Plan (LRDP) and the LRDP Update, the following sources were reviewed.

- CDFW's California Natural Diversity Database (CNDDB) record search within a 5-mile radius of the Sacramento Campus (California Department of Fish and Wildlife 2020).
- USFWS list of federally endangered, threatened, proposed, or candidate species evaluated for the project, using a database search of the USFWS Information, Planning, and Conservation System (IPaC) for the Sacramento Campus (U.S. Fish and Wildlife Service 2020).
- California Native Plant Society (CNPS) Online Inventory of Rare and Endangered Plants record search for the Sacramento East 7.5-minute quadrangle (California Native Plant Society 2020).

Sacramento Campus

The 146-acre Sacramento Campus is in the Sacramento Valley, which is characterized by a Mediterranean climate with hot, dry summers and mild, rainy winters. At its closest point, the campus is approximately 1.5 miles southwest of the American River.

The campus is bounded by V Street on the north, Stockton Boulevard on the west, Broadway to the south, and a residential neighborhood to the east. The campus is in an urbanized area in the city of Sacramento and is surrounded by residential and commercial development.

Vegetation Communities and Land Cover Types

The project vicinity includes the urban landscaping/development land cover type. This section focuses on additional details regarding trees within the urban landscaping/development land cover type.

Urban Landscaping/Development

Planted trees present in urban landscaping in the project vicinity and the associated demolition area include hackberry (*Celtis* sp.), pine (*Pinus* sp.), Washington fan palm (*Washingtonia filifera*), and other horticultural species. Areas of mowed turf grass, ornamental shrubs, and herbaceous flowering plants occur in the project area. Developed areas within the Sacramento Campus consist mostly of paved parking lots with some buildings, including the existing hospital tower.

Aquatic Resources and Sensitive Communities

The project vicinity does not support any waters of the United States, waters of the state, or sensitive natural communities (e.g., streams, wetlands, riparian areas) that would fall under the jurisdiction of federal or state resource agencies. Therefore, these sensitive resource categories will not be further addressed in this analysis.

Special-Status Species

Special-status species are plants and animals in one or more of following categories.

- Listed or proposed for listing as threatened or endangered under ESA (50 CFR Section 17.12 [listed plants] and various notices in the *Federal Register* [proposed species]).
- Listed as candidates for possible future listing (84 *Federal Register* 54732, October 10, 2019).
- Listed or candidates for listing by the State of California as threatened or endangered under CESA (14 California Code of Regulations Section 670.5).
- Listed as Fully Protected under the California Fish and Game Code (Sections 3511 [birds], 4700 [mammals], and 5050 [reptiles and amphibians]).
- Animals identified by CDFW as species of special concern on the Special Animals List.
- Plants listed as rare under the CNPPA (California Fish and Game Code Section 1900 et seq.).
- Plants considered to be "rare, threatened, or endangered in California" and assigned a California Rare Plant Rank (CRPR) (California Department of Fish and Wildlife 2020; California Native Plant Society 2020); the CDFW system includes rarity and endangerment ranks for categorizing plant species of concern, which are summarized as follows.
  - CRPR 1A: Plants are presumed to be extinct in California and either rare or extinct elsewhere.
  - CRPR 1B: Plants that are rare, threatened, or endangered in California and elsewhere.
  - CRPR 2: Plants that are extirpated, rare, threatened, or endangered in California but more common elsewhere.
  - CRPR 3: Plants about which more information is needed (a review list).
  - CRPR 4: Plants of limited distribution (a watch list).
- Considered a locally significant species; that is, a species that is not rare from a statewide perspective but is rare or uncommon in a local context such as within a county or region (California Environmental Quality Act [CEQA] Section15125 [c]) or is so designated in local or regional plans, policies, or ordinances (State CEQA Guidelines, Appendix G).
- Meets the definition of rare or endangered under CEQA Sections 15380 (b) and (d)

Lists of special-status species with potential to occur on the campus were compiled based on queries of the CNDDB (California Department of Fish and Wildlife 2020), species lists maintained by USFWS (U.S. Fish and Wildlife Service 2020), and the CNPS Online Inventory of Rare and Endangered Plants (California Native Plant Society 2020).

Special-Status Plants

Queries of the CNDDB and CNPS online rare plant inventory returned records of the following two special-status plant species that occur within a 5-mile radius of the Sacramento Campus.

Sanford's arrowhead (*Sagittaria sanfordii*) is a CRPR 1.B.2 species that is associated with marshes and swamps. This species has been documented at several locations within 5 miles of the Sacramento Campus, including sites along the American River, local creeks, and a drainage channel (California Department of Fish and Wildlife 2020). The nearest occurrence is approximately 1.25 miles east of the campus. The campus is primarily landscaped vegetation that is regularly maintained. The only undeveloped, open space areas on the campus do not have marsh, creek, or vegetated drainage channel habitats that would be suitable for Sanford's arrowhead. Because suitable habitat to support this plant species is not present on the campus, Sanford's arrowhead is not expected to occur.

Valley brodiaea (*Brodiaea rosea* ssp. *vallicola*) is a CRPR 4.2 species that grows in grassland swales and vernal pools. This species is known to occur within the Sacramento East USGS 7.5-minute quadrangle (California Department of Fish and Wildlife 2020). Vegetation on the Sacramento Campus is primarily landscaped vegetation that is regularly maintained. The only undeveloped, open space areas on the campus do not have natural grassland swales, vernal pools, or wetland habitats of any kind. Because suitable habitat to support this species is not present on the campus, valley brodiaea is not expected to occur.

No other special-status plant species are expected to occur on the Sacramento Campus, given its developed and highly disturbed condition.

Special-Status Wildlife

Queries of the CNDDB and USFWS species lists identified the following 15 special-status wildlife species that have been documented or have the potential to occur within a 5-mile radius of the campus.

- Valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*)—federally listed as threatened.
- Vernal pool fairy shrimp (*Branchinecta lynchii*)—federally listed as threatened.
- Vernal pool tadpole shrimp (*Lepidurus packardi*)—federally listed as endangered.
- California red-legged frog (*Rana draytonii*)—federally listed as threatened.
- California tiger salamander (*Ambystoma californiense*)—state- and federally listed as threatened.
- Giant garter snake (*Thamnophis gigas*)—state- and federally listed as threatened.
- White-tailed kite (*Elanus leucurus*)—fully protected.
- Purple martin (*Progne subis*)—species of special concern.
- Bank swallow (*Riparia riparia*)—state-listed as threatened.
- Swainson's hawk (*Buteo swainsoni*)—state-listed as threatened.
- Burrowing owl (*Athene cunicularia*)—species of special concern.
- Western yellow-billed cuckoo (*Coccyzus americanus occidentalis*)—state-listed as endangered and federally listed as threatened.
- American badger (*Taxidea taxus*)—species of special concern.
- Delta smelt (*Hypomesus transpacificus*)—state-listed as endangered and federally listed as threatened.
- Central Valley steelhead (*Oncorhynchus mykiss*)—federally listed as threatened.

Valley Elderberry Longhorn Beetle

Valley elderberry longhorn beetles are known to occupy elderberry shrubs within riparian habitats along the American River, approximately 2 miles northeast of the Sacramento Campus (California Department of Fish and Wildlife 2020). Nine blue elderberry (*Sambucus Mexicana*) shrubs, the host plant for valley elderberry longhorn beetle, are located within the campus major open space area. These nine elderberry shrubs were planted during initial development of the open space area in compliance with a mitigation measure in UC Davis Health's 1989 LRDP EIR to mitigate for impacts on urban wildlife. Historic aerial imagery of the campus major open space area in 1993 depicts the habitat as grassland with a few scattered trees located adjacent to existing buildings. Presently, vegetation in the vicinity of the elderberry shrubs consists of a variety of planted native and nonnative trees, including valley oak, interior live oak, cedar, pine, acacia, manzanita, and almond trees. This habitat is considered nonriparian.

Based on the USFWS's *2017 Framework for Assessing Impacts to the Valley Elderberry Longhorn Beetle,* occupancy of valley elderberry longhorn beetle within nonriparian habitats is assessed based on a several factors including presence of exit holes, proximity to known occupied sites and riparian areas, and site locality in relation to historic riparian corridors. The presence of exit holes in a shrub increases the likelihood that the shrub is occupied by valley elderberry longhorn beetles; however, a lack of exit holes does not preclude occupancy (U.S. Fish and Wildlife Service 2017).

There are nine elderberry shrubs present within the campus major open space area which is approximately 0.25 mile south of the project site. Therefore, valley elderberry longhorn beetles are not expected to occur on the project site. The major open space area would not be disturbed during construction or operation of the proposed project.

Aquatic Habitat Species

No suitable aquatic habitats (i.e., seasonal wetland, vernal pool, pond, emergent marsh, or perennial stream) are present at the Sacramento Campus for vernal pool fairy shrimp, vernal pool tadpole shrimp, California red-legged frog, California tiger salamander, giant garter snake, Delta smelt, or Central Valley steelhead. Therefore, these species are not expected to occur at the project site.

Purple Martin

Purple martins have been documented at several locations in project vicinity, with the closest occurrence 0.35 mile north of the project site (CNDDB occurrence ID 20). The population of purple martins in Sacramento has shown a significant decline since 2004, reduced from 173 nesting pairs in 2004 to only 29 nesting pairs in 2018 (Airola and Kopp 2018). Purple martins in the Sacramento area primarily use weep/drain holes on the underside of freeway and major road overpasses, including nearby colonies on Interstate 5, State Route 99, U.S. Route 50, and Sutterville Road (California Department of Fish and Wildlife 2020). Although there are no overpasses within the project site, there is a potential for purple martins to nest within tree cavities or within crevices in existing buildings, particularly drainpipes, within the project vicinity.

Western Yellow-Billed Cuckoo and Bank Swallow

No suitable riparian or stream bank habitat is present on the project site for western yellow-billed cuckoo or bank swallow. Therefore, these species are not expected to occur at the project site.

Burrowing Owl

Burrowing owls occupy grasslands and other habitats characterized by low-growing vegetation. This species nests in subterranean burrows excavated by small mammals, most notably California ground squirrel. Burrowing owls will also use culverts and rock/debris piles within suitable habitat for nesting and winter refuge. The only undeveloped area on the project site potentially large enough to support burrowing owls is within ruderal habitat along the eastern boundary of the Sacramento Campus. However, this area is far from the project site and does not contain ground squirrel or other small mammal burrows suitable for burrowing owls. Additionally, areas bordering the campus, including Greenfair Park and Marian Anderson School, do not provide suitable habitat for burrowing owls given the absence of suitable burrow sites, scattered trees that provide potential roosts for burrowing owl predators (burrowing owls generally avoid such habitats), and irrigated lawns. Therefore, burrowing owls are not expected to occur at the project site.

Swainson's Hawk and White-Tailed Kite

Swainson's hawk and white-tailed kites have been documented to nest in the project vicinity. There are numerous nesting records for Swainson's hawk and several records for white-tailed kite along the Sacramento River to the west and the American River to the north and east (California Department of Fish and Wildlife 2020). Swainson's hawks have also been reported to nest in urban areas within Sacramento, with the closest documented nest sites occurring 2 miles west of the Sacramento Campus within redwood trees in the backyard of a residence (CNDDB occurrence ID 2675) and at Freemont City Park (CNDDB occurrence ID 2216). Most of the trees on the Sacramento Campus are small to medium-stature landscape trees that are not expected to provide suitable nesting habitat for raptors. However, there are some large trees scattered throughout the campus that could support raptor nesting. Although raptors generally avoid nesting in urban areas, some birds have acclimated to human disturbances and may nest in less desirable areas to avoid competition with other territorial raptors for nesting sites. Overall, there is a low potential for Swainson's hawk or white-tailed kite to nest at the project site.

American Badger

American badgers require expansive areas of grasslands for denning and foraging. While the Sacramento Campus supports some areas of ruderal/grassland habitat, these areas are small (i.e., less than 1 acre), heavily disturbed (i.e., actively used as parking and materials staging), and are surrounded by urban development. The Sacramento Campus would not be suitable habitat for American badger and the species is not expected to occur at the project site.

Wildlife Movement Corridors

The project vicinity is largely developed and is surrounded by dense urban development. There are no streams or open contiguous habitat areas that link undeveloped portions of the Sacramento Campus to other natural or undeveloped areas outside the project area that could support wildlife populations. Therefore, no established wildlife movement corridors exist within the project site.

Wildlife movement within the project vicinity largely consists of migratory birds that could nest, forage, or take temporary refuge within trees. Tree and shrub nesting birds that are acclimated to human disturbances could use landscape trees for nesting within the project site.

3.3.2 Environmental Impacts

This section describes the environmental impacts associated with biological resources that would result from implementation of the California Hospital Tower Project. It describes the methods used to determine the effects of the California Hospital Tower Project and lists the thresholds used to conclude whether an impact would be significant. Measures to mitigate (i.e., avoid, minimize, rectify, reduce, eliminate, or compensate for) any significant impacts are provided, if available.

Methods for Analysis

The analysis of potential impacts on biological resources resulting from construction of the California Hospital Tower Project is based on a comparison of existing conditions, as described in *Environmental Setting*, to expected conditions during and after construction of the project. Evaluation of potential biological resource impacts is based on a review of existing species occurrence data and habitat requirements of species that could occur at the project site and vicinity.

Thresholds of Significance

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

- A substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the CDFW or USFWS.
- A substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations, or by the CDFW or USFWS.
- A substantial adverse effect on state- or federally protected wetlands (e.g., marshes, vernal pools, coastal wetlands) through direct removal, filling, hydrological interruption, or other means.
- Substantial interference with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impedance of the use of native wildlife nursery sites.
- Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.
- Conflict with the provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or state habitat conservation plan.

Issues not Evaluated Further

As discussed in the *Environmental Setting* above, there is not suitable habitat for any special-status plants known to occur in the region surrounding the Sacramento Campus, and no other special-status plant species are expected to occur in the project vicinity because of its developed and highly disturbed condition. No riparian or sensitive natural communities occur on the campus, and no waters of the United States or waters of the state are present on the campus. There is no adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or state habitat conservation plan in the project vicinity. Because the campus and, accordingly, the project site, does not support any special-status plant habitat, riparian habitat, sensitive natural communities, or state- or federally protected wetlands, and because there are no adopted habitat or natural community conservation plans that apply, these resources are not addressed further.

Impacts and Mitigation Measures

Impact BIO-1: Disturbance of vegetation-nesting migratory birds and raptors, including Swainson's hawk and white-tailed kite (less than significant with mitigation)

Summary of Impact BIO-1 by Component

Component	Level of Significance before Mitigation	Mitigation Measures Required	Level of Significance after Mitigation
Make-ready projects	S	LRDP-BIO-2	LTS
California Tower construction, Surgery and Emergency Services Pavilion interior renovation, Central Utility Plant upgrades	S	LRDP-BIO-2	LTS
Parking Structure 5 construction	S	LRDP-BIO-2	LTS
East Main Hospital Wing demolition	S	LRDP-BIO-2	LTS
Whole project	S	LRDP-BIO-2	LTS

NI = no impact; LTS = less than significant; S = significant; SU = significant and unavoidable.

The project site and vicinity contain scattered landscape trees and shrubs that provide nesting opportunities for migratory birds that occupy urban areas. Trees in the area are small in stature and are not likely to support nesting raptors; however, raptors, including Swainson's hawk and white-tailed kite could nest in large trees adjacent to the project site. There are numerous nesting records for Swainson's hawk and several records for white-tailed kite along the Sacramento River and American River in the vicinity of the project area (California Department of Fish and Wildlife 2020). Swainson's hawks have also been reported to nest in urban areas within Sacramento, with the closest documented nest sites occurring 2 miles west of the Sacramento Campus within redwood trees in the backyard of a residence (CNDDB occurrence 2675) and at John C. Fremont City Park (CNDDB occurrence 2216). If active migratory bird or raptor nests are present within or near areas proposed for construction as part of the California Hospital Tower Project, construction activities could result in the removal of active nests or disturbance of nesting birds, potentially resulting in nest abandonment, nest failure, or mortality of chicks or eggs.

Loss or disturbance of actively nesting migratory birds and raptors, including Swainson's hawk and white-tailed kite, would be considered a significant impact. Implementation of Mitigation Measure LRDP-BIO-2 would reduce this impact to a **less-than-significant** level.

Mitigation Measure LRDP-BIO-2: Conduct preconstruction surveys for nesting migratory birds and raptors, including special-status species, and establish protective buffers

For any projects implemented under the 2020 LRDP Update that would require vegetation removal (i.e., trees, shrubs, and ruderal vegetation) or would result in construction disturbances in the vicinity of vegetated areas, the following measures will be implemented prior to initiation of construction to avoid and minimize impacts to Swainson's hawk, white-tailed kite, and other vegetation-nesting migratory birds and raptors, and to avoid violation of the MBTA, CESA, and California Fish and Game Code Sections 3503, 3503.5, and 3511.

- For construction activities that occur during the nesting season for migratory birds and raptors, between February 15 and August 31, the University will ensure that a qualified wildlife biologist familiar with the nesting behavior of bird species that occur in the plan area to conduct a preconstruction nesting bird survey. The nesting bird surveys will be conducted no more than 14 days prior to vegetation removal or construction disturbance activities near nesting habitat. The survey will include a search of all trees and shrubs, and ruderal areas that provide suitable nesting habitat for birds and raptors within the construction disturbance area. In addition, a 600-foot area around the construction area will be surveyed for nesting raptors and a 100-foot area around the construction area will be surveyed for songbirds.
- If no special-status raptor species (i.e., Swainson's hawk or white-tailed kite) or active bird or raptor nests are detected during the preconstruction surveys, then no additional measures are required. If an active nest is found in the survey area, a no-disturbance buffer will be established to avoid disturbance or destruction of the nest site until the end of the breeding season (generally August 31) or until after a qualified wildlife biologist determines that the young have fledged and moved out of the construction area (this date varies by species). The extent of these buffers will be determined by a qualified biologist in coordination with any applicable agencies (as determined by species) and will depend on the level of noise or construction disturbance taking place, the line-of-sight between the nest and the disturbance, ambient levels of noise and other non-project disturbances, and other topographical or artificial barriers. Suitable buffer distances may vary between species; however, a minimum of 50 feet for songbirds and 300 feet for raptors is typical. In developed habitats, buffer areas may be adjusted based on presence of existing barriers.

Impact BIO-2: Disturbance of structure-nesting migratory birds, including purple martin (less than significant with mitigation)

Summary of Impact BIO-2 by Component

Component	Level of Significance before Mitigation	Mitigation Measures Required	Level of Significance after Mitigation
Make-ready projects	S	LRDP-BIO-3	LTS
California Tower construction, Surgery and Emergency Services Pavilion interior renovation, Central Utility Plant upgrades	S	LRDP-BIO-3	LTS
Parking Structure 5 construction	LTS	None	–
East Main Hospital Wing demolition	S	LRDP-BIO-3	LTS
Whole project	S	LRDP-BIO-3	LTS

NI = no impact; LTS = less than significant; S = significant; SU = significant and unavoidable.

The project vicinity contains several existing buildings that would be modified or demolished as part of project implementation, including Building #35 and the East Wing. These existing structures provide potential nesting areas for purple martins and other urban-dwelling non-special-status bird species, such as barn swallows (*Hirundo rustica*) and white-throated swifts (*Aeronautes saxatalis*). Purple martins are a colonial, cavity-nesting species that adapts well in urban areas, often using abandoned woodpecker holes, human-made nest boxes, or cavities in other structures such as bridges and overpasses. In the Sacramento area, purple martins most commonly nest in weep/drain holes on the underside of highway and major road crossings, often in the vicinity of a water source to provide foraging habitat (Airola and Kopp 2018). Although there are no previous nesting records within the Sacramento Campus, purple martins could utilize crevices and drains in existing structures within the project site for nesting. If active migratory bird nests are present within existing structures proposed for demolition activities, these activities could result in the removal of active nests or disturbance of nesting birds, potentially resulting in nest abandonment, nest failure, or mortality of chicks or eggs.

Loss or disturbance of actively nesting migratory birds, including purple martin, is considered a significant impact. Implementation of Mitigation Measure LRDP-BIO-3 would reduce this impact to a **less-than-significant** level.

Mitigation Measure LRDP-BIO-3: Modify existing structures during the non-breeding season for purple martin and other structure-nesting migratory birds or implement exclusion measures to deter nesting

For any projects implemented under the 2020 LRDP Update that would modify or demolish any existing building structures, the following measures will be implemented prior to initiation of construction to avoid and minimize impacts on purple martins and other structure-nesting migratory birds, and to avoid violation of the MBTA and California Fish and Game Code Section 3503.

- Conduct building demolition and modification activities during the non-breeding season for structure-nesting migratory birds (generally September 1 through January 31). If this is not possible, the University will implement the following avoidance measures.
- Prior to the start of each phase of demolition/construction that is anticipated to occur during the migratory bird breeding season (generally February through August), the University will retain a qualified wildlife biologist to thoroughly inspect structures that would be modified or disturbed to locate remnant bird nests or areas such as drain holes or crevices that could be used as nesting areas by migratory birds such as purple martins. It is preferable to perform this survey in the non-breeding season (September 1 through January 31) so that if nests are found and are determined to be inactive, they may be removed.
- After inactive nests are removed and prior to construction that would occur between February 1 and August 31, known or potential nesting areas on or within the building structure to be modified or demolished will be covered with a suitable exclusion material that will prevent birds from nesting (i.e., 0.5- to 0.75-inch mesh netting, plastic tarp, or other suitable material safe for wildlife). Portions of the existing structures containing drain holes or crevices that would be modified or disturbed also will be covered or filled with suitable material to prevent nesting (i.e., fiberglass insulation, foam padding, and polyvinyl chloride/acrylonitrile butadiene styrene). The University will ensure that a qualified wildlife management specialist experienced with installation of bird exclusion materials will ensure that exclusion devices are properly installed and will avoid inadvertent entrapment of

migratory birds. All exclusion devices will be installed before February 1 and will be monitored throughout the breeding season (typically several times a week). The exclusion material will be anchored so that birds cannot attach their nests to the structures through gaps in a net.

- Exclusion devices for migratory birds will be installed consistent with bat exclusion measures and in a manner that does not entrap day-roosting bats.
- If exclusion material is not installed on structures prior to February 1 and migratory birds colonize a structure, removal or modification to that portion of the structure may not occur until after August 31, or until a qualified biologist has determined that the young have fledged and the nest is no longer in use.
- If surveys determine that no active bird nests are present within existing structures to be modified or demolished and appropriate steps are taken to prevent migratory birds from constructing new nests as described in the preceding measures, work can proceed at any time of the year.

Impact BIO-3: Disturbance of structure-roosting bats (less than significant with mitigation)

Summary of Impact BIO-3 by Component

Component	Level of Significance before Mitigation	Mitigation Measures Required	Level of Significance after Mitigation
Make-ready projects	S	BIO-3	LTS
California Tower construction, Surgery and Emergency Services Pavilion interior renovation, Central Utility Plant upgrades	S	BIO-3	LTS
Parking Structure 5 construction	S	BIO-3	LTS
East Main Hospital Wing demolition	S	BIO-3	LTS
Whole project	S	BIO-3	LTS

NI = no impact; LTS = less than significant; S = significant; SU = significant and unavoidable.

Modification or disturbance of existing building structures within the project site could affect structure-roosting bats such as the Mexican free-tailed bat (*Tadarida brasiliensis*), little brown bat (*Myotis lucifugus*), and Yuma myotis (*Myotis yumanensis*) during the maternity season or hibernation period. Bats play important roles in California ecosystems and offer important benefits to humans, including the control of mosquitos and crop-damaging insects. Potential roosting habitat for bats in the project site includes crevices and dark enclosed spaces within buildings, drain holes, attics, tile roofs, and other suitable crevices that provide the appropriate thermal and physical conditions for day-roosting bats. Even if an active bat roost is not directly affected (i.e., removal of a section of a building where the roost occurs), noise generated from construction activities could be very loud and create vibrations within the structure that could disturb bats during the day when they are asleep. All of the project components involve construction or demolition that would occur at or near existing buildings where roosting could occur.

Construction activities could result in injury or mortality of bats if occupied roost sites are removed or disturbed at times when bats are present and are either not able to escape the roost site (e.g., early in the day, periods of cold weather) or have young. Surveys for bats in structures to be disturbed need to be done close to the time of building demolition or modification, in order to appropriately determine the presence or absence of the species. For this reason, bat surveys were not performed for this EIR, but are required as a mitigation measure.

This impact is considered significant. Implementation of Mitigation Measure BIO-3 would reduce this impact to a **less-than-significant** level.

Mitigation Measure BIO-3: Conduct pre-construction surveys for roosting bats and implement protection measures

Baseline data about how bats may use structures on the project site and in the project vicinity, their individual numbers, or how they vary seasonally are not available. Daily and seasonal variations in habitat use by bats is common. To obtain the highest likelihood of detection, the following pre-construction bat surveys will be conducted within the construction area prior to modification or demolition of existing building structures. If surveys determine that bats are roosting in the construction area, the University will implement the following protective measures.

Conduct Pre-Construction Surveys at Structures

- Before work begins on any building or structure, qualified bat biologists will conduct a thorough habitat assessment of the structures to evaluate their potential to support roosting bats and to look for evidence of bat use (i.e., guano, urine staining, audible vocalizations). The biologists will inspect crevices, drain holes, and other visible features that could house bats. If potential roost areas are identified within the disturbance area, then evening emergence surveys (further described below) would be conducted to determine whether the structure is occupied by bats. Surveys will occur no earlier than 30 days prior to the construction start-date. Prior to demolition of existing structures, it is recommended that a habitat assessment and emergence surveys be conducted 1-2 years before demolition during multiple seasons (i.e., summer breeding and winter hibernation) to allow for sufficient time to evaluate potential roost sites, determine occupancy status, identify species and population numbers, develop an appropriate eviction or exclusion plan, and establish appropriate offsite replacement habitat, if necessary.
- Qualified biologists also will conduct evening emergence surveys at structures that contain suitable roosting areas. The surveys will consist of at least one biologist stationed near potential entry and exit points of the structure watching for emerging bats from a half hour before sunset to 1–2 hours after sunset for a minimum of 2 nights at each survey location within the season that construction would be taking place. Surveys may take place over several nights to fully cover the extent of structure work. All emergence surveys will be conducted during favorable weather conditions (calm nights with temperatures conducive to bat activity and no precipitation predicted). Survey methodology may be supplemented as new research identifies advanced survey techniques and equipment that would aid in bat detections. Acoustic detectors will be used during emergence surveys to obtain data on bat species present in the survey area at the time of detection.
- If a building or structure proposed for modification or demolition is identified as supporting an active bat roost, additional surveys may be required to determine how the structure is

used by bats—whether it is used as a night roost, maternity roost, migration stopover, or for hibernation.

Identify Protective Measures for Bats Using Structures

- If it is determined that bats are using building structures within or adjacent to the construction area as roost sites, the University will coordinate with CDFW to identify protective measures to avoid and minimize impacts on roosting bats based on the type of roost and timing of activities. These measures could include the following actions.
  - If a non-maternity roost is located within a structure that would be modified or disturbed in a manner that would expose the roost, bats will be excluded from the structure by a qualified wildlife management specialist working with a bat biologist. An exclusion plan will be developed in coordination with CDFW that identifies the type of exclusion material/devices to be used, the location and method for installing the devices, and monitoring schedule for checking the effectiveness of the devices. Exclusion devices will be installed between September 15 and October 31 to avoid affecting maternal and hibernating bat roosts and will take place during weather and temperature conditions conducive to bat activity. Because bats are expected to tolerate temporary construction noise and vibrations, bats will not be excluded from structures if no direct impacts on the roost are anticipated.
  - An alternative to installing exclusion devices would be to make structural changes to a known roost proposed for removal to create conditions in the roost that are undesirable to roosting bats and encourage the bats to leave on their own (e.g., open additional portals so that the temperature, wind, light, and precipitation regime in the roost change). Structural changes to the roost will be authorized by CDFW and will be performed during the appropriate exclusion timing (listed above) to avoid harming bats.
  - If a maternity roost is located, whether solitary or colonial, that roost will remain undisturbed until September 15 or until a qualified biologist has determined that the roost is no longer active.

Impact BIO-4: Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance (less than significant)

Summary of Impact BIO-4 by Component

Component	Level of Significance before Mitigation	Mitigation Measures Required	Level of Significance after Mitigation
Make-ready projects	LTS	None	–
California Tower construction, Surgery and Emergency Services Pavilion interior renovation, Central Utility Plant upgrades	LTS	None	–
Parking Structure 5 construction	LTS	None	–
East Main Hospital Wing demolition	LTS	None	–
Whole project	LTS	None	–

NI = no impact; LTS = less than significant; S = significant; SU = significant and unavoidable.

Trees in the project vicinity that potentially meet the City of Sacramento standard for protected trees were planted as part of landscaping. The campus is not subject to the City's tree preservation ordinance, which requires a permit and compensation for loss of City Trees and Private Protected Trees due to construction activities. The UC Davis main campus recognizes two categories of on-campus trees that meet standards for important trees, including Heritage Trees and Specimen Trees. Based on the tree sizes and species for Heritage Trees (i.e., healthy valley oak trees with trunk diameters of 33 inches or greater at a height of 24 inches from the ground), no trees observed on the project site meet the UC Davis criteria for protected trees. No known documented Heritage or Specimen Trees occur on the project site.

UC Davis avoids removing native trees whenever practical and, if removal is required, includes the planting of native trees in landscaping plans. Removal of trees would be a long-term impact, due to the length of time required for newly planted trees to reach mature size. However, because these trees are all located in an urbanized area, the habitat in which the trees are located is not sensitive or critical as wildlife habitat. Construction of the California Hospital Tower Project would entail removal of non-protected trees, which would be re-planted at a 1:1 ratio. Because the loss of the trees in this urban area would not affect sensitive or critical wildlife habitat, the time span required for replacement of the habitat provided by the trees would not substantially affect wildlife on campus.

Because construction of the project components would not require removal of heritage or specimen trees, and non-protected trees would be replanted at a 1:1 ratio, this impact would be **less than significant.**

Mitigation Measures

No mitigation measures are necessary.

3.4 Archaeological, Historical, and Tribal Cultural Resources

This section describes the regulatory and environmental setting for archaeological, historical, and tribal cultural resources on the project site and in the project vicinity; analyzes effects on archaeological, historical, and tribal cultural resources that would result from implementation of the project; and provides mitigation measures, if applicable, to reduce the effects of any significant impacts.

Written comments received on the Notice of Preparation include a letter from the Native American Heritage Commission (NAHC) recommending consultation with California Native American Tribes, as well as discussion of impacts on tribal cultural resources.

3.4.1 Existing Conditions

Regulatory Setting

University of California

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

There are no UC regulations specifically related to archaeological, historical, or tribal cultural resources that apply to the California Hospital Tower Project.

Federal

National Historic Preservation Act

Among those statutes enacted by Congress that affect historic properties, the National Historic Preservation Act of 1966 (NHPA) is the most significant law that addresses historic preservation. One of the most important provisions of the NHPA is the establishment of the National Register of Historic Places (NRHP), the official designation of historical resources. Districts, sites, buildings, structures, and objects are eligible for listing in the NRHP. Nominations are listed if they retain integrity and are significant in American history, architecture, archeology, engineering, and culture. The NRHP is administered by the National Park Service and is the nation's master inventory of known historic resources. It includes listings of buildings, structures, sites, objects, and districts that possess historic, architectural, engineering, archaeological, and cultural value.

The formal criteria (36 Code of Federal Regulations [CFR] Section 60.4) for determining NRHP eligibility are as follows.

1. The property is at least 50 years old (however, properties under 50 years of age that are of exceptional importance or are contributors to a district can also be included in the NRHP);

2. It retains integrity of location, design, setting, materials, workmanship, feeling, and associations; and
3. It possesses at least one of the following characteristics:
    a. Association with events that have made a significant contribution to the broad patterns of history (events).
    b. Association with the lives of persons significant in the past (persons).
    c. Distinctive characteristics of a type, period, or method of construction, or represents the work of a master, or possesses high artistic values, or represents a significant, distinguishable entity whose components may lack individual distinction (architecture).
    d. Has yielded, or may be likely to yield, information important to prehistory or history (information potential).

A project is considered to have a significant impact when the effect on a historic property may diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association. These seven aspects of integrity are described as follows.

- **Location**. Integrity of location refers to whether a property remains where it was originally constructed or was relocated.
- **Design.** Integrity of design refers to whether a property has maintained its original configuration of elements and style that characterize its plan, massing, and structure. Changes made after original construction can acquire significance in their own right.
- **Setting.** Integrity of setting refers to the physical environment surrounding a property that informs the characterization of the place.
- **Materials**. Integrity of materials refers to the physical components of a property, their arrangement or pattern, and their authentic expression of a particular time period.
- **Workmanship**. Integrity of workmanship refers to whether the physical elements of a structure express the original craftsmanship, technology and aesthetic principles of a particular people, place or culture at a particular time period.
- **Feeling.** Integrity of feeling refers to the property's ability to convey the historical sense of a particular time period.
- **Association.** Integrity of association refers to the property's significance defined by a connection to a particular important event, person or design.

Listing in the NRHP does not ascribe specific protection or assistance for a property but it does afford recognition in planning for federal or federally assisted projects, eligibility for federal tax benefits, and qualification for federal historic preservation assistance. Additionally, project effects on properties listed in the NRHP must be evaluated under CEQA.

Section 106 of the National Historic Preservation Act

Federal protection of cultural resources is legislated by (a) the NHPA of 1966 as amended by 16 United States Code 470, (b) the Archaeological Resource Protection Act of 1979, and (c) the Advisory Council on Historical Preservation. Section 106 of the NHPA and accompanying regulations (36 CFR Part 800) constitute the main federal regulatory framework guiding cultural resources investigations and require consideration of effects on properties that are listed in, or may be eligible for listing in the NRHP. These laws and organizations maintain processes for determination of the effects on historical properties eligible for listing in the NRHP. For UC Davis, listing in the NRHP and compliance with Section 106 is relevant to future projects requiring federal permitting.

Secretary of the Interior's Standards

The Secretary of the Interior's Standards for the Treatment of Historic Properties (Secretary's Standards), codified in 36 CFR Part 67, provide guidance for working with historic properties. The Secretary's Standards are used by lead agencies to evaluate proposed rehabilitative work on historic properties. The Secretary's Standards are a useful analytic tool for understanding and describing the potential impacts of proposed changes to historic resources. Projects that comply with the Secretary's Standards benefit from a regulatory presumption under CEQA that they would not result in a significant impact on a historic resource. Projects that do not comply with the Secretary's Standards may or may not cause a substantial adverse change in the significance of a historic property.

In 1992, the Secretary's Standards were revised so they could be applied to all types of historic resources, including landscapes. They were reduced to four sets of treatments to guide work on historic properties: Preservation, Rehabilitation, Restoration, and Reconstruction. The four distinct treatments are defined as follows.

- Preservation focuses on the maintenance and repair of existing historic materials and retention of a property's form as it has evolved over time.
- Rehabilitation acknowledges the need to alter or add to a historic property to meet continuing or changing uses while retaining the property's historic character.
- Restoration depicts a property at a particular period of time in its history, while removing evidence of other periods.
- Reconstruction re-creates vanished or non-surviving portions of a property for interpretive purposes.

The Guidelines for the Treatment of Historic Properties

The Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring and Reconstructing Historic Buildings (Guidelines) illustrate how to apply the four treatment standards (Preservation, Rehabilitation, Restoration, and Reconstruction) to historic properties in a way that meets the Secretary's Standards and are advisory, not regulatory (U.S. Department of the Interior, National Park Service 2017). The purpose of the Guidelines is to provide guidance to historic building owners and building managers, preservation consultants, architects, contractors, and project reviewers prior to beginning work. They address both exterior and interior work on historic buildings. There are four sections, each focusing on one of the four treatment standards. Each section includes one set of standards with accompanying Guidelines that are to be used throughout the course of a project.

State

California Register of Historical Resources

All properties listed in or formally determined eligible for listing in the NRHP are eligible for listing in the California Register of Historical Resources (CRHR). The CRHR is a listing of State of California resources that are significant within the context of California's history. The CRHR is a statewide program of similar scope and with similar criteria for inclusion as those used for the NRHP. In addition, properties designated under municipal or county ordinances are also eligible for listing in the CRHR.

A historic resource must be significant at the local, state, or national level under one or more of the criteria defined in the California Code of Regulations (CCR) Title 15, Chapter 11.5, Section 4850. The CRHR criteria are similar to the NRHP criteria and are tied to CEQA because any resource that meets the criteria below is considered a historical resource under CEQA. As noted previously, all resources listed in or formally determined eligible for the NRHP are automatically listed in the CRHR.

The CRHR uses four evaluation criteria for listing eligibility of a resource to the CRHR.

1. Is associated with events or patterns of events that have made a significant contribution to the broad patterns of local or regional history, or the cultural heritage of California or the United States.
2. Is associated with the lives of persons important to local, California, or national history.
3. Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of a master, or possesses high artistic values.
4. Has yielded, or has the potential to yield, information important to the prehistory or history of the local area, California, or the nation.

Similar to the NRHP, a resource must meet one of the above criteria and retain integrity. The CRHR uses the same seven aspects of integrity as the NRHP (location, design, setting, materials, workmanship, feeling, and association).

California Environmental Quality Act

CEQA requires public agencies to consider the effects of their actions on both "historical resources" and "unique archaeological resources." Pursuant to Public Resources Code (PRC) Section 21084.1, a "project that may cause a substantial adverse change in the significance of an historical resource is a project that may have a significant effect on the environment." Section 21083.2 requires agencies to determine whether proposed projects would have effects on unique archaeological resources.

Historical Resources

"Historical resource" is a term with a defined statutory meaning (PRC, Section 21084.1; determining significant impacts on historical and archaeological resources is described in the State CEQA Guidelines, Sections 15064.5[a] and [b]). Under State CEQA Guidelines Section 15064.5(a), historical resources include the following.

1) A resource listed in, or determined to be eligible by the State Historical Resources Commission, for listing in the California Register of Historical Resources (Public Resources Code, Section 5024.1).
2) A resource included in a local register of historical resources, as defined in PRC Section 5020.1(k) or identified as significant in a historical resource survey meeting the requirements of PRC Section 5024.1(g), will be presumed to be historically or culturally significant. Public agencies must treat any such resource as significant unless the preponderance of evidence demonstrates that it is not historically or culturally significant.
3) Any object, building, structure, site, area, place, record, or manuscript which a lead agency determines to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California may

be considered to be a historical resource, provided the lead agency's determination is supported by substantial evidence in light of the whole record. Generally, a resource will be considered by the lead agency to be historically significant if the resource meets the criteria for listing in the California Register of Historical Resources (Public Resources Code, Section 5024.1), including the following:

a) Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;

b) Is associated with the lives of persons important in our past;

c) Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or

d) Has yielded, or may be likely to yield, information important in prehistory or history.

4) The fact that a resource is not listed in or determined to be eligible for listing in the California Register of Historical Resources, not included in a local register of historical resources (pursuant to PRC Section 5020.1(k)), or identified in a historical resources survey (meeting the criteria in PRC Section 5024.1(g)) does not preclude a lead agency from determining that the resource may be an historical resource as defined in PRC Section 5020.1(j) or 5024.1.

Unique Archaeological Resources

CEQA also requires lead agencies to consider whether projects will affect unique archaeological resources. PRC Section 21083.2, subdivision (g), states that unique archaeological resource means an archaeological artifact, object, or site about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria.

1. Contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information.
2. Has a special and particular quality such as being the oldest of its type or the best available example of its type.
3. Is directly associated with a scientifically recognized important prehistoric or historic event or person.

Tribal Cultural Resources

Assembly Bill (AB) 52, signed by the California Governor in September of 2014, added several sections to the PRC establishing a new class of resources under CEQA and a new category in the CEQA Appendix G environmental checklist: "tribal cultural resources." AB 52 requires that lead agencies undertaking CEQA review must, upon written request of a California Native American tribe, begin consultation once the lead agency determines that the application for the project is complete, prior to the issuance of a notice of preparation of an environmental impact report or notice of intent to adopt a negative declaration or mitigated negative declaration.

PRC Section 21074 states the following.

a) "Tribal cultural resources" are either of the following:

1) Sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe that are either of the following:

A) Included or determined to be eligible for inclusion in the California Register of Historical Resources.

B) Included in a local register of historical resources as defined in subdivision (k) of Section 5020.1.

2) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Section 5024.1. In applying the criteria set forth in subdivision (c) of Section 5024.1 for the purposes of this paragraph, the lead agency shall consider the significance of the resource to a California Native American tribe.

b) A cultural landscape that meets the criteria of subdivision (a) is a tribal cultural resource to the extent that the landscape is geographically defined in terms of the size and scope of the landscape.

c) A historical resource described in Section 21084.1, a unique archaeological resource as defined in subdivision (g) of Section 21083.2, or a "nonunique archaeological resource" as defined in subdivision (h) of Section 21083.2 may also be a tribal cultural resource if it conforms with the criteria of subdivision (a).

Declining consultation under AB 52 does not limit a tribe's option to consult on a project under other CEQA or federal cultural resources laws or limit protective measures to be taken under those other laws. Furthermore, tribes and individuals may still submit comments on the environmental document during the public circulation period even if a tribe chose not to consult under AB 52.

Public Resources Code Section 5024 and 5024.5

The California State Legislature enacted PRC Sections 5024 and 5024.5 as part of a larger effort to establish a state program to preserve historical resources. These sections of the code require state agencies to take a number of actions to ensure preservation of state-owned historical resources under their jurisdictions. These actions include evaluating resources for NRHP eligibility and California Historical Landmark eligibility, maintaining an inventory of eligible and listed resources, and managing these historical resources so that that they will retain their historic characteristics.

PRC Section 5024(f) requires state agencies to submit to the State Historic Preservation Officer for comment documentation for any project having the potential to affect historical resources under its jurisdiction that are listed in or potentially eligible for inclusion in the NRHP, or are registered or eligible for registration as California Historical Landmarks. The State Historic Preservation Officer has 30 days after receipt of the notice for review and comment.

Health and Safety Code, Section 7050.5

Section 7050.5 (b) of the California Health and Safety Code specifies protocol when human remains are discovered. The code states the following.

> In the event of discovery or recognition of any human remains in any location other than a dedicated cemetery, there shall be no further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent remains until the coroner of the county in which the human remains are discovered has determined, in accordance with Chapter 10 (commencing with Section 27460) of Part 3 of Division 2 of Title 3 of the Government Code, that the remains are not subject to the provisions of Section 27492 of the Government Code or any other related provisions of law concerning investigation of the circumstances, manner and cause of death, and the recommendations concerning treatment and disposition of the human remains have been made to the person responsible for the excavation, or to his or her authorized representative, in the manner provided in PRC Section 5097.98.

California Native American Historical, Cultural, and Sacred Sites Act

The California Native American Historical, Cultural and Sacred Sites Act applies to both state and private lands. The act requires that upon discovery of human remains, construction or excavation activity cease and the county coroner be notified. If the remains are of a Native American, the coroner must notify the NAHC. The NAHC then notifies those persons most likely to be descended from the Native American's remains. The act stipulates the procedures the descendants may follow for treating or disposing of the remains and associated grave goods. The descendants may, with the permission of private landowners, inspect the site and recommend to the owner or the person responsible for the excavation means for treating or disposing of the remains and associated grave goods. The descendants must complete their inspection and make recommendations within 24 hours of their notification by the NAHC. The recommendation may include scientific removal and nondestructive analysis.

Public Resource Code, Section 5097.5

PRC Section 5097.5 specifies the procedures to be followed in the event of the unexpected discovery of human remains on nonfederal land. The disposition of Native American burial falls within the jurisdiction of the NAHC. Section 5097.5 of the PRC states the following.

> No person shall knowingly and willfully excavate upon, or remove, destroy, injure, or deface any historic or prehistoric ruins, burial grounds, archaeological or vertebrate pale ontological site, including fossilized footprints, inscriptions made by human agency, or any other archaeological, paleontological or historical feature, situated on public lands, except with the express permission of the public agency having jurisdiction over such lands. Violation of this section is a misdemeanor.

Regional and Local

Sacramento Preservation Ordinance

The Sacramento Historic Preservation Ordinance is an enacted regulation enforced by the Community Development Department (City Municipal Code Chapter 17.604). The ordinance establishes a city preservation program, commission, and staff and provides mechanisms to identify and protect historic and cultural resources. It provides standards, criteria, and processes consistent with state and federal preservation standards and criteria. It also establishes the Sacramento Register or Historic and Cultural Resources, which is on file with the City Clerk.

City of Sacramento 2035 General Plan

Relevant goals and policies pertaining to cultural and historic resources are listed in the Citywide Historic and Cultural Preservation element of the *City of Sacramento 2035 General Plan* (City of Sacramento 2015).

Policies

HCR-2.1.1. Identification. The City shall identify historic and cultural resources, including individual properties, districts, and sites (e.g., archaeological sites), to ensure adequate protection of these resources.

HCR-2.1.6. Planning. The City shall take historical and cultural resources into consideration in the development of planning studies and documents.

HCR-2.1.16. Archaeological and Cultural Resources. The City shall develop or ensure compliance with protocols that protect or mitigate impacts to archaeological and cultural resources including prehistoric resources. (City of Sacramento 2015)

Environmental Setting

Ethnography

Nisenan

The California Hospital Tower Project and the Sacramento Campus are located within the lands occupied and used by the Nisenan, or Southern Maidu. The language of the Nisenan, which includes several dialects, is classified in the Maiduan family of the Penutian linguistic stock (Kroeber 1925; Shipley 1978). The western boundary of Nisenan territory was the western bank of the Sacramento River. The eastern boundary was "the line in the Sierra Nevada mountains where the snow lay on the ground all winter" (Kroeber 1929).

Nisenan settlement locations depended primarily on elevation, exposure, and proximity to water and other resources. Permanent villages usually were located on low rises along major watercourses. Village size ranged from three houses to 40 or 50. Houses were domed structures covered with earth and tule or grass and measured 3.0 to 4.6 meters (9.8 to 15 feet) in diameter. Brush shelters were used in summer and at temporary camps during food-gathering rounds. Larger villages often had semi-subterranean dance houses that were covered in earth and tule or brush, with a central smoke hole at the top and an east-facing entrance. Another common village structure was a granary used for storing acorns (Wilson and Towne 1978).

The Nisenan occupied permanent settlements from which specific task groups set out to harvest the seasonal bounty of flora and fauna that the rich valley environment provided. The Valley Nisenan economy involved riparian resources—in contrast to the Hill Nisenan, whose resource base consisted primarily of acorn and game procurement. The only domestic plant was native tobacco (*Nicotiana* sp.), but many wild species were closely husbanded. The acorn crop from the blue oak (*Quercus douglasii*) and black oak (*Q. kelloggii*) was so carefully managed that this activity served as the equivalent of agriculture. Acorns could be stored in anticipation of winter shortfalls in resource abundance. Deer, rabbit, and salmon were the chief sources of animal protein in the aboriginal diet, but many other insect and animal species were taken when available.

Religion played an important role in Nisenan life. The Nisenan believe that all natural objects were endowed with supernatural powers. Two kinds of shamans existed: curing shamans and religious shamans. Curing shamans had limited contact with the spirit world and diagnosed and healed illnesses. Religious shamans gained control over the spirits through dreams and esoteric experiences (Wilson and Towne 1978).

As with other California Native American groups, the gold rush of 1849 had a devastating effect on the Valley Nisenan. The flood of miners that came to the area in search of gold brought diseases with them that decimated the Nisenan population. Those who survived were subjected to violence and prejudice at the hands of the miners, and the Nisenan eventually were pushed out of their ancestral territory. Although this contact with settlers had a profound negative impact on the Nisenan population through disease and violent actions, the Nisenan people survived and maintained strong communities and action-oriented organizations.

Regional History

The city of Sacramento sits in the Sacramento Valley, the northern region of the Great Central Valley of California. The Sacramento Valley has the Sierra Nevada on its eastern border, the California Coast Ranges on the western border, and the Siskiyou Mountains to the north. Sacramento sits at the confluence of the Sacramento River and the American River and consists of flat topography with an average elevation of 25 feet above sea level. Sacramento is California's seventh most populated city and forms the core cultural and economic hub of a four-county metropolitan area.

The UC Davis Sacramento Campus occupies property along Stockton Boulevard at V Street and Broadway, some 2.5 miles southeast of downtown Sacramento and 17 miles east of the UC Davis Main Campus in Davis. The campus is surrounded by residential and commercial properties in an urbanized area of Sacramento. Stockton Boulevard serves as a major urban corridor with numerous office buildings and a few retail businesses. North of V Street, the Elmhurst neighborhood forms a residential center with numerous single-family homes. The North Oak Park neighborhood sits to the west of the hospital, and the Fairgrounds neighborhood sits at the southwest of the campus (JRP Historical Consulting Services 2002:12–14).

Development of American Hospitals

Early hospitals in the United States served as almshouses and jails for indigent individuals rather than centers for medical care. Over time this reputation shifted to one where hospitals reflected "citadels of science and bureaucratic order." Early hospitals relied on public funding and accepted everyone into their makeshift centers, often any available building at the time, where care adapted to suit the space rather than the other way around. This often led to dirty, overcrowded, and poorly ventilated treatment spaces catered specifically to lower-income individuals and foreigners. The overall effect resulted in these hospitals operating more as substitute houses for those without one, or a place where people went to die. Middle class or wealthy citizens almost never frequented such centers, instead seeking the expertise of private doctors. After 1840, hospitals moved to become the epicenter of medical practice with advancements in surgical practice, anesthesia, and sterilization procedures. A variety of public and privately funded institutions arose, specializing in the treatment of different segments of the population. County hospitals often adopted a "ward plan" that proved easier to construct and favorable to sanitation and care procedures. Long-term care and convalescent homes formed add-on components to the open space plans, as needed, as beds for more acutely ill patients rose in demand. "Big block" vertical hospitals began replacing the "ward plan" as specialized care and advances in the understanding of bacteria and antiseptic wound treatments grew into the early 20th century and construction capabilities allowed for taller, more stable buildings (JRP Historical Consulting Services 2002:12–14).

California County System of Hospitals

Since 1855, most counties oversaw responsibility for health care for the poor, where interpretation of Section 17000 of the State Welfare and Institutions Code translated to a mandatory duty for providing both financial and medical relief for the state's disadvantaged communities. Counties, however, could opt to pay a private institution to fulfill these legal duties. In California, many counties chose to simply operate their own general hospitals. California remains one of the few states to construct a network of well-developed county hospitals. These institutions catered specifically to the poor and those unable to pay for services outright whereas middle class patients capable of paying for care often were referred to private doctors and hospitals for treatment. This was upheld in court in 1933, where a group of Bakersfield doctors sued to stop Kern County General

Hospital from admitting patients capable of paying for services. The decision ensured private and tax-advantaged public county hospitals would not compete with private institutions for business (JRP Historical Consulting Services 2002:15).

The Great Depression laid bare how public institutions often relied on property taxes to fund their operations, a practice that failed many hospitals with the widespread economic crisis. While private insurance companies provided coverage for patients attending private institutions, no such funding arose for public hospitals. After 1966, when California enacted a state-level program, Medi-Cal, to complement the federal-level Medicare program that supported the elderly, county hospitals had to pay an annual lump-sum payment to the state in support of Medi-Cal. Patients who qualified for Medi-Cal seen at county hospitals required transfer to private institutions to free space for those unable to qualify for Medi-Cal. Due to changing political philosophies after the election of Ronald Reagan to the governorship, state support for county-operated hospitals under the "county plan"—whereby the state would cover all costs incurred above and beyond the base 1965 rate of the Medi-Cal law and patients could opt-in for care in county hospitals—eroded. Many county institutions closed, became privatized, contracted out, or transformed into medical schools for educational purposes. Sacramento County Hospital chose to ally with the nearby university medical school at UC Davis (JRP Historical Consulting Services 2002:15–16).

Establishment of Sacramento County Hospital (1852; consolidation 1876)

Fraternal organizations formed the earliest hospitals in Sacramento, starting with the Odd Fellows in 1850 and a group of doctors operating at Sutter's Fort Hospital. Charitable organizations also facilitated growth in local medical care, particularly catering to the needs of children, the mentally ill, and senior populations. The first public hospital occupied a space near the business district of the town as population grew and with it a concurrently growing medical need. The Gold Rush transformed Sacramento into a mining town hub and a place to receive medical care. Sacramento County continued to see a sustained, increasing need for medical services and later purchased 60 acres of property for a larger facility. Around 1852, the first Sacramento County hospital occupied multiple locations across the city. The first consolidated County Hospital building occupied 22 acres adjoining Stockton Boulevard and dates to 1871, with building designs by A. Bennett and a total cost of $80,000. This original building burned down in 1878, with its replacement, a ward-style plan with five wings radiating from a central administration building, designed by Nathaniel D. Goodell at the request of the Sacramento County Board of Supervisors. "Ward plan" hospitals often included an open-plan layout with only a handful of private rooms with ample sunshine and ventilation entering through multiple rows of windows on opposite elevations of the building and grouping of different illnesses in self-contained service units. Reflecting the times, the hospital also continued to serve the disadvantaged communities who could not pay for private care, particularly foreign residents, poorer laborers and, at times, ill soldiers. This building operated until 1908, when questionable sanitation practices and overcrowding necessitated a re-evaluation of the building's capabilities. The next expression of the hospital incorporated a formal allée approach to the administration building with 10 separate wards connected through open porches or underground passageways. This design emerged from the work of Rudolph A. Herold and resulted in demolition of many of Goodell's original buildings. This iteration of the complex dates to 1928, 2 years after Herold's death, with an additional annex, the Camellia Cottage (designed by Harry J. Devine) for aged women, receiving funding in 1934. The Camellia Cottage represents a transformation in the perception of elder care, focusing more on a home-like atmosphere catering to the needs of its residents at a time when most women relied on their families for support, only accepting public assistance when desperate

(Sacramento Bee 1900:8; University of California, Davis 2020a:15-17; JRP Historical Consulting Services 2002:13, 17–25).

The next expansion of the hospital facilities dates to 1950. This mid-twentieth century addition, designed by architect George C. Sellon, raised the height of the building to six stories and increased the total interior space to 140,000 square feet. This addition also altered Herold's original façade and reflected modern tastes. A new tower arose in 1964 east of the main hospital building. Standing eight stories and designed by Starks, Jozens, and Nacht, it added 120,000 square feet of space to the existing complex. A 34,000-square-foot addition east of the tower served as kitchen and laundry facilities. By 1964, all of Herold's original exterior design work became hidden by additions and alterations (JRP Historical Consulting Services 2002:22).

The Sacramento County Hospital's affiliation with the UC dates to 1966, with the state of California founding the UC Davis School of Medicine in 1965. With the development of Medi-Cal and Medicare came a subsequent agreement for UC Davis's medical campus to utilize the hospital as its primary educational facility, which replaced a proposed on-campus medical center, scrapped when the 1970 Health Sciences bond failed to pass. Operational and fiscal responsibility and ownership of the facility changed to UC Davis in 1972, with full ownership secured by 1978 with the renaming of the facility to the UC Davis Medical Center (JRP Historical Consulting Services 2002:22–23; University of California, Davis 2020a:16).

An eight-story tower addition, designed by Anshen & Allen, as well as a second story to the kitchen and laundry facility, came in 1982. The south wing of the campus received a Magnetic Resonance Imaging (MRI) facility, as well as an Ambulatory Surgery Unit in the 1980s. Additional emergency and operating facilities to the north and northeast sections of the complex were built in the 1990s. By 1989, UC Davis Medical Center operated some 59 separate buildings; 1999 saw the addition of a 14-story tower on the east portion of the campus near the laundry/kitchen addition, which added another 454,000 square feet of usable space. The overall nature of the original Sacramento County Hospital has changed dramatically over time with only a few of the older buildings remaining. The campus occupies 146 acres with more than two dozen buildings and facilities totaling 3.4 million gross square feet. All UC Davis School of Medicine teaching activities now operate at the UC Davis Medical Center Sacramento Campus; research is the primary activity at the UC Davis Main Campus facilities (JRP Historical Consulting Services 2002:23; University of California, Davis 2020a: 16-17).

Rudolph A. Herold (1870–1926)

Born in San Francisco on December 26, 1870, Rudolph A. Herold studied architecture in Europe for 3 years. His professional career began, developed, and ended in Sacramento. Herold designed several civic buildings in the downtown area, including the City Hall (1908), the County Court House (1912, demolished 1970s), the County Jail (demolished), the old Sacramento High School and the Sacramento County Hospital. Commercial buildings designed by Herold include the Capitol National Bank and the Masonic Temple. Herold designed other hospital buildings beyond Sacramento, including the Weimar Joint Sanitarium in Placer County. Herold's late-career notable commission dates to 1926: the six-story Providence Hospital and Nurses' Home in Oakland. Herold died on April 14, 1926 at the age of 55 (JRP Historical Consulting Services 2002:19–20; Find a Grave Index 2015).

Original State Fairgrounds

The UC Davis Medical Center now sits on several parcels that were the former California State Fairgrounds, which occupied much of the site from 1909 (when it first hosted the State Fair) until 1968, when it moved to the present site of Cal Expo north of the American River. Organizers of the California State Fair aimed "to educate the public about agriculture and industry in California." In August 1911, the California State Fair hosted the first Women's Day, spearheaded by notable leader of the College Equal Suffrage League of Northern California, Lillian Cash Hough. By October 1911, California hosted a special election that resulted in its becoming the sixth state to grant women the right to vote. In 1939, organizers could expect upwards of 500,000 visitors during a 10-day run of the fair. During World War I, the United States Army used the open areas for a temporary camp. The Army used the grounds for camps also during World War II, and the fair did not operate from 1942 to 1946. The decades between the 1950s through its relocation to Cal Expo in 1968 are seen as the golden age of the California State Fair, during which the fair hosted a variety of highly popular events at Broadway and Stockton Boulevard in addition to its agricultural programs, particularly ballooning, horse racing, and cultural exhibitions. Extant buildings include the Governor's Hall and the Exhibition Hall (originally known as the Machinery Building and currently functions as the Institute for Regenerative Cures) (University of California, Davis 2020b:30; Hendricks 2010:8, 31–35, 51, 53–54).

Known Cultural Resources

Archaeological Resources

On April 14, 2020, a records search was conducted at the California Historic Resources Information System North Central Information Center located at California State University, Sacramento. The records search included a review of previous cultural resources studies conducted for the campus, as well as previously recorded cultural resources. A records search showed that there were no known recorded archaeological resources associated with the Sacramento Campus site and the potential for Native American sites, including Native American burial sites, is low. On April 6, 2020, a request was sent to the NAHC for a search of their Sacred Lands database. The NAHC responded on April 14, 2020 stating that a sacred lands database search had revealed potential Native American resources, but did not indicated who to contact regarding the positive database result. On June 23, 2020, the NAHC provided a contact name at the United Auburn Indian Community. ICF staff has reached out to that contact on June 26, 2020, September 28, 2020, and April 1, 2021. No response has been received to date. Based on past experience, it is possible that the positive database search is a result of a buffer surrounding all rivers.

In 2004, during excavation for the addition of a radiation oncology lab in the Cancer Center, workers discovered a human cranial bone fragment and several other bones. Ground-disturbing activities were halted and the county coroner was notified of the discovery. The human remains were found in what was determined to be part of a long-forgotten burial ground at the former Sacramento County Hospital that was in use between 1891 and 1927. The Burial Ground Excavation conducted by Pacific Legacy archaeologists identified 78 burials in the project vicinity. Three burials consisted of casket remnants and three others were isolated bone fragments. The excavation was limited to the area comprising the footprint of the planned radiation oncology lab and, therefore, only established the location of a portion of the burial ground. The human remains and associated artifacts were transported to Pacific Legacy's lab and examined for data. It was determined that the burials were not Native American. After the lab work, all recovered human remains and associated artifacts were placed in caskets in a single mass grave at the St. Mary's Cemetery and Mausoleum in Sacramento.

Built Environment Resources

There are two UC-owned built environment architectural resources in the project vicinity that are 45 years of age or older, the Cypress Building and the Pathology Administration Building (Figure 3.4-1). The Cypress Building, constructed in 1954, was originally called the Primary Care Facility. The Pathology Administration Building was constructed in 1968 and was originally called the Pathology Support Building. These buildings have not been evaluated for eligibility for listing in state or federal registers. Additionally, there are approximately 15 residences on V Street in the Elmhurst neighborhood that were built between 1917 and 1976, making them 45 years old or older. These buildings have not been evaluated for eligibility for listing in state or federal registers. For the purposes of analysis of impacts resulting from the California Hospital Tower Project, it is assumed that all of these buildings are eligible for listing in state and federal registers.

Tribal Cultural Resources

The process for complying with AB 52 requires actions by both tribes and lead agencies and is separate from consultation procedures under other cultural resources laws. AB 52 instructs tribes to submit written requests to lead agencies to be formally notified of projects proposed in the geographic area with which the tribe is traditionally and culturally affiliated. Lead agencies that receive such requests must formally notify the concerned tribes of a project within 14 days of determining that an application for a project is complete or of a decision to undertake a project. The tribes so notified must respond in writing within 30 days of receiving the notice with a request to consult or decline consultation under AB 52. If consultation is requested, the lead agency must initiate the consultation process within 30 days of receiving the request, and prior to the release of an environmental document (negative declaration, mitigated negative declaration, or environmental impact report). Consultation is concluded when either (1) the parties agree to mitigate or avoid a significant effect on a tribal cultural resource, if such an effect is identified, or (2) a party, acting on good faith and after reasonable effort, concludes that a mutual agreement cannot be reached (PRC Section 20180.3.2, subdivision (b)).

Impacts on tribal cultural resources are assessed based on the results of consultations conducted pursuant to the AB 52 process. UC Davis has not received a request for notification of projects in Sacramento County from any of the local tribes. Accordingly, UC Davis is not required to issue invitations to consult under AB 52 and no AB 52 consultations with any tribe have occurred.

3.4.2 Environmental Impacts

This section describes the environmental impacts associated with archaeological, historical, and tribal cultural resources that would result from implementation of the California Hospital Tower Project. It describes the methods used to determine the effects of the project and lists the thresholds used to conclude whether an impact would be significant. Measures to mitigate (i.e., avoid, minimize, rectify, reduce, eliminate, or compensate for) any significant impacts are provided, if available.

Methods for Analysis

This analysis identifies the potential impacts of the California Hospital Tower Project on archaeological, historical, and tribal cultural resources on the project site and in the project vicinity. The impact analysis considers the known archaeological, historical, and tribal cultural resource environmental setting in the project vicinity, as well as the potential for previously undocumented resources, including human remains, and physical effects (i.e., disturbance, material alteration, demolition) to known and previously undocumented cultural resources that could result from project construction. The analysis is also informed by the provisions and requirements of federal, state, and local laws and regulations that apply to cultural resources.

Thresholds of Significance

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

- A substantial adverse change in the significance of a historical resource pursuant to Section 15064.5.
- A substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5.
- Disturbance of any human remains, including those interred outside of formal cemeteries.
- Potential to cause a substantial adverse change in the significance of a tribal cultural resource, defined in PRC Section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is listed or eligible for listing in the CRHR or in a local register of historical resources as defined in PRC Section 5020.1(k).
- Potential to cause a substantial adverse change in the significance of a tribal cultural resource, defined in PRC Section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is a resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of PRC Section 5024.1. In applying the criteria set forth in subdivision (c) of PRC Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.

Impacts and Mitigation Measures

Impact CUL-1: Potential to cause a substantial adverse change in the significance of a historical resource (less than significant)

Summary of Impact CUL-1 by Component

Component	Level of Significance before Mitigation	Mitigation Measures Required	Level of Significance after Mitigation
Make-ready projects	LTS	None	–
California Tower construction, Surgery and Emergency Services Pavilion interior renovation, Central Utility Plant upgrades	LTS	None	–
Parking Structure 5 construction	LTS	None	–
East Main Hospital Wing demolition	NI	None	–
Whole project	LTS	None	–

NI = no impact; LTS = less than significant; S = significant; SU = significant and unavoidable.

There are approximately 17 structures that are 45 years of age or older in the project vicinity. The properties are assumed to be historical resources as defined by CEQA for the purposed of analysis of impacts resulting from the California Hospital Tower Project.

The project would not result in direct impacts on any of these structures. The Cypress Building is located on the other side of the Main Hospital and more than 400 feet from the nearest construction, the East Main Hospital Wing demolition. The Pathology Support Building is adjacent to Building #35, but would not be directly affected by its removal. The removal of Building #35 as part of the Make-ready projects and PS5 would be the closest construction to the residences on V Street. Those structures are across V Street, approximately 50 feet from the parking structure site and 160 feet from the project site, and the structures would not be directly affected by the project. Therefore, the California Hospital Tower Project would not result in any direct substantial adverse change in the significance of a historical resource as defined in Section 15064.5.

The California Hospital Tower Project would introduce a new parking structure and new 14-story hospital structure to the area, which could affect the setting of these historic properties. However, the existing Davis Tower is 14 stories and is located within the same building complex as the proposed California Tower. The new structures would be similar in function, construction, and nature to the existing Davis Tower and other hospital structures. Therefore, while the project would affect the setting of the historic properties in the area, the change in the setting would not be significant because the area is already dominated by tall hospital structures. Therefore, the California Hospital Tower Project would not result in any indirect impacts that would cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5. This impact would be **less than significant.**

Mitigation Measures

No mitigation measures are necessary.

Impact CUL-2: Potential to cause a substantial adverse change in the significance of an archaeological resource (less than significant with mitigation)

Summary of Impact CUL-2 by Component

Component	Level of Significance before Mitigation	Mitigation Measures Required	Level of Significance after Mitigation
Make-ready projects	S	LRDP-CUL-1a LRDP-CUL-1b	LTS
California Tower construction, Surgery and Emergency Services Pavilion interior renovation, Central Utility Plant upgrades	S	LRDP-CUL-1a LRDP-CUL-1b	LTS
Parking Structure 5 construction	S	LRDP-CUL-1a LRDP-CUL-1b	LTS
East Main Hospital Wing demolition	S	LRDP-CUL-1a LRDP-CUL-1b	LTS
Whole project	S	LRDP-CUL-1a LRDP-CUL-1b	LTS

NI = no impact; LTS = less than significant; S = significant; SU = significant and unavoidable.

Although no archaeological resources have been identified on the project site or in the project vicinity (excluding the paupers grave site, which is addressed below under Impact CUL-3), ground disturbance associated with each of the project components could result in disturbances to unidentified buried archaeological resources. Because implementation of the project could cause a substantial adverse change in the significance of an archaeological resource, this impact would be significant. Implementation of mitigation measures LRDP-CUL-2a and LRPD-CUL-2b would reduce this impact to a **less-than-significant** level.

Mitigation Measure LRDP-CUL-2a: Conduct cultural resources sensitivity training

Prior to any ground disturbance, construction crews will be required to attend a cultural resources sensitivity training. The training will focus on identifying potential archaeological resources, as well as human remains. If potential archaeological resources or human remains are encountered, construction crews will be instructed to notify the UC immediately.

Mitigation Measure LRDP-CUL-2b: Stop work in the event of discovery of an archaeological resource

If an archaeological resource is discovered during construction, all project-related ground disturbance within 100 feet of the find will cease. The UC will contact a qualified archaeologist within 24 hours to inspect the site. If a resource is determined to qualify as a unique archaeological resource (as defined by CEQA), and the UC determines, in compliance with PRC 21083.2, which requires preservation in place as a first option, that the resource cannot feasibly be avoided, the UC will retain a qualified archaeologist to conduct excavations to recover the material. Any archaeologically important artifacts recovered during monitoring will be cleaned, catalogued, and analyzed, with the results presented in an archaeological data recovery report.

Impact CUL-3: Disturbance of any human remains, including those interred outside of dedicated cemeteries (less than significant with mitigation)

Summary of Impact CUL-3 by Component

Component	Level of Significance before Mitigation	Mitigation Measures Required	Level of Significance after Mitigation
Make-ready projects	S	LRDP-CUL-3a LRDP-CUL-3b	LTS
California Tower construction, Surgery and Emergency Services Pavilion interior renovation, Central Utility Plant upgrades	S	LRDP-CUL-3a LRDP-CUL-3b	LTS
Parking Structure 5 construction	S	LRDP-CUL-3a LRDP-CUL-3b	LTS
East Main Hospital Wing demolition	S	LRDP-CUL-3b	LTS
Whole project	S	LRDP-CUL-3a LRDP-CUL-3b	LTS

NI = no impact; LTS = less than significant; S = significant; SU = significant and unavoidable.

Historic human remains associated with the Sacramento County Hospital could be encountered during ground-disturbing activities associated with construction of make-ready projects (particularly street improvements) and the California Tower construction, and Parking Structure 5. These project components are located on or near a burial ground associated with the Sacramento County Hospital. It is estimated that between 899 and 1,174 individuals were interred at the hospital burial ground (Pacific Legacy 2005). Excavation associated with the hospital revealed that perhaps dozens of burials in the radiation oncology lab footprint had been destroyed by previous ground-disturbing activities dating from 1927. It is likely that many burials outside of the lab area have been disturbed or destroyed by ground-disturbing activities since 1927, reducing the number of remaining intact burials. However, intact burials could still be encountered and damaged or destroyed by construction activities. Because the project site may overlap with the identified cemetery area, it is likely that human remains would be encountered and testing and recovery would be required. Implementation of Mitigation Measures CUL-3 and LRDP-CUL-3b would ensure that impacts on human remains are avoided and accordingly, this impact would be **less than significant**.

Human remains not associated with the Sacramento County Hospital may also be encountered during ground-disturbing activities associated with all project components. Should human remains be encountered, the impact would be significant. Implementation of Mitigation Measures LRDP-CUL-3b would ensure that impacts on human remains are reduced to a less-than-significant level.

Mitigation Measure CUL-3: Develop and implement a testing, monitoring, and burial recovery plan

The University will retain a qualified archaeologist to develop and implement a subsurface testing, monitoring, and burial recovery plan. When project plans identifying the horizontal and vertical extent of subsurface disturbance have been developed, a testing plan to identify the extent of the cemetery area boundaries within the project footprint will be prepared and implemented. The plan will include methods and locations of testing and will provide guidance for the recovery, treatment and reburial of any human remains or associated artifacts located during testing and project construction. The plan will also include guidance for construction monitoring for burials, including locations that require monitoring and monitoring methods.

Mitigation Measure LRDP-CUL-3b: Stop work if human remains are encountered

In the event of a discovery on campus of human bone, suspected human bone, or a burial, all excavation within 100 feet of the find will halt immediately and the UC will contact a qualified archaeologist or the County Coroner within 24 hours to determine whether the bone is human. Consistent with California Health and Safety Code Section 7050.5(b), which prohibits disturbance of human remains uncovered by excavation until the coroner has made a finding relative to PRC Section 5097.5 procedures, the UC will ensure that the remains, and a reasonable buffer around the remains established in coordination with the coroner or archaeologist, are protected against further disturbance. If it is determined that the find is of Native American origin, the UC will comply with the provisions of PRC Section 5097.98 regarding identification and involvement of the Native American Most Likely Descendant (MLD).

If human remains cannot be left in place, the University will ensure that the qualified archaeologist and the MLD are provided opportunity to confer on archaeological treatment of human remains, and that appropriate studies, as identified through this consultation, are carried out prior to reinterment. The University will provide results of all such studies to the local Native American community and will provide an opportunity of local Native American involvement in any interpretative reporting.

If the human remains are determined to be historic, and cannot be avoided and preserved in place, the project site will be excavated under the supervision of an archaeologist and all human remains and associated artifacts will be removed from the site and analyzed. After analysis, all recovered human remains and associated artifacts will be placed in caskets and buried in a single mass grave at a local cemetery.

Impact TCR-1: Potential to cause a substantial adverse change in the significance of a tribal cultural resource with cultural value to a California Native American tribe and that is listed or eligible for listing in the California Register of Historical Resources or in a local register of historical resources as defined in Public Resources Code Section 5020.1(k) (no impact)

Summary of Impact TCR-1 by Component

Component	Level of Significance before Mitigation	Mitigation Measures Required	Level of Significance after Mitigation
Make-ready projects	NI	None	–
California Tower construction, Surgery and Emergency Services Pavilion interior renovation, Central Utility Plant upgrades	NI	None	–
Parking Structure 5 construction	NI	None	–
East Main Hospital Wing demolition	NI	None	–
Whole project	NI	None	–

NI = no impact; LTS = less than significant; S = significant; SU = significant and unavoidable.

The process for complying with AB 52 requires actions by both tribes and lead agencies and is separate from consultation procedures under other cultural resources laws. AB 52 instructs tribes to submit written requests to lead agencies to be formally notified of projects proposed in the geographic area with which the tribe is traditionally and culturally affiliated. Lead agencies that receive such requests must formally notify the concerned tribes of a project within 14 days of determining that an application for a project is complete or of a decision to undertake a project. The tribes so notified must respond in writing within 30 days of receiving the notice with a request to consult or decline consultation under AB 52. If consultation is requested, the lead agency must initiate the consultation process within 30 days of receiving the request, and prior to the release of an environmental document (negative declaration, mitigated negative declaration, or environmental impact report). Consultation is concluded when either (1) the parties agree to mitigate or avoid a significant effect on a tribal cultural resource, if such an effect is identified, or (2) A party, acting on good faith and after reasonable effort, concludes that a mutual agreement cannot be reached. (PRC Section 20180.3.2, subd. (b)).

Impacts on tribal cultural resources are assessed based on the results of consultations conducted pursuant to the AB 52 process. UC Davis has not received a request for notification of projects in Sacramento County from any of the local tribes; however, UC Davis notifies the Yocha Dehe Wintun Nation of all projects, and provides an update two or three times per year. Yocha Dehe Wintun Nation has requested consultation for projects generally west of the Sacramento River and within Yolo County, and not for this project (Dulcich pers. comm.). Accordingly, UC Davis is not required to issue invitations to consult under AB 52 and no AB 52 consultations with any tribe have occurred.

Subsequent discretionary projects may be required to prepare site-specific project-level analysis to fulfill CEQA requirements, which may include additional AB 52 consultation that could lead to the identification of tribal cultural resources. Although no tribal cultural resources within the project site and vicinity have been identified, it is possible that tribal cultural resources could be identified during analysis of subsequent projects. California law recognizes the need to protect tribal cultural resources from inadvertent destruction and the procedures for the treatment of tribal cultural resources are contained in PRC Section 21080.3.2 and Section 21084.3 (a).

Because UC Davis has not received requests from tribes culturally or traditionally affiliated with the project site or vicinity to be notified of opportunities to consult on new projects under AB 52, UC Davis is not required to take further action under AB 52 and there would be **no impact.**

Mitigation Measures

No mitigation measures are necessary.

Impact TCR-2: Potential to cause a substantial adverse change in the significance of a tribal cultural resource with cultural value to a California Native American tribe and that is a resource determined by the lead agency to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1 (no impact)

Summary of Impact TCR-2 by Component

Component	Level of Significance before Mitigation	Mitigation Measures Required	Level of Significance after Mitigation
Make-ready projects	NI	None	–
California Tower construction, Surgery and Emergency Services Pavilion interior renovation, Central Utility Plant upgrades	NI	None	–
Parking Structure 5 construction	NI	None	–
East Main Hospital Wing demolition	NI	None	–
Whole project	NI	None	–

NI = no impact; LTS = less than significant; S = significant; SU = significant and unavoidable.

Please see discussion under Impact TCR-1. Because UC Davis has not received requests from tribes culturally or traditionally affiliated with the project site or vicinity to be notified of opportunities to consult on new projects under AB 52, UC Davis is not required to take further action under AB 52, and there would be **no impact.**

Mitigation Measures

No mitigation measures are necessary.

If tribal cultural resources are identified during project implementation, compliance with PRC Section 21080.3.2 and Section 21084.3(a) would reduce impacts to a less-than-significant level.

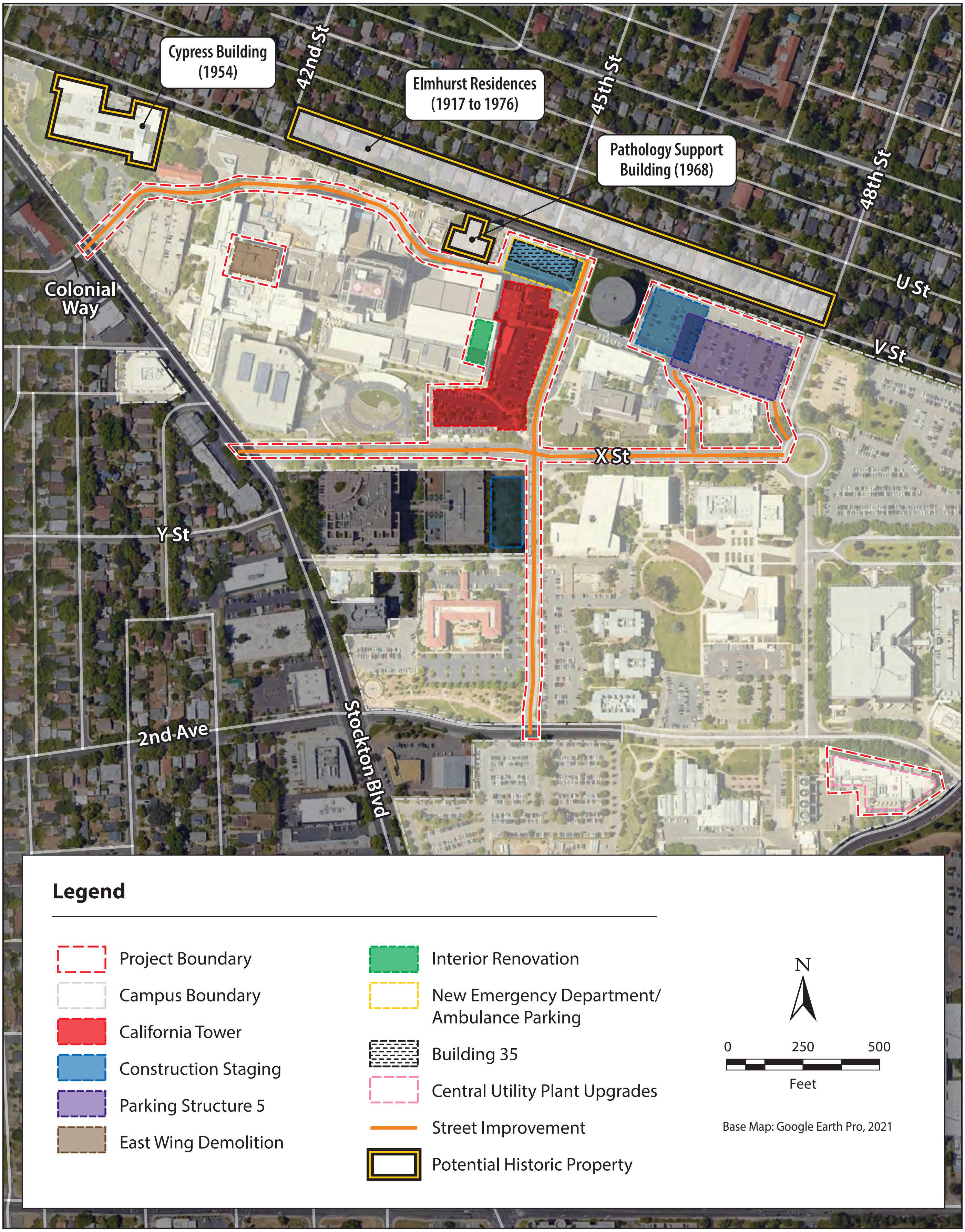


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Figure 3.4-1
Potential Historic Properties in the Vicinity of the Project

3.5 Energy

This section describes the regulatory and environmental setting for energy on the project site and in the project vicinity, analyzes effects on energy that would result from construction and operation of the project, and provides mitigation measures, if applicable, to reduce the effects of any significant impacts.

Written comments received on the Notice of Preparation include a letter from Sacramento Municipal Utility District (SMUD) describing existing SMUD facilities near the project site, and requirements for an interconnection assessment and an amendment to the Special Facilities Agreement SMUD has with the UC Davis Sacramento Campus.

3.5.1 Existing Conditions

Regulatory Setting

University of California

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

Sustainable Practices Policy

UC has a systemwide policy regarding sustainability practices and performance goals and targets (University of California 2020). The Sustainable Practices Policy, which is regularly updated (most recently in July 2020), is intended to further sustainability within the UC system and covers these nine areas of operational sustainability.

- Green building design
- Clean energy
- Climate protection
- Sustainable transportation
- Sustainable building and laboratory operations for campuses
- Zero waste
- Sustainable procurement
- Sustainable foodservices
- Sustainable water systems

Of these, the most relevant targets for energy use are established in the green building design, clean energy, climate protection, sustainable transportation, and sustainable water systems sections of the policy. In particular, through targets established with respect to green building design, UC Davis is committed to achieving a Leadership in Energy and Environmental Design (LEED) certification of Silver at a minimum but striving for Silver or higher with new construction, including the California Hospital Tower Project. Specifically, Section III.A.2 says that acute care/hospital facilities and medical office buildings shall be designed, constructed, and commissioned to outperform ASHRAE 90.1 - 2010 by at least 30 percent or meet the whole-building energy performance targets listed in Table 2 in Section V.A.3.

In September 2017, the UC Sustainability Steering Committee approved additional changes to the clean energy section, establishing the following goals and practices.

- 100 percent clean electricity by 2025 (clean electricity is defined as having a residual greenhouse gas (GHG) emission factor that is less than 150 pounds of carbon dioxide [CO_2] per megawatt-hour [MWh]), to be met through a campus-determined mix of onsite and offsite renewables.
- Implementation of energy efficiency actions in buildings and infrastructure systems to reduce the location's (campus's) energy use intensity by an average of at least 2 percent annually.
- By 2025, at least 40 percent of the natural gas combusted onsite at each location will be biogas (University of California 2020).

In addition, the policy states the following (University of California 2020).

> No new building or major renovation that is approved after June 30, 2019 shall use onsite fossil fuel combustion (e.g., natural gas) for space and water heating (except hospitals which are an exception, and those projects connected to an existing campus central thermal infrastructure). Projects unable to meet the requirement shall document the rationale for that decision.

The documentation must include a plan to mitigate associated GHG emissions, among other requirements.

As detailed in Section 3.7, *Greenhouse Gas Emissions*, UC's Sustainable Practices Policy on climate protection targets three goals: reduction of GHG emissions to 2000 levels by 2014, to 1990 levels by 2020, and climate neutrality as soon as feasible. *Climate neutrality* is defined in the policy as the University having a net zero impact on the earth's climate, which is to be achieved by minimizing GHG emissions as much as possible and purchasing carbon offsets or other measures to mitigate the remaining GHG emissions.

University Carbon Neutrality Initiative

In 2013 former UC President Janet Napolitano introduced the University Carbon Neutrality Initiative, which commits UC campuses to emitting net zero GHG emissions by 2025 from Scope 1 and 2 sources. Current UC President Michael Drake reaffirmed this goal in a statement made on January 20, 2021. In line with this initiative, UC Davis Health and other UC campuses have also committed to achieving net zero GHG emissions from all sources (including on-road mobile) by 2050. These goals require the UC Davis Health system, including the Sacramento Campus, to aggressively improve energy efficiency in buildings, reduce emissions from the campus fleet and other sources, and increase utilization of renewable energy sources. As part of the University Carbon Neutrality Initiative, internal guidelines have been developed to ensure that any use of offsets to achieve the carbon neutrality targets will result in additional, verified GHG emissions reductions from actions that align, as much as possible, with UC's research, teaching, and public service mission.

2009–2010 Climate Action Plan

UC Davis has prepared the *2009–2010 Climate Action Plan* (CAP; University of California, Davis 2010), which includes both the Davis and Sacramento Campuses, as well as outlying facilities. The CAP describes and addresses policy and regulatory requirements of (1) UC's Sustainable Practices Policy; (2) Assembly Bill (AB) 32, including CARB's GHG Mandatory Reporting Program; (3) the American College and University Presidents Climate Commitment; (4) CEQA; and (5) U.S. Environmental Protection Agency (EPA) reporting requirements. The CAP provides documentation of how campus GHG emissions are calculated, a report of 2008 emissions, estimates of past (to 1990) and future emissions (to 2020), a statement of GHG emission reduction goals, a characterization of options and methods to reduce emissions, and a blueprint for future action.

The CAP was written before the UC Carbon Neutrality Initiative was announced and written into UC's Sustainable Practices Policy. The Carbon Neutrality Initiative commits UC to emitting net zero GHGs from its buildings and vehicle fleet by 2025. As such, the CAP uses the 2014 and 2020 targets, rather than the UC committing to emitting net zero greenhouse gases from its buildings and fleet by 2025, with an understanding that climate neutrality will require fundamental shifts in global and national energy policy, energy production, and technologies currently using fossil fuels. The CAP focuses on emissions related to campus operations, rather than commuting and business air travel, because the share of operations-related emissions is much larger (three to four times greater) than the share attributable to commuting and air travel or commuting alone, respectively. The CAP provides analysis of commuting and air travel reduction options but does not quantify emissions reductions for those options (University of California, Davis 2010). UC Davis is currently in the process of updating the CAP. UC Davis is also conducting a transportation demand management planning study to determine options for additional GHG reduction related to commuting.

Federal

Energy Policy and Conservation Act

The Energy Policy and Conservation Act of 1975 sought to ensure that all vehicles sold in the United States would meet certain fuel economy goals. Through this act, Congress established the first fuel economy standards for on-road motor vehicles in the United States. Pursuant to this act, the National Highway Traffic and Safety Administration, which is part of the U.S. Department of Transportation (USDOT), is responsible for establishing additional vehicle standards and for revising existing standards. Since 1990, the fuel economy standard for new passenger cars has been 27.5 miles per gallon. Since 1996, the fuel economy standard for new light trucks (gross vehicle weight of 8,500 pounds or less) has been 20.7 miles per gallon. Heavy-duty vehicles (i.e., vehicles and trucks over 8,500 pounds gross vehicle weight) are not currently subject to fuel economy standards. Compliance with federal fuel economy standards is determined based on each manufacturer's average fuel economy for the portion of its vehicles produced for sale in the United States. The Corporate Average Fuel Economy (CAFE) program, administered by the EPA, was created to determine vehicle manufacturers' compliance with the fuel economy standards. EPA calculates a CAFE value for each manufacturer based on city and highway fuel economy test results and vehicle sales. Based on the information generated under the CAFE program, USDOT is authorized to assess penalties for noncompliance.

Energy Policy Act of 1992

The Energy Policy Act of 1992 (EPAct) was passed to reduce the country's dependence on foreign petroleum and improve air quality. EPAct includes several parts intended to build an inventory of alternative fuel vehicles (AFVs) in large, centrally fueled fleets in metropolitan areas. EPAct requires certain federal, state, and local government and private fleets to purchase a percentage of light duty AFVs capable of running on alternative fuels each year. In addition, financial incentives are included in EPAct. Federal tax deductions are allowed for businesses and individuals to cover the incremental cost of AFVs. States are also required by the act to consider a variety of incentive programs to help promote AFVs.

Energy Policy Act of 2005

The Energy Policy Act of 2005 was signed into law on August 8, 2005. Generally, the act provides for renewed and expanded tax credits for electricity generated by qualified energy sources, such as landfill gas; provides bond financing, tax incentives, grants, and loan guarantees for a clean renewable energy and rural community electrification; and establishes a federal purchase requirement for renewable energy.

State

Warren-Alquist Act

The 1975 Warren-Alquist Act established the California Energy Resources Conservation and Development Commission, now known as the California Energy Commission (CEC). The act established state policy to reduce wasteful, uneconomical, and unnecessary uses of energy by employing a range of measures. The California Public Utilities Commission (CPUC) regulates privately owned utilities in the energy, rail, telecommunications, and water sectors.

Assembly Bill 2076: Reducing Dependence on Petroleum

Pursuant to AB 2076 (Chapter 936, Statutes of 2000), CEC and the California Air Resources Board (CARB) prepared and adopted a joint agency report in 2003, *Reducing California's Petroleum Dependence*. Included in this report are recommendations to increase the use of alternative fuels to 20 percent of on-road transportation fuel use by 2020 and to 30 percent by 2030, significantly increase the efficiency of motor vehicles, and reduce per capita vehicle miles traveled (VMT) (California Energy Commission and California Air Resources Board 2003). Further, in response to the CEC's 2003 and 2005 *Integrated Energy Policy Reports*, Governor Joseph Graham "Gray" Davis directed CEC to take the lead in developing a long-term plan to increase alternative fuel use. A performance-based goal of AB 2076 was to reduce petroleum demand to 15 percent below 2003 demand by 2020.

Integrated Energy Policy Report

Senate Bill (SB) 1389 (Chapter 568, Statutes of 2002) required CEC to conduct "assessments and forecasts of all aspects of energy industry supply, production, transportation, delivery and distribution, demand, and prices." It also required the CEC to use these assessments and forecasts to "develop energy policies that conserve resources, protect the environment, ensure energy reliability, enhance the state's economy, and protect public health and safety" (Public Resources Code Section 25301(a)). This work culminated in the *Integrated Energy Policy Report* (IEPR).

CEC adopts an IEPR every 2 years and an update every other year. The 2019 IEPR is the most recent IEPR, which was adopted February 20, 2020. The 2019 IEPR provides a summary of priority energy issues currently facing the state, outlining strategies and recommendations to further the state's goal of ensuring reliable, affordable, and environmentally responsible energy sources. Energy topics covered in the report include progress toward statewide renewable energy targets and issues facing future renewable development; efforts to increase energy efficiency in existing and new buildings; progress by utilities in achieving energy efficiency targets and potential; improving coordination among the state's energy agencies; streamlining power plant licensing processes; results of preliminary forecasts of electricity, natural gas, and transportation fuel supply and demand; future energy infrastructure needs; the need for research and development efforts to support statewide energy policies; and issues facing California's nuclear power plants.

Senate Bill 1078: California Renewables Portfolio Standard Program

SB 1078 (Chapter 516, Statutes of 2002) establishes a Renewable Portfolio Standard (RPS) for electricity supply. The RPS requires that retail sellers of electricity, including investor-owned utilities and community choice aggregators, provide 20 percent of their supply from renewable sources by 2017. This target date was moved forward by SB 1078 to require compliance by 2010. In addition, electricity providers subject to the RPS must increase their renewable share by at least 1 percent each year. The outcome of this legislation will impact regional transportation powered by electricity. As of 2016, the state has reported that a minimum of 25 percent of electricity has been sourced from certified renewable sources (California Public Utilities Commission 2017).

Senate Bill X1-2: California Renewable Energy Resources Act

SB X1-2 of 2011 required all California utilities to generate 33 percent of their electricity from renewables by 2020. SB X1-2 set a three-stage compliance period requiring all California utilities, including independently owned utilities, energy service providers, and community choice aggregators, to generate 20 percent of their electricity from renewables by December 31, 2013; 25 percent by December 31, 2016; and 33 percent by December 31, 2020. SB X1-2 also required the renewable electricity standard to be met increasingly with renewable energy that is supplied to the California grid from sources within, or directly proximate to, California. SB X1-2 mandates that renewables from these sources make up at least 50 percent of the total renewable energy for the 2011–2013 compliance period, at least 65 percent for the 2014–2016 compliance period, and at least 75 percent for 2016 and beyond.

Senate Bill 350: Clean Energy and Pollution Reduction Act of 2015

The Clean Energy and Pollution Reduction Act of 2015 (SB 350) requires the amount of electricity generated and sold to retail customers per year from eligible renewable energy resources to be increased to 50 percent by December 31, 2030. This act also requires doubling of the energy efficiency savings in electricity and natural gas for retail customers through energy efficiency and conservation by December 31, 2030.

Energy Action Plan

The first Energy Action Plan emerged in 2003 from a crisis atmosphere in California's energy markets. California's three major energy policy agencies (CEC, CPUC, and the Consumer Power and Conservation Financing Authority [established under deregulation and now defunct]) came together to develop a high-level, coherent approach to meeting California's electricity and natural gas needs.

It was the first time that energy policy agencies formally collaborated to define a common vision and set of strategies to address California's future energy needs and emphasize the importance of the impacts of energy policy on the California environment.

In the October 2005 *Energy Action Plan II: Implementation Roadmap For Energy Policies*, CEC and CPUC updated their energy policy vision by adding some important dimensions to the policy areas included in the original Energy Action Plan, such as the emerging importance of climate change, transportation-related energy issues, and research and development activities. The CEC adopted an update to the Energy Action Plan II in February 2008 that supplements the earlier Energy Action Plans and examines California's ongoing actions in the context of global climate change.

Assembly Bill 1007: State Alternative Fuels Plan

AB 1007 (Chapter 371, Statues of 2005) required CEC to prepare a state plan to increase the use of alternative fuels in California. CEC prepared the *State Alternative Fuels Plan* (SAF Plan) in partnership with CARB and in consultation with other state, federal, and local agencies. The SAF Plan presents strategies and actions California must take to increase the use of alternative, non-petroleum fuels in a manner that minimizes the costs to California and maximizes the economic benefits of in-state production. The SAF Plan assessed various alternative fuels and developed fuel portfolios to meet California's goals to reduce petroleum consumption, increase alternative fuel use, reduce GHG emissions, and increase in-state production of biofuels without causing a significant degradation of public health and environmental quality.

Executive Order S-06-06

Executive Order (EO) S-06-06, signed on April 25, 2006, established targets for the use and production of biofuels and biopower, and directs state agencies to work together to advance biomass programs in California while providing environmental protection and mitigation. The EO established the following target to increase the production and use of bioenergy, including ethanol and biodiesel fuels made from renewable resources: produce a minimum of 20 percent of its biofuels within California by 2010, 40 percent by 2020, and 75 percent by 2050. The EO also calls for California to meet a target for use of biomass electricity. The *2011 Bioenergy Action Plan* identifies those barriers and recommends actions to address them so that the state can meet its clean energy, waste reduction, and climate protection goals. The *2012 Bioenergy Action Plan* updated the 2011 plan and provides a more detailed action plan to achieve the following goals.

- Increase environmentally and economically sustainable energy production from organic waste.
- Encourage development of diverse bioenergy technologies that increase local electricity generation, combined heat and power facilities, renewable natural gas, and renewable liquid fuels for transportation and fuel cell applications.
- Create jobs and stimulate economic development, especially in rural regions of the state.
- Reduce fire danger, improve air and water quality, and reduce waste. (O'Neill 2012)

As of 2018, 2.35 percent of the total electricity system power in California was derived from biomass (California Energy Commission 2018).

California Building Standards Code

The California Building Standards Code, Title 24 of the California Code of Regulations, contains the regulations that govern the construction of buildings in California. Within the Building Standards Code, two parts pertain to the incorporation of both energy efficient and green building elements into land use development. Part 6 is California's Energy Efficiency Standards for Residential and Nonresidential Buildings and Part 11 is the California Green Building Standards, also known as CALGreen. Title 24 was established by CEC in 1978 in response to a legislative mandate to create uniform building codes to reduce California's energy consumption and provide energy efficiency standards for residential and non-residential buildings. The most recent Title 24 standards were updated in 2019 and became effective January 1, 2020. The building efficiency standards are enforced through the local plan check and building permit process. Local government agencies may adopt and enforce additional energy standards for new buildings as reasonably necessary because of local climatologic, geologic, or topographic conditions, provided that these standards exceed those provided in Title 24.

Assembly Bill 32, Climate Change Scoping Plan and Update

In December 2008, CARB adopted its first version of its *Climate Change Scoping Plan*, which contained the main strategies California will implement to achieve the mandate of AB 32 (2006) to reduce statewide GHG emissions to 1990 levels by 2020. In May 2014, CARB released and subsequently adopted the *First Update to the Climate Change Scoping Plan* to identify the next steps in reaching the goals of AB 32 (2006) and evaluate the progress made between 2000 and 2012 (California Air Resources Board 2014). After releasing multiple versions of proposed updates in 2017, CARB adopted *California's 2017 Climate Change Scoping Plan* (2017 Scoping Plan) in December of that same year (California Air Resources Board 2017). The 2017 Scoping Plan indicates that California is on track to achieve the 2020 statewide GHG target mandated by AB 32 of 2006 (California Air Resources Board 2017:9). It also lays out the framework for achieving the mandate of SB 32 of 2016 to reduce statewide GHG emissions to at least 40 percent below 1990 levels by the end of 2030 (California Air Resources Board 2017). The 2017 Scoping Plan identifies the GHG reductions needed by each emissions sector (e.g., transportation, building energy, agriculture).

The measures identified in the 2017 Scoping Plan have the co-benefits of reducing California's dependency of fossil fuels and making land use development and transportation systems more energy efficient. More details about the statewide GHG reduction goals and Scoping Plan measures are provided in the regulatory setting of Section 3.7, *Greenhouse Gas Emissions*.

Senate Bill 375

SB 375, signed by Governor Arnold Schwarzenegger in September 2008, aligns regional transportation planning efforts, regional GHG emission reduction targets, and land use and housing allocation. SB 375 requires metropolitan planning organizations (MPOs) to adopt a sustainable communities strategy (SCS) or alternative planning strategy, showing prescribed land use allocation in each MPO's regional transportation plan. CARB, in consultation with the MPOs, is to provide each affected region with reduction targets for GHGs emitted by passenger cars and light trucks in their respective regions for 2020 and 2035. Implementation of SB 375 has the co-benefit of reducing California's dependency of fossil fuels and making land use development and transportation systems more energy efficient.

The Sacramento Area Council of Governments (SACOG) serves as the MPO for Sacramento, Placer, El Dorado, Yuba, Sutter, and Yolo Counties, excluding those lands located in the Lake Tahoe Basin. The UC Davis Sacramento Campus is in Sacramento County. SACOG adopted its *Metropolitan Transportation Plan/Sustainable Communities Strategy (MTP/SCS) 2035* in 2012, and completed an update adopted on November 18, 2019 (Sacramento Area Council of Governments 2019). For the 2020 MTP/SCS, CARB assigned SACOG a target of 19 percent per capita GHG reduction. The MTP/SCS forecasted land use development by community types: center and corridor communities, established communities, developing communities, rural residential communities, and lands not identified for development in the MTP/SCS planning period.

Executive Order B-30-15

On April 20, 2015, Governor Edmund G. Brown Jr. signed EO B-30-15 to establish a California GHG reduction target of 40 percent below 1990 levels by 2030. The EO aligns California's GHG reduction targets with those of leading international governments such as the 28-nation European Union, which adopted the same target in October 2014. California's emission reduction target of 40 percent below 1990 levels by 2030 will make it possible to reach the goal of reducing emissions 80 percent below 1990 levels by 2050. This is in line with the scientifically established levels needed in the United States to limit global warming below 2 degrees Celsius, the warming threshold at which major climate disruptions are projected, such as super droughts and rising sea levels.

Executive Order B-48-18: Zero Emission Vehicles

In January 2018, Governor Brown signed EO B-48-18 requiring all state entities to work with the private sector to put at least 5 million zero-emission vehicles on the road by 2030, as well as install 200 hydrogen fueling stations and 250,000 zero-emissions chargers (10,000 of which to be direct current fast chargers) by 2025. This EO also requires all state entities to continue to partner with local and regional governments to streamline the installation of zero-emission vehicle infrastructure. The Governor's Office of Business and Economic Development is required to publish a Plug-in Charging Station Development Guidebook and update the 2015 *Hydrogen Station Permitting Guidebook* to aid in these efforts. All state entities are required to participate in updating the 2018 *Zero-Emissions Vehicle Action Plan* to help expand private investment in zero-emissions vehicle infrastructure with focus in low-income and disadvantaged communities (Governor's Interagency Working Group on Zero-Emission Vehicles 2018). Additionally, all state entities are to support and recommend policies and actions to expand infrastructure in homes, through the Low Carbon Fuel Standard, and recommend how these actions can strengthen the economy, create jobs, and ensure affordability and accessibility for all drivers.

California and 22 other states filed suit in November 2019 to challenge the Trump administration's decision to revoke California's authority to set stiff vehicle tailpipe emissions rules and require an increasing number of zero-emission vehicles. The lawsuit, filed in the U.S. Court of Appeals for the District of Columbia, seeks to overturn EPA's decision in September 2019 to revoke portions of a waiver it granted in 2013. As of the writing of this report the lawsuit is still pending.

Senate Bill 32 and Assembly Bill 197 of 2016

In August 2016, Governor Brown signed SB 32 and AB 197, which serve to extend California's GHG reduction programs beyond 2020. SB 32 amended the Health and Safety Code to include Section 38566, which contains language to authorize CARB to achieve a statewide GHG emission reduction of at least 40 percent below 1990 levels by no later than December 31, 2030. SB 32 codified the targets established by EO B-30-15 for 2030, which set the next interim step in the state's continuing efforts to pursue the long-term target expressed in EOs S-3-05 and B-30-15 of 80 percent below 1990 emissions levels by 2050. Achievement of these goals has the co-benefit of reducing California's dependency of fossil fuels and making land use development and transportation systems more energy efficient.

Advanced Clean Cars Program

In January 2012, CARB approved the Advanced Clean Cars program, which combines the control of GHG emissions and criteria air pollutants, as well as requirements for greater numbers of zero-emission vehicles, into a single package of standards for vehicle model years 2017 through 2025. The new rules strengthen the GHG standard for 2017 models and beyond. This will be achieved through existing technologies, the use of stronger and lighter materials, and more efficient drivetrains and engines. The program's zero-emission vehicle regulation requires battery, fuel cell, and/or plug-in hybrid electric vehicles to account for up to 15 percent of California's new vehicle sales by 2025. The program also includes a clean fuels outlet regulation designed to support the commercialization of zero-emission hydrogen fuel cell vehicles planned by vehicle manufacturers by 2015 by requiring increased numbers of hydrogen fueling stations throughout the state. The number of stations will grow as vehicle manufacturers sell more fuel cell vehicles. By 2025, when the rules will be fully implemented, the statewide fleet of new cars and light trucks will emit 34 percent fewer global warming gases and 75 percent fewer smog-forming emissions than the statewide fleet in 2016 (California Air Resources Board 2016).

Regional and Local

City of Sacramento General Plan

The *Sacramento 2035 General Plan* was adopted in March 2015. The Utilities element contains the following goals and policies that are relevant to energy resources:

GOAL U 6.1: Adequate Level of Service. Provide for the energy needs of the city and decrease dependence on nonrenewable energy sources through energy conservation, efficiency, and renewable resource strategies.

Policy U 6.1.1: Electricity and Natural Gas Services. The City shall continue to work closely with local utility providers to ensure that adequate electricity and natural gas services are available for existing and newly developing areas.

Policy U 6.1.4: Energy Efficiently of City Facilities. The City shall improve energy efficiency of City facilities to consume 25 percent less energy by 2030 compared to the baseline year of 2005.

Policy U 6.1.14: Energy Efficiency Partnerships. The City shall continue to build partnerships (e.g., Sacramento County Business Environmental Resource Center (BERC) and SMUD to promote energy efficiency and conservation for the business community and residents. (City of Sacramento 2015)

Environmental Setting

Energy Facilities and Services on Campus

The Central Utility Plant (CUP) on the Sacramento Campus provides normal and emergency electrical power, chilled and hot water for cooling and heating, and process steam to most campus buildings. The CUP uses natural gas provided by Pacific Gas and Electric Company (PG&E), and its chilled water system is composed of multiple absorption and centrifugal chillers, with an operating capacity of 10,500 tons of water. Backup electrical power is provided by emergency generators, and additional electrical power backup is provided by SMUD. The CUP is equipped to receive SMUD power for planned and unplanned CUP outages. According to its utility master plan (Affiliated Engineers 2019), the CUP is designed to accommodate some growth in utility demand.

Energy Use and Global Warming

Scientists and climatologists have produced evidence that the burning of fossil fuels by vehicles, power plants, industrial facilities, residences, and commercial facilities has led to an increase in the earth's temperature. For an analysis of GHG production and the California Hospital Tower Project's potential impacts on climate change, please see Section 3.7, *Greenhouse Gas Emissions*.

3.5.2 Environmental Impacts

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

Methods for Analysis

Construction

During project construction, energy use would come from fuel and electricity. It is assumed that both diesel and gasoline fuels would be used in on-road vehicles for material hauling and worker commute trips, and projected gallons of diesel and gasoline fuels are combined in this analysis. The same assumptions of construction equipment numbers, horsepower ratings, and load factors used to estimate construction CO_2 emissions (see Section 3.7, *Greenhouse Gas Emissions*) were used to calculate construction-related fuel use. Estimated CO_2 emissions were used to characterize gallons of fuel consumed based on the carbon content of the fuel (Climate Registry 2020). Electricity data projected to be used during construction were obtained using the data and sources described in Section 3.7, *Greenhouse Gas Emissions.*

Operations

Energy use associated with project operations includes natural gas from the CUP turbine and boilers, diesel fuel from the CUP boilers and emergency generators, purchased electricity for back-up power, and fuel from transportation sources (diesel and gasoline).

The CUP normally operates to follow the electrical load of the Sacramento Campus with a small amount of power continuously exported to SMUD. However, in the event of a normal or forced outage of the gas turbine, the entire campus electrical load (including the East Wing) is served by SMUD utility power import. The California Hospital Tower Project would be powered primarily by the CUP and would rely on purchased electricity from SMUD during outages as a back-up to the generators. Electricity consumption estimates (MWh/year) for potential outages were obtained using the data and sources described in Section 3.7, *Greenhouse Gas Emissions.*

The CUP uses natural gas provided by PG&E to power five steam boilers, eight hot water boilers, and one gas turbine. The five steam boilers also consume minor amounts of diesel fuel oil. Natural gas and diesel fuel oil estimates (therms/year) for existing and future project operations were obtained using the data and sources described in Section 3.7, *Greenhouse Gas Emissions.*

The CUP currently has five 2,500 kilovolt-ampere emergency diesel generators (Tier 0). The California Hospital Tower Project would add three new Tier 4 generators. Gasoline consumption by these sources for existing and future campus operations were obtained using the data and sources described in Section 3.7, *Greenhouse Gas Emissions*.

Transportation fuel-use estimates were calculated by applying average fuel usage rates per vehicle mile to VMT data related to the project (see Section 3.15, *Transportation, Circulation, and Parking*, for an explanation of the assumptions behind the VMT modeling). CARB's EMFAC2017 model includes average fuel usage rates by vehicle class, fuel type (e.g., diesel, gasoline, electric, and natural gas), speed bin, calendar year, and county. Fuel usage rates from EMFAC2017 representing Sacramento County in 2019 and 2030 were applied to the project's VMT data. Daily VMT were adjusted to annual VMT using a conversion factor of 347, which accounts for holidays and weekday/weekend business operations.

Thresholds of Significance

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

- Wasteful, inefficient, or unnecessary consumption of energy resources during project construction or operations.
- Conflict with or obstruction of a state or local plan for renewable energy or energy efficiency.

Impacts and Mitigation Measures

Impact EN-1: Wasteful, inefficient, or unnecessary consumption of energy resources during project construction or operation (less than significant)

Summary of Impact EN-1 by Component

Component	Level of Significance before Mitigation	Mitigation Measures Required	Level of Significance after Mitigation
Make-ready projects	LTS	None	–
California Tower construction, Surgery and Emergency Services Pavilion interior renovation, Central Utility Plant upgrades	LTS	None	–
Parking Structure 5 construction	LTS	None	–
East Main Hospital Wing demolition	LTS	None	–
Whole project	LTS	None	–

NI = no impact; LTS = less than significant; S = significant; SU = significant and unavoidable.

Construction-Related Energy

Energy would be required to construct the project components, including operation and maintenance of construction equipment and transportation of construction materials. Most energy consumption would result from operation of off-road construction equipment and haul truck trips. The most intensive construction phases are during the underground tank installation phase and the foundation pouring phase. During the underground tank installation phase, the daily haul trips would reach a maximum of 200 trips per day. During the foundations phase, the daily haul trips would reach a maximum of 300 trips per day.

Table 3.5-1 shows gallons of gasoline and diesel fuel estimated to be used during construction of the project components. Gallons of fuel would vary widely by construction year depending on construction activity. The year 2025 would require the most fuel use at 909,381 gallons.

Table 3.5-1. Gallons of Fuel for Construction of the California Hospital Tower Project

Construction Year	Gallons of Fuel (Diesel and Gasoline)
2021	11,482
2022	218,722
2023	256,243
2024	268,154
2025	909,381
2026	675,894
2027	492,552
2028	496,245
2029	248,181
2030	100,638
2031	47,776

Source: GHG assumptions.

In addition to the liquid fuel, construction is estimated to consume approximately 742,000 kilowatt hours (kWh) of electricity per year (with the exception of 2021) for all project components, as shown in Table 3.5-2. This estimate is an average projection and is assumed to be the same for all years, based on an assessment of the average mix of construction activities over time. Electrification of construction cranes would be required by Mitigation Measure AQ -2a (see Section 3.2, A*ir Quality*); the total amount of electricity with this mitigation measure implemented is shown in a in Table 3.5-2.

Table 3.5-2. Electricity Consumption (kWh per year) during Project Construction

Construction Year	kWh per Year	kWh per Year with Air Quality Mitigation
2021	62,000	62,000
2022	742,000	743,000
2023	742,000	744,000
2024	742,000	744,000
2025	742,000	750,000
2026	742,000	749,000
2027	742,000	747,000
2028	742,000	743,000
2029	742,000	742,000
2030	742,000	742,000
2031	742,000	742,000

kWh = kilowatt hours.

[a] Electrification of cranes would be required by Mitigation Measure AQ-CT-2 (see Section 3.2, *Air Quality*).

[b] Annual electricity calculations include crane electrification.

In accordance with California Code of Regulations, Title 13, Sections 2449(d)(3) and 2485, idling of onsite equipment during construction would be limited to no more than 5 minutes. The construction contractors would use the best available engineering techniques, construction and design practices, and equipment operating procedures, thereby ensuring that the wasteful consumption of fuels and use of energy would not occur. Therefore, this impact would be **less than significant**.

Operational Building Energy and Stationary Sources

The East Wing is currently piped to PG&E and uses 2,682 therm/year of purchased natural gas. Once constructed, the California Hospital Tower Project would be connected to the CUP. Natural gas usage will increase, as shown in Table 3.5-3.

The California Hospital Tower Project would result in increased electricity and other fuel consumption. Table 3.5-3 shows the electricity, natural gas, and diesel consumption that is currently used in the East Wing (2019) as well as several future scenarios. The future scenarios represent what conditions would be like in 2030 without the project, with the project and continued operation of the East Wing, and finally with the project and complete decommissioning of the East Wing. Electricity is purchased from SMUD, although the California Hospital Tower Project would obtain electricity from the CUP, and natural gas is from PG&E and is provided by the CUP.

Table 3.5-3. Operational and Stationary Energy Use (annual)

Stationary Sources	Existing (2019)	Future No Project (2030 without California Hospital Tower Project)	Future with Project (2030) and continued operation of East Wing	Future with Project (2030), and Demolition of East Wing
Turbine natural gas consumption MMBTU	1,078,398	1,300,000	1,700,000	1,650,000
Boiler natural gas consumption (therm)	741,176	900,000	1,200,000	1,150,000
Boiler diesel consumption (gallons)	439	450	450	450
Purchased electricity consumption (kWh)	5,323,349	5,400,000	5,400,000	5,400,000

MMBTU = One million British Thermal Units; Therm: One therm = 100,000 BTU; kWh = kilowatt hour.

As shown in Table 3.5-3, turbine and boiler gas consumption would increase with the project. Diesel consumption and electricity consumption would increase slightly with the project.

The project also includes three new emergency generators, which would require additional fuel. Under existing (2019) conditions, approximately 11,186 gallons of diesel are used per year to fuel emergency generators associated with the East Wing. Approximately 17,900 gallons of diesel fuel would be used per year for emergency generators associated with the California Hospital Tower Project.

All new projects are designed to comply with UC's Sustainable Practices Policy, which ensures that new projects incorporate energy sustainability. The California Hospital Tower Project is designed using green-building principles, including an emphasis on energy efficiency, water conservation, waste reduction, and encouraging alternative transportation, thereby reducing the impacts of increased development.

The project would attain at a minimum of LEED Silver standards and would exceed California Code of Regulations Title 24 requirements by at least 20 percent through implementation of UC's Sustainable Practices Policy. Specifically, the California Tower would be designed, constructed, and commissioned to outperform the American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE) Standard 90.1-2010 by at least 30 percent or meet the whole-building energy performance targets listed in Table 2 in Section V.A.3 of UC's Sustainable Practices Policy.

In summary, the project would result in increased natural gas use at the CUP and increased diesel and natural gas use associated with CUP upgrades and emergency generators. The project is designed to achieve LEED Silver certification, and would be designed, constructed, and commissioned to exceed Title 24 Building Energy Efficiency Standards. The project would also incorporate design measures to meet UC's Sustainable Practices Policy, including obtaining 100% clean electricity from SMUD. Therefore, project operations would not result in energy use that is wasteful or inefficient and this impact would be **less than significant**.

Transportation Energy

Existing fuel consumption is anticipated to be approximately 2,072,935 gallons of diesel/gasoline. Operational fuel consumption associated with the California Tower is estimated to be approximately 1,754,975 gallons of diesel/gasoline per year. The Sacramento Campus is located within close proximity to public transit including light rail. Both the Gold Line, which travels between Folsom and downtown Sacramento, and the Blue Line, which travels from Cosumnes River College east to Watt/Interstate 80, have stops within walking distance to the project site. Other elements of the project such as enhanced bicycle facilities, as well as the existing Green Commuter Program on campus would further reduce VMT and associated transportation energy. The project would increase hospital capacity for an additional 250 patients and would add approximately 250 employees. Energy used for trips generated by operation of uses associated with the project would support emergency care and would not be considered inefficient, wasteful, and unnecessary.

The California Tower would also have additional helipads which would support additional emergency helicopter use. Under existing conditions (2019), approximately 77,451 gallons of fuel are used per year. With the California Hospital Tower Project, more helicopters and larger helicopters can land at the Sacramento Campus for emergency response, and the fuel use would increase to approximately 84,576 gallons per year. While helicopter fuel use would increase with the project, the purpose is for increased emergency patient care and would not be considered wasteful or inefficient. This impact would be **less than significant**.

Mitigation Measures

No mitigation measures are necessary.

Impact EN-2: Conflict with or obstruction of a state or local plan for renewable energy or energy efficiency (less than significant)

Summary of Impact EN-2 by Component

Component	Level of Significance before Mitigation	Mitigation Measures Required	Level of Significance after Mitigation
Make-ready projects	LTS	None	–
California Tower construction, Surgery and Emergency Services Pavilion interior renovation, Central Utility Plant upgrades	LTS	None	–
Parking Structure 5 construction	LTS	None	–
East Main Hospital Wing demolition	LTS	None	–
Whole project	LTS	None	–

NI = no impact; LTS = less than significant; S = significant; SU = significant and unavoidable.

The California Hospital Tower Project, not including the parking structure, would exceed Title 24 Building Energy Efficiency Standards by at least 20 percent; Title 24 establishes minimum efficiency standards related to various building features, including appliances, water and space heating and cooling equipment, building installation and roofing, and lighting. Title 24 standards are anticipated to be exceeded by attainment of LEED Silver standards and through implementation of UC's

Sustainable Practices Policy. The project would also outperform ASHRAE 90.1 - 2010 by at least 30 percent consistent with UC's Sustainable Practices Policy section III.A.2 (Green Building Design). In addition, the Sacramento Campus would continue to implement the conservation and efficiency programs (e.g., Carbon Neutrality Initiative, Green Commuter Program, Clean Energy Efforts) identified above, and UC Davis is committed to meeting the goals of UC's Sustainable Practices Policy that would result in further reductions in energy use and increased use of onsite renewable energy.

PS5 would achieve at minimum a "Bronze" ParkSmart Certification. This program is intended to inform the design of parking garages to support advanced environmental sustainability across design, construction, and operations. Credits can be obtained by including parking pricing, cleaning procedures, use of regional materials and labor, utilizing reused/recycled materials, and including bicycle parking, to name a few.

The California Hospital Tower Project would result in an increase of 571,602 MMBTUs of natural gas usage from 2019 to 2030 and an increase of 76,651 kWh of electricity from 2019 to 2030.

While the project would increase fuel usage, federal and state regulations including the Low Carbon Fuel Standard, Clean Car Standards, and Low Emission Vehicle Program would reduce the transportation fuel demand. Adherence to the increasingly stringent building and vehicle efficiency standards as well as design features consistent with UC's carbon neutrality goals including LEED Silver certification would reduce energy consumption to be consistent with applicable plans, policies, and regulations for renewable energy or energy efficiency. Therefore, this impact would be **less than significant**.

Mitigation Measures

No mitigation measures are necessary.

3.6 Geology, Soils, and Seismicity

This section describes the regulatory and environmental setting for geology, soils, and seismicity on the project site and in the project vicinity; analyzes effects on geology, soils, and seismicity that would result from implementation of the project; and provides mitigation measures, if applicable, to reduce the effects of any significant impacts. No comments related to geology, soils, and seismicity were received during the scoping period.

3.6.1 Existing Conditions

Regulatory Setting

University of California

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

Seismic Safety Policy

UC's Seismic Safety Policy was crafted to provide, to the extent feasible by present earthquake engineering practice, an acceptable level of earthquake safety for students, employees, and members of the public who occupy UC facilities and leased facilities. Feasibility is determined by considering the forecasted severity and probability of injury resulting from seismic activity and then balancing the practicality and the cost of protective measures.

UC Davis Environmental Health and Safety Department Programs

The UC Davis Environmental Health and Safety department provides programs and leadership on campus safety topics including disaster preparedness, fire prevention, personal and workplace safety, and risk management for campus research and other activities.

Federal

National Earthquake Hazards Reduction Act

The national Earthquake Hazards Reduction Act of 1977 was passed to reduce the risks to life and property resulting from earthquakes. The act established the National Earthquake Hazards Reduction Program (NEHRP). The mission of NEHRP includes improved understanding, characterization, and prediction of hazards and vulnerabilities; improved building codes and land use practices; risk reduction through post-earthquake investigations and education; development and improvement of design and construction techniques; improved mitigation capacity; and accelerated application of research results. NEHRP designates the Federal Emergency Management Agency as the lead agency of the program and assigns several planning, coordinating, and reporting responsibilities. Other NEHRP agencies include the National Institute of Standards and Technology, National Science Foundation, and the U.S. Geological Survey.

State

Alquist-Priolo Earthquake Fault Zoning Act

The Alquist-Priolo Earthquake Fault Zoning Act of 1972 (Alquist-Priolo Act) (Public Resources Code [PRC] Sections 2621–2630) intends to reduce the risk to life and property from surface fault rupture during earthquakes by regulating construction in active fault corridors and prohibiting the location of most types of structures intended for human occupancy across the traces of active faults. The law addresses only the hazard of surface fault rupture and is not directed toward other earthquake hazards.

Senate Bill 1953 (SB 1953) was introduced on February 25, 1994. It was signed into law on September 21, 1994 and filed by the Secretary of State on September 22, 1994. The bill was an amendment to and furtherance of the Alfred E. Alquist Hospital Seismic Safety Act of 1983 (Alquist Act). SB 1953 (Chapter 740, 1994) is now chaptered into statute in Sections 130000 through 130070 of the Alfred E. Alquist Hospital Facilities Seismic Safety Act, and part of the California Health and Safety Code. The regulations developed as a result of this statute are deemed to be emergency regulations and became effective upon approval by the California Building Standards Commission and filing with the Secretary of State on March 18, 1998.

Seismic Hazards Mapping Act

The intention of the Seismic Hazards Mapping Act of 1990 (PRC Sections 2690–2699.6) is to reduce damage resulting from earthquakes. While the Alquist-Priolo Act addresses surface fault rupture, the Seismic Hazards Mapping Act addresses other earthquake-related hazards, including ground shaking, liquefaction, and seismically induced landslides. The act's provisions are similar in concept to those of the Alquist-Priolo Act: the state is charged with identifying and mapping areas at risk of strong ground shaking, liquefaction, landslides, and other corollary hazards, and cities and counties are required to regulate development within mapped Seismic Hazard Zones. Under the Seismic Hazards Mapping Act, permit review is the primary mechanism for local regulation of development. Specifically, cities and counties are prohibited from issuing development permits for projects in Seismic Hazard Zones until appropriate site-specific geologic or geotechnical investigations have been carried out and measures to reduce potential damage have been incorporated into the development plans.

California Building Standards Code

The State of California provides minimum standards for building design through the California Building Standards Code (CBC; California Code of Regulations, Title 24). Where no other building codes apply, Chapter 29 regulates excavation, foundations, and retaining walls. The state earthquake protection law (California Health and Safety Code Section 19100 *et seq*.) requires that structures be designed to resist stresses produced by lateral forces caused by wind and earthquakes.

The CBC has been modified from the International Building Code for California conditions with more detailed and/or more stringent regulations. The CBC identifies seismic factors that must be considered in structural design. Specific minimum seismic safety and structural design requirements are set forth in Chapter 16 of the CBC. Chapter 18 of the CBC regulates the excavation of foundations and retaining walls, while Chapter 18A regulates construction on unstable soils, such as expansive soils and areas subject to liquefaction. Appendix J of the CBC regulates grading activities, including drainage and erosion control. The CBC also contains a provision that provides for a preliminary soil report to be prepared to identify "...the presence of critically expansive soils or other soil problems which, if not corrected, would lead to structural defects" (CBC Chapter 18 Section 1803.1.1.1-1803.1.1.2).

Regional and Local

City of Sacramento General Plan

The *Sacramento 2035 General Plan* was adopted in March 2015. The Public Health and Safety element contains the following goals and policies that are relevant to geology/soils/seismicity.

> **GOAL PHS 6.1:** Compliance with Health and Safety Codes. Improve the health, safety, and visual quality of the community by ensuring compliance with State and City health and safety codes.
>
> > **Policy PHS 6.1.7:** Substandard and Dangerous Buildings. The City shall require all buildings that are identified as substandard or dangerous be either repaired or demolished (City of Sacramento 2015a).

Environmental Setting

Geology and Topography

The Sacramento Campus is located in the Great Valley geomorphic province of California. The Great Valley is a flat alluvial plain approximately 50 miles wide and 400 miles long in the central portion of California. Its northern part is the Sacramento Valley drained by the Sacramento River, and its southern part is the San Joaquin Valley drained by the San Joaquin River. It is surrounded by the Sierra Nevada to the east, the Tehachapi Mountains to the south, the Coastal Range to the west, and the Cascade Range to the north (City of Sacramento 2015b).

The city of Sacramento is situated at the confluence of the American and Sacramento Rivers. The topography of the city ranges from flat to gently rolling. With the exception of the stream banks along the American River, Morrison Creek, and other local drainages, ground slope within the city does not exceed 8 percent and in most places is between 0 and 3 percent (University of California, Davis, 2010:4.5-1). The campus site is flat. At its closest point, the campus is located approximately 1.5 miles southwest of the American River.

The project vicinity is underlain by the Pleistocene Riverbank Formation. The Riverbank Formation is an alluvial deposit made up of weathered reddish gravels, sand, silt, and clay. California's Pleistocene sedimentary units—especially those that, like the Riverbank Formation, record deposition in continental settings—are typically considered highly sensitive for paleontological resources because of the large number of recorded fossil finds in such units throughout the state. The Pleistocene age of the Riverbank Formation is well represented by important fossils recovered from excavations at the Arco Arena site in 1989 and more than a dozen other localities. Fossil finds in the Riverbank Formation include mammoth, bison, camel, horse, ground sloth, dire wolf, rodents, moles, birds, and bony fish (University of California Museum of Paleontology 2021a). Because of its vertebrate content, the Riverbank Formation is considered highly sensitive for paleontological resources.

Soils

The site has been mapped as underlain by soils assigned to the San Joaquin Urban Land complex (Natural Resources Conservation Service 2020). However, because the site has undergone extensive grading, an intact soil profile may not be present. In particular, topsoil is likely to be absent or highly disturbed.

The upper layer of soils at the Sacramento Campus consists of loose, fine to coarse sandy silt. These are underlain by hard, silty, and fine sandy clay soils that correlate with the Victor Plain, which is characterized by well-drained, moderately deep to deep, fine sandy silt soils that are underlain by a cemented hardpan. Below the hardpan are medium-dense to very dense silt, fine to medium gravel, and fine sandy silt. The San Joaquin Urban Land complex exhibits a moderate shrink-swell potential (or the potential for volume change with losses and gains in moisture). Erosion potential is generally low in these soils (Natural Resources Conservation Service 2020).

Seismicity

The Sacramento Campus is not within or traversed by any Alquist-Priolo Earthquake Fault Zone defined by the State of California under the Alquist-Priolo Act. The site is therefore not considered subject to surface fault rupture hazard. However, like much of California, it is located in a seismically active area and is therefore subject to other hazards associated with seismicity, discussed in the following paragraphs.

Earthquake intensity is typically expressed using the Modified Mercalli Intensity (MMI) scale with values ranging from I to X (Table 3.6-1). The Sacramento Campus is located in a region of low to moderate seismic activity that corresponds to a probable maximum intensity between VII and VIII on the MMI scale.

The Sacramento region has historically experienced ground shaking originating from faults in the Foothills fault zone and the Dunnigan Hills fault and may also be subject to shaking hazard associated with active faults in the eastern Coast Ranges. However, ground shaking hazard in Sacramento is considered lower than in many areas of California. According to the Probabilistic Seismic Hazards Map prepared by the California Geological Survey (CGS), the likelihood of earthquake ground motions (in terms of peak ground acceleration) in the Sacramento area is 0.143 g1 on firm rock, 0.156 g for soft rock, and 0.2 g for alluvium (California Geological Survey 2018).

Table 3.6-1. Modified Mercalli Intensity Scale

CIIM Intensity	People's reactions	Furnishings	Built Environment	Natural Environment
I	Not felt			Changes in level and clarity of well water are occasionally associated with great earthquakes at distances beyond which the earthquakes are felt by people.
II	Felt by a few.	Delicately suspended objects may swing.		

CIIM Intensity	People's reactions	Furnishings	Built Environment	Natural Environment
III	Felt by several; vibration like passing of truck	Hanging objects may swing appreciably.		
IV	Felt by many; sensation like heavy body striking building.	Dishes rattle.	Walls creak; window rattle.	
V	Felt by nearly all; frightens a few.	Pictures swing out of place; small objects move; a few objects fall from shelves within the community.	A few instances of cracked plaster and cracked windows with the community.	Trees and bushes shaken noticeably.
VI	Frightens many; people move unsteadily.	Many objects fall from shelves.	A few instances of fallen plaster, broken windows, and damaged chimneys within the community.	Some fall of tree limbs and tops, isolated rockfalls and landslides, and isolated liquefaction.
VII	Frightens most; some lose balance.	Heavy furniture overturned.	Damage negligible in buildings of good design and construction, but considerable in some poorly built or badly designed structures; weak chimneys broken at roof line, fall of unbraced parapets.	Tree damage, rockfalls, landslides, and liquefaction are more severe and widespread with increasing intensity.
VIII	Many find it difficult to stand.	Very heavy furniture moves conspicuously.	Damage slight in buildings designed to be earthquake resistant, but severe in some poorly built structures. Widespread fall of chimneys and monuments.	
IX	Some forcibly thrown to the ground.		Damage considerable in some buildings designed to be earthquake resistant; buildings shift off foundations if not bolted to them.	
X			Most ordinary masonry structures collapse; damage moderate to severe in many buildings designed to be earthquake resistant.	

Source: U.S. Geological Survey 2020.

Liquefaction occurs when saturated, unconsolidated soils lose their strength and become liquid as a result of ground shaking caused by a seismic event. Liquefaction generally occurs at depths below the water table (i.e., in saturated materials) but less than about 50 feet below the ground surface. The resulting disruption can move upward through soils after it has developed, and at its worst can result in extensive foundation damage and structural failure. Soils subject to liquefaction are found within the central area of the City of Sacramento (City of Sacramento 2015b:7-4). Although geotechnical reports have been prepared for specific projects on campus, no site-specific information on liquefaction hazard is available for all areas of the campus, and the area has not yet been mapped under the state's seismic hazards mapping program.

The structures most susceptible to seismic hazards are unreinforced masonry buildings and buildings constructed on unreinforced masonry foundations. The University has identified older buildings on the Sacramento Campus that are seismically deficient, such as the North/South Wing of the hospital. The Sacramento Campus intends to demolish or retrofit these structures in accordance with the California Hospital Seismic Retrofit Program (Senate Bill 1953) and UC's Seismic Safety Policy.

3.6.2 Environmental Impacts

This section describes the environmental impacts associated with geology, soils, and seismicity that would result from implementation of the California Hospital Tower Project. It describes the methods used to determine the effects of the project and lists the thresholds used to conclude whether an impact would be significant. Measures to mitigate (i.e., avoid, minimize, rectify, reduce, eliminate, or compensate for) any significant impacts are provided, if available.

Methods for Analysis

To evaluate project impacts, resource conditions that could pose a risk to the project site were identified through review of documents pertaining to these topics within the project site and vicinity. Sources consulted include U.S. Geological Survey and CGS technical maps and guides; the Natural Resources Conservation Service (NRCS) Soil Survey (available through the Soil Survey Geographic Database [SSURGO]); previous environmental impact reports; background reports prepared for nearby plans and projects; and published geologic literature. The information obtained from these sources was reviewed and summarized to establish the existing conditions and identify potential environmental hazards. In determining level of significance, the analysis assumes that the project would comply with relevant laws, regulations, and guidelines.

Thresholds of Significance

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

- Potential substantial adverse effects, including the risk of loss, injury, or death involving: (1) rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault; (2) strong seismic ground shaking; (3) seismic-related ground failure, including liquefaction; or (4) landslides.
- Substantial soil erosion or the loss of topsoil.
- Placement of project-related facilities on a geologic unit or soil that is unstable or that would become unstable as a result of the project and potentially result in an onsite or offsite landslide, lateral spreading, subsidence, liquefaction, or collapse.

- Placement of project-related facilities on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property.
- Placement of project facilities on soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems in areas where sewers are not available for the disposal of wastewater.
- Direct or indirect destruction of a unique paleontological resource or site or unique geologic feature.

Impacts and Mitigation Measures

Impact GEO-1: Potential substantial adverse effects, including the risk of loss, injury, or death involving: (1) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault; (2) strong seismic ground shaking; (3) seismic-related ground failure, including liquefaction; or (4) landslides (less than significant with mitigation)

Summary of Impact GEO-1 by Component

Component	Level of Significance before Mitigation	Mitigation Measures Required	Level of Significance after Mitigation
Make-ready projects	LTS	None	–
California Tower construction, Surgery and Emergency Services Pavilion interior renovation, Central Utility Plant upgrades	S	GEO-1	LTS
Parking Structure 5 construction	S	GEO-1	LTS
East Main Hospital Wing demolition	LTS	None	–
Whole project	S	GEO-1	LTS

NI = no impact; LTS = less than significant; S = significant; SU = significant and unavoidable.

The Sacramento Campus is not located within an Alquist-Priolo Earthquake Fault Zone and the nearest recognized active fault is more than 40 miles away. Therefore, fault rupture at or near the project site is unlikely. Past earthquakes have resulted in minor ground shaking, and one of the goals of the project is to address seismic deficiencies, resulting a structure that meets current codes. Therefore, the project would reduce risks of loss, injury, or death related to ground shaking and the impact would be beneficial.

The topography of the Sacramento Campus is flat, and there is no risk posed by landslides.

The Sacramento East quadrangle, which encompasses the project site, has not been evaluated for liquefaction hazards. Consequently, no state liquefaction hazard zones have been established for the site vicinity (Rutherford & Chekene 2021). The *Geologic Hazards Evaluation and Geotechnical Investigation* prepared for the project by Rutherford & Chekene (2021) concluded that based on dense to very dense granular materials encountered below the groundwater table at the site, the potential for liquefaction hazard is low (Rutherford & Chekene 2021). The report also noted that the potential for bearing capacity failure is low. Per the report, adherence to the 2019 California Building Code and the design recommendations in the geotechnical report (Mitigation Measure GEO-1) would result in a **less-than-significant impact with mitigation**.

Mitigation Measure GEO-1: Implement Design Recommendations in the Geotechnical Investigation

A site-specific, design-level geotechnical investigation was prepared for the project (Rutherford & Chekene 2021). The design recommendations from this investigation will be incorporated into the plans and specifications for the California Hospital Tower Project. The design recommendations cover structural design recommendations, ancillary structures, water tanks, basement walls and slabs, issues relating to the interface between the existing Surgery Emergency Services Pavilion and the new tower, supported excavations, civil design recommendations, earthwork and grading, soil cement columns, and corrosion potential and below grade construction.

Impact GEO-2: Potential to result in substantial soil erosion or the loss of topsoil (less than significant)

Summary of Impact GEO-2 by Component

Component	Level of Significance before Mitigation	Mitigation Measures Required	Level of Significance after Mitigation
Make-ready projects	LTS	None	–
California Tower construction, Surgery and Emergency Services Pavilion interior renovation, Central Utility Plant upgrades	LTS	None	–
Parking Structure 5 construction	LTS	None	–
East Main Hospital Wing demolition	LTS	None	–
Whole project	LTS	None	–

NI = no impact; LTS = less than significant; S = significant; SU = significant and unavoidable.

The Sacramento Campus is extensively developed and has a long history of urban development and use. The topsoil in the area has already either been removed or extensively altered in conjunction with previous development; therefore, implementation of the proposed project would not result in a significant loss of topsoil. With a Stormwater Pollution Prevention Plan in place, the impact related to accelerated erosion from construction activities would be less than significant. Additionally, because of the nature of the project components (development of structures with associated hardscape and landscaping and associated infrastructure), and with National Pollutant Discharge Elimination System (NPDES) compliance in place, the project is not expected to result in significant long-term (operational) impacts related to accelerated erosion because the project would be located on existing paved and built surfaces. Therefore, potential impacts resulting in substantial soil erosion or the loss of topsoil would be **less than significant.** Implementation of Mitigation Measure GEO-1 would further reduce this less-than-significant impact.

Mitigation Measures

No mitigation measures are necessary.

Impact GEO-3: Placement of project-related facilities on a geologic unit or soil that is unstable or that would become unstable as a result of the project and potentially result in an onsite or offsite landslide, lateral spreading, subsidence, liquefaction, or collapse (less than significant with mitigation)

Summary of Impact GEO-3 by Component

Component	Level of Significance before Mitigation	Mitigation Measures Required	Level of Significance after Mitigation
Make-ready projects	LTS	None	–
California Tower construction, Surgery and Emergency Services Pavilion interior renovation, Central Utility Plant upgrades	S	GEO-1	LTS
Parking Structure 5 construction	S	GEO-1	LTS
East Main Hospital Wing demolition	LTS	None	–
Whole project	S	GEO-1	LTS

NI = no impact; LTS = less than significant; S = significant; SU = significant and unavoidable.

As discussed in Impact GEO-1 above, the potential for liquefaction at the project site is low. The project would adhere to the 2019 CBC and Mitigation Measure GEO-1, which would require adherence to the design recommendations from the geotechnical investigation. Implementation of Mitigation Measure GEO-1 would reduce this impact to a **less-than-significant** level.

Mitigation Measure GEO-1: Implement Design Recommendations in the Geotechnical Investigation

Impact GEO-4: Placement of project-related facilities on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property (less than significant)

Summary of Impact GEO-4 by Component

Component	Level of Significance before Mitigation	Mitigation Measures Required	Level of Significance after Mitigation
Make-ready projects	LTS	None	–
California Tower construction, Surgery and Emergency Services Pavilion interior renovation, Central Utility Plant upgrades	LTS	None	–
Parking Structure 5 construction	LTS	None	–
East Main Hospital Wing demolition	LTS	None	–
Whole project	LTS	None	–

NI = no impact; LTS = less than significant; S = significant; SU = significant and unavoidable.

The soils underlying the Sacramento Campus are characterized as being moderately expansive, thus there would be some potential for damage to improperly designed or constructed structures and facilities. However, with adherence to the provisions in the CBC, as required by the University of California for all new construction, expansive soils would be addressed consistent with the current engineering standard of care, and the impact of the project would be **less than significant**.

Mitigation Measures

No mitigation measures are necessary.

Impact GEO-5: Placement of project facilities on soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems in areas where sewers are not available for the disposal of wastewater (no impact)

Summary of Impact GEO-5 by Component

Component	Level of Significance before Mitigation	Mitigation Measures Required	Level of Significance after Mitigation
Make-ready projects	NI	None	–
California Tower construction, Surgery and Emergency Services Pavilion interior renovation, Central Utility Plant upgrades	NI	None	–
Parking Structure 5 construction	NI	None	–
East Main Hospital Wing demolition	NI	None	–
Whole project	NI	None	–

NI = no impact; LTS = less than significant; S = significant; SU = significant and unavoidable.

The Sacramento Campus is connected to the Sacramento wastewater system and no component of the project would require the installation of a septic system. Therefore, there would be no impact.

Mitigation Measures

No mitigation measures are necessary.

Impact GEO-6: Direct or indirect destruction of a unique paleontological resource or site or unique geologic feature (less than significant with mitigation)

Summary of Impact GEO-6 by Component

Component	Level of Significance before Mitigation	Mitigation Measures Required	Level of Significance after Mitigation
Make-ready projects	LTS	None	–
California Tower construction, Surgery and Emergency Services Pavilion interior renovation, Central Utility Plant upgrades	S	MM-GEO-6	LTS

Component	Level of Significance before Mitigation	Mitigation Measures Required	Level of Significance after Mitigation
Parking Structure 5 construction	S	MM-GEO-6	LTS
East Main Hospital Wing demolition	LTS	None	–
Whole project	S	MM-GEO-6	LTS

NI = no impact; LTS = less than significant; S = significant; SU = significant and unavoidable.

Professional standards of practice adopted by the Society of Vertebrate Paleontology (SVP; 2010) offer guidance for control and mitigation of adverse impacts on paleontological resources. Paleontological sensitivity is a qualitative assessment that takes into account the paleontological potential of the stratigraphic units present, the local geology and geomorphology, and any other local factors that may be germane to fossil preservation and potential yield. According to the SVP, an area is considered to have a high potential (sensitivity) to contain fossils if it is a unit from which "vertebrate or significant invertebrate, plant, or trace fossils have been recovered." Paleontological resources are considered to be older than middle Holocene (i.e., older than approximately 5,000 years) (Society of Vertebrate Paleontology 2010:11). Unlike sensitivity assessments for archaeological resources, paleontological sensitivity is determined by geological units or formations.

The project site and vicinity are located on the Riverbank formation, which is considered sensitive for paleontological resources. The University of California Museum of Paleontology (2021b) database contains more than 100 records for vertebrate finds in sediments of the Riverbank formation in Sacramento County. Excavation associated with construction could result in the discovery of paleontological resources, which would be a significant impact. It is expected that excavations more than 10 feet in depth would be the most likely to result in impacts on paleontological resources. Based on this assumption, significant impacts could result from the California Tower and Parking Structure 5 components but are less likely to result from the make-ready project and the East Main Hospital Wing demolition. Implementation of Mitigation Measure GEO-6 to prepare and implement a monitoring plan would reduce this impact to a less-than-significant level.

Mitigation Measure GEO-6: Prepare and implement a paleontological monitoring plan.

Prior to construction, UC Davis will retain a qualified paleontologist to prepare and implement a paleontological monitoring plan to address any excavation of more than 10 feet in depth. Borings and small excavations need not be monitored. The plan will include, at a minimum, criteria for sensitivity training for construction workers, criteria for monitoring, processes for stopping work for paleontological discoveries, processes for removing paleontological finds, and plans for the final disposition of those finds. The plan will also include a requirement for fossil preparation and a monitoring report.

3.7 Greenhouse Gas Emissions

This section describes the regulatory and environmental setting for greenhouse gas (GHG) emissions in the study area, analyzes effects on GHG emissions that would result from implementation of the project, and provides mitigation measures, if applicable, to reduce the effects of any significant impacts. Appendix E, *Air Quality and Greenhouse Gas Modeling Inputs and Supporting Data*, presents supporting GHG calculations for the impact analysis, as referenced further below.

In response to the Notice of Preparation for this EIR, commenters requested UC Davis consider sustainable design features and provided suggestions for types of sustainable design features.

3.7.1 Existing Conditions

Regulatory Setting

There is currently no overarching federal law specifically related to climate change or the reduction of GHG emissions. During the Obama administration, the U.S. Environmental Protection Agency (EPA) began developing GHG regulations under the federal Clean Air Act (CAA); however, no federal law is in effect at this time. At the state level, California has adopted broad statewide legislation to address various aspects of climate change and GHG emissions mitigation.

University of California

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

Climate Action Plan

In 2010, UC Davis adopted the *2009–2010 Climate Action Plan* (CAP) that includes policies and strategies to reduce Davis and Sacramento Campus emissions to 2000 levels by 2014 and 1990 levels by 2020 (University of California, Davis 2010). The CAP focuses on the 2014 and 2020 targets, with the understanding that climate neutrality will require fundamental shifts in global and national energy policy, energy production, and technologies currently using fossil fuels. Further, the CAP focuses on emissions related to campus operations, instead of commuting and air travel, because emissions related to commuting and air travel are less than one-quarter of campus operations. The CAP does provide analysis of commuting and air travel reduction options but does not quantify emissions reductions for those options.

Sustainable Practices Policy

UC's Policy on Sustainable Practices was adopted in 2006. It is regularly updated, with the most recent update occurring in 2020. The policy goals encompass nine areas of sustainable practices: green building design, clean energy, climate protection, sustainable transportation, sustainable building operations, zero waste, sustainable procurement, sustainable foodservices, and sustainable water systems. Many of the general policies within these nine practice areas are applicable to UC Davis Health facilities. Additionally, Section J, *Sustainability at UC Health*, specifically outlines practices to improve sustainability at UC Davis Health facilities. Policies from the 2020 Sustainable Practices Policy most relevant to the project GHG analysis are excerpted below.

Green Building Design

- Acute care/hospital facilities and medical office buildings shall be designed, constructed, and commissioned to outperform ASHRAE 90.1 - 2010 by at least 30% or meet the whole-building energy performance targets listed in Table 2 in Section V.A.3.
- No new building or major renovation that is approved after June 30, 2019, shall use onsite fossil fuel combustion (e.g., natural gas) for space and water heating (except those projects connected to an existing campus central thermal infrastructure). Projects unable to meet this requirement shall document the rationale for this decision, as described in Section V.A.4.
- All new buildings will achieve a USGBC LEED "Silver" certification at a minimum. All new buildings will strive to achieve certification at a USGBC LEED "Gold" rating or higher, whenever possible within the constraints of program needs and standard budget parameters.
- Acute care facilities and medical office buildings undertaking major renovations as defined above will outperform ASHRAE 90.1-2010 by 30%.

Clean Energy

- Implement energy efficiency actions in buildings and infrastructure systems to reduce the location's energy use intensity by an average of least 2% annually.
- Install additional on-site renewable electricity supplies and energy storage systems whenever cost-effective and/or supportive of the location's Climate Action Plan or other goals.
- By 2025, each campus and health location will obtain 100% clean electricity.
- By 2025, at least 40% of the natural gas combusted onsite at each campus and health location will be biogas.

Climate Protection[1]

- Climate neutrality from scope 1 and 2 sources by 2025 (discussed further below).
- Climate neutrality from specific scope 3 sources (as defined by Second Nature's Carbon Commitment) by 2050 or sooner.

Sustainable Transportation

- By 2025, zero-emission vehicles or hybrid vehicles shall account for at least 50% of all new light-duty vehicle acquisitions.
- By 2025, each location shall strive to reduce its percentage of employees and students commuting by SOV [single occupancy vehicle] by 10% relative to its 2015 SOV commute rates.
- By 2050, each location shall strive to have at least 30% of commuter vehicles be ZEV [zero-emission vehicles].

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[1] Emission scopes are defined below under *Emissions Inventories*. The UC Sustainable Practices Policy requires each campus to complete an assessment of Scope 1 emissions from natural gas combustion when the location's major fossil fuel–using infrastructure (e.g., combined heat and power facility) is planned for capital renewable or major repair, or no later than 2035. The assessment must determine the best pathway to decarbonize 80 percent of Scope 1 emissions through means other than GHG offsets.

Zero Waste

- The University prioritizes waste reduction in the following order: reduce, reuse, and then recycle and compost. UC Davis Health has the following waste targets:
  - By 2025, at least 40% of total solid waste diverted from landfill and incineration.
  - By 2025, no more than 25 pounds of total solid waste per Adjusted Patient Day

Sustainable Water Systems

- Locations, including UC Davis Health, will reduce growth-adjusted potable water consumption 20% by 2020, and 36% by 2025, when compared to a three-year average baseline of FY2005/06, FY2006/07, and FY2007/08.
- Each location will develop and maintain a Water Action Plan that identifies long term strategies for achieving sustainable water systems.

The UC Sustainable Practices Policy includes the University Carbon Neutrality Initiative, which commits UC campuses to emitting net zero GHG emissions by 2025 from Scope 1 and 2 sources. UC President Michael Drake reaffirmed this goal in a statement made on January 20, 2021. In line with this initiative, UC Davis Health and other UC campuses have also committed to achieving net zero GHG emissions from all sources (including on-road mobile) by 2050. The policy requires the UC Davis Health system, including the Sacramento Campus, to aggressively improve energy efficiency in buildings, reduce emissions from campus fleet and other sources, and increase utilization of renewable energy sources. As part of the University Carbon Neutrality Initiative, internal guidelines have been developed to ensure that any use of offsets to achieve the carbon neutrality targets will result in additional, verified GHG emissions reductions from actions that align, as much as possible, with UC's research, teaching, and public service mission.

University of California Davis Health Green Commuter Program

The UC Davis Health Green Commuter Program, housed within Parking, Transportation, and Fleet Services, is a program designed to help foster environmental stewardship while creating a better work-life balance by offering more sustainable commute modes to employees and students. These programs include carpool matching, transit planning, bicycling and walking programs as well as telework. Within these programs are incentives providing benefits to those who choose not to drive alone. A large component of the Green Commuter Program is education and outreach offered throughout the year. Bicycle classes, transit field trips and informational fairs provide direct involvement on the Sacramento Campus.

UC Davis Health Energy Efficiency and Conservation Efforts

The Plant Operations and Maintenance (PO&M) department's Clean Energy Measures include implementing a large retrocommissioning (RCx) effort on the Sacramento Campus buildings to reduce their energy consumption through more efficient operations. Additionally, near real-time software is being deployed to identify new energy reduction measures and track existing measures to ensure long-term successes. PO&M is also continuing to retrofit inefficient lighting with light-emitting diode (LED) fixtures and modern controls to reduce energy consumption.

Federal

The EPA has issued an endangerment finding and cause or contribute finding for six key well-mixed GHGs—carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFC), perfluorocarbons (PFC), and sulfur hexafluoride (SF_6). The EPA has also issued the Greenhouse Gas Reporting Rule, which sets CO_2-based permitting criteria for certain industrial facilities. The Obama administration developed the Clean Power Plan in August 2015 to reduce CO_2 emission from electric power generation by 32 percent within 25 years, relative to 2005 levels. However, on February 9, 2016, the Supreme Court stayed implementation of the Clean Power Plan pending judicial review, which is still ongoing as of this analysis. As discussed in Section 3.2, *Air Quality*, the National Highway Traffic Safety Administration (NHTSA) and EPA have also proposed limits on future light-duty vehicle emission standards via the Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule, although this rule may be repealed or replaced under the Biden Administration.

State

California has established various regulations to address GHG emissions. The most relevant of these regulations are described below.

Legislative Reduction Targets

Assembly Bill (AB) 32 (Chapter 488, Statutes of 2006), known as the Global Warming Solutions Act of 2006, requires the state to reduce GHG emissions to 1990 levels by 2020. Senate Bill (SB) 32 (passed in 2016) requires the state to reduce emissions to 40 percent below the 1990 level by 2030. The state's plan to reach these targets are presented in periodic scoping plans. The California Air Resources Board (CARB) adopted the *2017 Climate Change Scoping Plan* (Scoping Plan) in November 2017 to meet the GHG reduction requirement set forth in SB 32 (California Air Resources Board 2017a). It proposes continuing the major programs of the previous Scoping Plan, including cap-and-trade regulation; low carbon fuel standards; more efficient cars, trucks, and freight movement; Renewables Portfolio Standard (RPS); and reducing methane emissions from agricultural and other wastes. The current Scoping Plan articulates a key role for local governments, recommending they establish GHG reduction goals for both their municipal operations and the community consistent with those of the state.

Executive Orders

In 2005, Governor Arnold Schwarzenegger signed Executive Order (EO) S-3-05, which established goals to reduce California's GHG emissions to (1) 2000 levels by 2010 (achieved); (2) 1990 levels by 2020; and (3) 80 percent below the 1990 levels by 2050. Governor Jerry Brown signed EO B-18-12 in 2012 requiring state agencies to implement green building practices to improve energy, water and materials efficiency; improve air quality and working conditions for state employees; reduce costs to the state; and reduce environmental impacts from state operations. In 2018, Governor Brown signed EO B-48-18 requiring all state entities to work with the private sector to have at least 5 million zero-emissions vehicles on the road by 2030, as well as install 200 hydrogen fueling stations and 250,000 electric vehicle (EV) charging stations by 2025. Also in 2018, Governor Brown signed EO B-55-18, which established a state goal to achieve carbon neutrality as soon as possible, and no later than 2045, and to achieve and maintain net negative emissions thereafter. Note that EOs are binding on state government agencies and only some are legally binding on the UC.

Renewables Portfolio Standard

SBs 1078 (2002), 107 (2006) 2 (2011) and 100 (2015) govern California's RPS under which investor-owned utilities, energy service providers, and Community Choice Aggregators must procure additional retail sales per year from eligible renewable sources. The current goals for renewable sources (as outlined under SB 100 in 2015) are 33 percent by 2020, 40 percent by 2024, 50 percent by 2026, and 60 percent by 2030. SB 100 further requires all electricity come from zero-carbon sources by 2045.

Integrated Waste Management

AB 341 (passed in 2011) directed the California Department of Resources Recycling and Recovery to develop and adopt regulations for mandatory commercial recycling. The resulting Mandatory Commercial Recycling Regulation (2012) requires that after July 1, 2012, certain businesses that generate 4 cubic yards or more of commercial solid waste per week arrange recycling services. AB 341 also established a statewide recycling goal of 75 percent by 2020. In April 2016, AB 1826 passed requiring businesses that generate 2 cubic yards per week of organic waste (beginning on January 1, 2020) arrange for recycling services for that waste. Diverting organic waste from landfills reduces emissions of CH_4 by reducing anaerobic decomposition of organic waste that are more likely to occur in landfills were organic waste is often buried with inorganic waste. SB 1383 (discussed below) established specific targets for reducing organic waste in landfills and CH_4 emissions from dairy and livestock operations.

Cap and Trade

In 2011, CARB adopted a statewide cap-and-trade regulation covering sources of GHG emissions that emit more than 25,000 metric tons of CO_2 equivalent (CO_2e) per year. The covered sources are refineries, power plants, industrial facilities, and transportation fuels. The cap-and-trade program includes an enforceable statewide emissions cap that declines approximately 3 percent annually. CARB distributes allowances, which are tradable permits, equal to the emissions allowed under the cap. Sources that reduce emissions more than their limits can auction carbon allowances to other covered entities through the cap-and-trade market. Sources subject to the cap are required to surrender allowances and offsets equal to their emissions at the end of each compliance period. The cap-and-trade program took effect in early 2012 with the enforceable compliance obligation beginning January 1, 2013. The cap-and-trade program was initially slated to sunset in 2020 but the passage of SB 398 in 2017 extended the program through 2030.

The Central Utility Plant (CUP) is subject to cap-and-trade regulation. Through an agreement with CARB, all subject UC campuses, including the Sacramento Campus, receive allowances in exchange for a financial commitment to combat climate change through university actions. The campus acquires California Carbon Offsets to offset up to 8 percent (i.e., the maximum allowed in the cap-and-trade program) of cap-and-trade subject emissions.

Energy Efficiency Standards

The California Green Building Standards Code (Part 11, Title 24), commonly referred to as CALGreen, was adopted as part of the California Building Standards Code (Title 24, California Code of Regulations [CCR]). Part 11 of Title 24 established voluntary standards that became mandatory under the 2010 edition of the code. These involved sustainable site development, energy efficiency (in excess of California Energy Code requirements), water conservation (e.g., low-flow fixtures), material conservation, and internal air contaminants. The current energy efficiency standards were adopted in 2019 and took effect on January 1, 2020. SB 350, which was signed by Governor Brown in October 2015, also requires a doubling of energy efficiency (electrical and natural gas) by 2030, including improvements to the efficiency of existing buildings.

Vehicle Efficiency Standards and Rules

Additional strengthening of the Pavley I standards (referred to as the "Advanced Clean Cars" measure) was adopted for vehicle model years 2017–2025 in 2012. Together, the two standards are expected to increase average fuel economy to roughly 54.5 miles per gallon in 2025. As noted above and discussed in Section 3.2, *Air Quality*, the federal SAFE Vehicles Rule adopted under the Trump Administration proposed to freeze national fuel economy standards and revoke California's ability to set statewide standards. However, on April 22, 2021 NHTSA, under the Biden Administration, issued a notice of proposed rulemaking to repeal the SAFE Vehicles Rule.

As discussed in Chapter 3.2, *Air Quality*, CARB adopted the Advanced Clean Truck Regulation in June 2020 to accelerate a large-scale transition of zero-emission medium- and heavy-duty vehicles. The regulation requires the sale of zero-emission medium-and-heavy-duty vehicles as an increasing percentage of total annual California sales from 2024 to 2035. By 2035, zero-emission truck/chassis sales would need to be 55 percent of Class 2b–3 truck sales, 75 percent of Class 4–8 straight truck sales, and 40 percent of truck tractor sales. By 2045, every new medium-and-heavy-duty truck sold in California will be zero-emission. This effort is currently in litigation.

Regional Land Use and Transportation Planning to Reduce Vehicle Miles Travelled

SB 375 (passed in 2009) requires the state's 18 Metropolitan Planning Organizations to develop the sustainable communities strategies (SCSs) as part of their Regional Transportation Plans (RTPs) through integrated land use and transportation planning, and to demonstrate an ability to attain the GHG emissions reduction targets. CARB released updated SB 375 targets in March 2018. The revised targets require the Sacramento Area Council of Governments (SACOG) to reduce per capita GHG emissions from passenger vehicles by approximately 19 percent by 2035, compared to 2005 levels (California Air Resources Board 2018).

SB 743 (passed in 2013) requires revisions to the CEQA Guidelines that establish new impact analysis criteria for the assessment of a project's transportation impacts. The intent behind SB 743 and revising the CEQA Guidelines is to integrate and better balance the needs of congestion management, infill development, active transportation, and GHG emissions reduction. The Governor's Office of Planning and Research (OPR) recommends that vehicle miles traveled (VMT) serves as the primary analysis metric, replacing the existing criteria of delay and level of service. In 2018, OPR released a technical advisory outlining potential VMT significance thresholds for different project types. As of July 1, 2020, CEQA requires the use of VMT as well.

Short-Lived Climate Pollutants Reduction Strategy

SB 605 directed CARB, in coordination with other state agencies and local air districts, to develop a comprehensive Short-Lived Climate Pollutants (SLCP) Reduction Strategy. SB 1383 directed CARB to approve and implement the SLCP Reduction Strategy (noted below) to achieve the following reductions in SLCPs.

- 40 percent reduction in CH_4 below 2013 levels by 2030.
- 40 percent reduction in HFC gases below 2013 levels by 2030.
- 50 percent reduction in anthropogenic black carbon below 2013 levels by 2030.

SB 1383 also establishes the following targets for reducing organic waste in landfills and CH_4 emissions from dairy and livestock operations.

- 50 percent reduction in organic waste disposal from the 2014 level by 2020.
- 75 percent reduction in organic waste disposal from the 2014 level by 2025.
- 40 percent reduction in CH_4 emissions from livestock manure management operations and dairy manure management operations below the dairy sector's and livestock sector's 2013 levels by 2030.

CARB adopted the SLCP Reduction Strategy in March 2017 as a framework for achieving the CH_4, HFC, and anthropogenic black carbon reduction targets set by SB 1383 (California Air Resources Board 2017b). The SLCP Reduction Strategy includes 10 measures to reduce SLCPs, which fit within a wide range of ongoing planning efforts throughout the state. Final regulations to achieve the GHG reduction goals expressed in SB 1383 were codified under the California Code of Regulations (Title 14, Division 7, Chapters 3 and Title 27, Division 2, Chapters 2, 3, and 4) in November 2020. The regulation goes into effect on January 1, 2022.

Regional and Local

Sacramento Air Quality Management District

As discussed in Section 3.2, *Air Quality*, the Sacramento Metropolitan Air Quality Management District (SMAQMD) is responsible for air quality planning in Sacramento County. SMAQMD has adopted a construction emissions threshold of 1,100 metric tons CO_2e and guidance for evaluating operational GHG emissions from land use development projects (Sacramento Metropolitan Air Quality Management District 2020; Ramboll 2020). The operational guidance identifies best management practices (BMPs) new development should implement to avoid conflicting with long-term state GHG reduction goals. These BMPs are consistent with guidance from other agencies, such as CARB (2019) and OPR (2018), and include prohibiting natural gas infrastructure, ensuring projects are EV ready, and achieving VMT reductions consistent with SB 743 (Ramboll 2020).

Sacramento Area Council of Governments

As discussed in Section 3.2, *Air Quality*, SACOG is an association of local governments in the Sacramento region that provides transportation planning and funding for the region. The current *2020 Metropolitan Transportation Plan/Sustainable Communities Strategy* (MTP/SCS), which was adopted by SACOG on November 18, 2019, addresses CARB's per-capita GHG emissions reduction targets set under SB 375 (discussed above).

City of Sacramento

The City adopted a CAP on February 14, 2012. The CAP includes measures designed to reduce communitywide GHG emissions by 15 percent below 2005 levels by 2020, 38 percent below 2005 levels by 2030, and 83 percent below 2005 levels by 2050 (City of Sacramento 2012). The City is currently working on updating its CAP.

Environmental Setting

GHGs are gaseous compounds that limit the transmission of Earth's radiated heat out to space. GHG emissions generated from implementation of the project could contribute to global climate change. Climate change is a global problem and GHGs are global pollutants, unlike criteria air pollutants (such as ozone precursors), which are primarily pollutants of regional and local concern. Given the long atmospheric lifetimes of GHGs, GHGs emitted by many sources worldwide accumulate in the atmosphere. No single emitter of GHGs is large enough to trigger global climate change on its own. Rather, climate change is the result of the individual contributions of countless past, present, and future sources. Thus, GHG impacts are inherently cumulative, and the study area for impacts on GHGs includes the entire state and global atmosphere.

Global Climate Change

The process known as the *greenhouse effect* keeps the atmosphere near Earth's surface warm enough for the successful habitation of humans and other life forms. The greenhouse effect is created by sunlight that passes through the atmosphere. Some of the sunlight striking Earth is absorbed and converted to heat, which warms the surface. The surface emits a portion of this heat as infrared radiation, some of which is re-emitted toward the surface by GHGs. Human activities that generate GHGs increase the amount of infrared radiation absorbed by the atmosphere, thus enhancing the greenhouse effect and amplifying the warming of Earth.

Increases in fossil fuel combustion and deforestation have exponentially increased concentrations of GHGs in the atmosphere since the Industrial Revolution (Intergovernmental Panel on Climate Change 2018). Rising atmospheric concentrations of GHGs in excess of natural levels result in increasing global surface temperatures—a process commonly referred to as *global warming*. Higher global surface temperatures, in turn, result in changes to Earth's climate system, including increased ocean temperature and acidity, reduced sea ice, variable precipitation, and increased frequency and intensity of extreme weather events (Intergovernmental Panel on Climate Change 2018). Large-scale changes to Earth's system are collectively referred to as *climate change.*

The Intergovernmental Panel on Climate Change (IPCC) was established by the World Meteorological Organization and United Nations Environment Programme to assess scientific, technical, and socioeconomic information relevant to the understanding of climate change, its potential impacts, and options for adaptation and mitigation. The IPCC estimates that human-induced warming reached approximately 1 degree Celsius (°C) above pre-industrial levels in 2017, increasing at 0.2°C per decade. Under the current nationally determined contributions of mitigation from each country until 2030, global warming is expected to rise to 3°C by 2100, with warming to continue afterward (Intergovernmental Panel on Climate Change 2018). Large increases in global temperatures could have substantial adverse effects on the natural and human environments worldwide and in California.

Principal Greenhouse Gases

The principal anthropogenic (i.e., human-made) GHGs contributing to global warming are CO_2, CH_4, N_2O, and fluorinated compounds, including SF_6, HFCs, and PFCs. Water vapor, the most abundant GHG, is not included in this list because its natural concentrations and fluctuations far outweigh its anthropogenic sources. The primary GHGs of concern associated with the project are CO_2, CH_4, N_2O, and HFCs (i.e., refrigerants). Principal characteristics of these pollutants are discussed in the following sections. Note that SF_6 and PFCs are not discussed because these gases are primarily generated by industrial and manufacturing processes, which are not anticipated as part of the project.

Methods have been set forth to describe GHGs emissions in terms of a single gas to simplify reporting and analysis. The most commonly accepted method to compare GHG emissions is the global warming potential (GWP) methodology defined in IPCC reference documents. The IPCC defines the GWP of various GHG emissions on a normalized scale that recasts all GHG emissions in terms of CO_2e, which compares the gas in question to that of the same mass of CO_2 (CO_2 has a GWP of 1 by definition).

Table 3.7-1 lists the GWP of CO_2, CH_4, N_2O, and refrigerants used by the project (existing and future conditions).

Table 3.7-1. Global Warming Potentials of Key Greenhouse Gases for the Sacramento Campus

Greenhouse Gas	Global Warming Potential (GWP) (100 years)
CO_2	1
CH_4	25
N_2O	298
R-143a	4,470
R-513a	631

Sources: California Air Resources Board 2020a, 2020b.
CH_4 = methane; CO_2 = carbon dioxide; N_2O = nitrous oxide; R = refrigerant.

All GWPs used for CARB's GHG reporting and to assess attainment of the state's 2020 and 2030 reduction targets are considered over a 100-year timeframe (as shown in Table 3.7-1). However, CARB recognizes the importance of SLCP and reducing these emissions to achieve the state's overall climate change goals. SLCP have atmospheric lifetimes on the order of a few days to a few decades, and their relative climate forcing impacts, when measured in terms of how they heat the atmosphere, can be tens, hundreds, or even thousands of times greater than that of CO_2 (California Air Resources Board 2017b). Recognizing their short-term lifespan and warming impact, SLCP are measured in terms of CO_2e using a 20-year time period. The use of GWPs with a time horizon of 20 years or better captures the importance of SLCP and gives a better perspective on the speed at which emission controls will impact the atmosphere relative to CO_2 emission controls. The SLCP Reduction Strategy, which is discussed above, addresses CH_4, HFC, and anthropogenic black carbon. CH_4 has a lifetime of 12 years and a 20-year GWP of 72. HFC gases have lifetimes of 1.4 to 52 years and a 20-year GWP of 437 to 6,350. Anthropogenic black carbon has a lifetime of a few days to weeks and a 20-year GWP of 3,200 (California Air Resources Board 2017b).

Carbon Dioxide

CO_2 is the most important anthropogenic GHG and accounts for more than 80 percent of all GHG emissions emitted in California (California Air Resources Board 2021). Its atmospheric lifetime ensures that atmospheric concentrations of CO_2 will remain elevated for decades even after mitigation efforts to reduce GHG concentrations are promulgated. CO_2 enters the atmosphere through fossil fuels (i.e., oil, natural gas, and coal) combustion, solid waste decomposition, plant and animal respiration, and chemical reactions (e.g., manufacture of cement). CO_2 is also removed from the atmosphere (or *sequestered*) when it is absorbed by plants as part of the biological carbon cycle.

Methane

CH_4, the main component of natural gas, is the second most abundant GHG and has a GWP of 25 (California Air Resources Board 2020a). Sources of anthropogenic emissions of CH_4 include growing rice, raising cattle, using natural gas, landfill outgassing, and mining coal. Certain land uses also function as a both a source and sink for CH_4 (i.e., they remove CH_4 from the atmosphere). For example, wetlands are a terrestrial source of CH_4, whereas undisturbed, aerobic soils act as a CH_4 sink.

Nitrous Oxide

Anthropogenic sources of N_2O include agricultural processes (e.g., fertilizer application), nylon production, fossil fuel–fired power plants, nitric acid production, and vehicle emissions. N_2O also is used in rocket engines, racecars, and as an aerosol spray propellant. Natural processes, such as nitrification and denitrification, can also produce N_2O, which can be released to the atmosphere by diffusion.

Hydrofluorocarbons

HFCs are human-made chemicals used in commercial, industrial, and consumer products and have high GWPs. HFCs are generally used as substitutes for ozone-depleting substances in automobile air conditioners and refrigerants. Within the transportation sector, HFCs from refrigeration and air conditioning units represent about 3 percent of total onroad emissions in California in 2018 (California Air Resources Board 2020c).

Emissions Inventories

A GHG inventory is a quantification of all GHG emissions and sinks[2] within a selected physical and/or economic boundary. GHG inventories can be performed on a large scale (e.g., for global and national entities) or on a small scale (e.g., for a building or person). Table 3.7-2 outlines the most recent global, national, statewide, and local GHG inventories.

Table 3.7-2. Global, National, State, and Local GHG Emissions Inventories

Emissions Inventory	CO_2e (metric tons)
2010 Global GHG Emissions Inventory	52,000,000,000
2018 National GHG Emissions Inventory	6,677,800,000
2018 State GHG Emissions Inventory	425,300,000
2016 City of Sacramento GHG Emissions Inventory	3,424,728

Sources: Intergovernmental Panel on Climate Change 2014; U.S. Environmental Protection Agency 2020a; California Air Resources Board 2021; Rincon Consultants 2020.

CO_2e = carbon dioxide equivalent.

As shown in Table 3.7-2, California produces about 1 percent of the entire world's GHG emissions and 6 percent of the nation's GHG emissions, with major emitting sources including fossil fuel consumption from transportation (41 percent), industry (24 percent), electricity production (15 percent), agricultural and forestry (8 percent), residential (7 percent), and commercial (5 percent) (California Air Resources Board 2021). As discussed above, the California government has put in place programs and legislation to reduce GHG emissions across all sectors of the economy.

Like the federal and state governments, the Sacramento Campus conducts annual GHG inventories to assess their progress in reducing emissions and meeting their climate change goals. The campus categorizes their emissions into "scopes," and pursuant to the Sustainable Practices Policy, defines

[2] A GHG sink is a process, activity, or mechanism that removes a GHG from the atmosphere.

Scope 1 and 2 sources per the Climate Registry (2016) and scope 3 sources per Second Nature (2012). The scope definitions are organized around the locational and operational control of emission sources, as shown below. UC Davis Sacramento emissions by scope type are provided in Table 3.7-3.

- **Scope 1**: All direct GHG emissions (except for direct CO_2 emissions from biogenic sources) from sources controlled by UC Davis (Climate Registry 2016).
- **Scope 2**: Indirect anthropogenic (i.e., human-generated) GHG emissions associated with the consumption of purchased or acquired electricity, steam, heating, or cooling, at facilities controlled by UC Davis (Climate Registry 2016).
- **Scope 3**: Emissions from sources that are not owned or controlled by UC Davis, but that are central to campus operations or activities (e.g., non-fleet transportation, employee/student commuting, air travel paid for by the institution) (Second Nature 2012). UC Davis does not currently report Scope 3 emissions in their verified annual GHG inventories submitted to TCR.
- **Non-Scope**: Emission from sources associated with activity on a UC Campus, but outside the operational control of the UC system. UC Davis does not currently track non-scope emissions as part of their verified annual GHG inventories, as per the TCR General Reporting Protocol. These sources are not subject to the Sustainable Practices Policy.

Table 3.7-3. Sacramento Campus Greenhouse Gas Emissions Sources by Scope[a]

Scope	Types of GHG Emissions
Scope 1	• Stationary combustion—Onsite boilers, turbines, generators, and other fossil-fuel powered equipment • Mobile combustion—Fleet Services vehicles, campus shuttles, and off-road agricultural and grounds maintenance equipment • Fugitive emissions—Refrigerant usage in chillers, HVAC systems, and vehicles; research gases; and distribution losses in natural gas lines and meters
Scope 2	• Purchased electricity— Electricity purchased from SMUD for campus and leased spaces • Purchased gas—Natural gas purchased from PG&E for campus and leased spaces
Scope 3	• Commuting—Passenger vehicle trips, truck trips, air travel, and non-campus owned transit trips • Business air travel—UC Davis sponsored air travel by faculty and staff • Solid waste generation[b]—Decomposition of campus-generated waste in local and regional landfills not owned by UC Davis • Water and wastewater use[b]—Treatment, distribution, and conveyance of campus water and wastewater using infrastructure not owned by UC Davis
Non-Scope	• Sources associated activity on a UC campus, but outside the operational control of the UC system (e.g., emergency helicopter operations, construction activities).

HVAC = heating, ventilation and air conditioning; PG&E = Pacific Gas and Electric; SMUD = Sacramento Municipal Utility District.

[a] The annual Sacramento Campus GHG inventories are submitted and verified by the Climate Registry. These inventories exclude Scope 3 and non-scope emissions.

[b] Indirect waste and water-related emissions are not included in Second Nature's (2012) definition of Scope 3 sources. Accordingly, these emissions are not covered by University Carbon Neutrality Initiative, which requires Scope 3 emissions from commuting and business air travel be offset to net zero by 2050.

Table 3.7-4 summarizes UC Davis' verified GHG inventories for the Sacramento Campus by scope from 2013 to 2017. As noted above, annual Sacramento Campus GHG inventories are submitted and verified by the Climate Registry. These inventories exclude Scope 3 and non-scope emissions. Accordingly, the inventories shown in Table 3.7-4 only include Scope 1 and 2 emissions (as defined in Table 3.7-2).

Table 3.7-4. Sacramento Campus Verified Greenhouse Gas Emissions (Scope 1 and 2) between 2013 and 2017 (metric tons CO_2e per year)

Scope/Source	2013	2014	2015	2016	2017
Scope 1					
Stationary	64,000	62,951	64,583	64,710	65,570
Mobile	615	789	425	505	654
Fugitive[a]	34	156	308	197	46
Scope 2					
Purchased electricity/gas	5,438	5,348	4,841	3,510	2,901
Allowable Offsets					
CARB allowances[b]	-3,781	-3,712	-3,803	-3,799	-3,834
Total Scope 1 and 2	66,306	65,532	66,354	65,123	65,337

Source: Lee pers. comm.

[a] Per guidance from the Climate Registry, UC Davis' verified inventories exclude emissions of R-22, which are being phased out under the Montreal Protocol.

[b] As noted above under *Regulatory Setting*, all subject UC campuses, including the Sacramento Campus, receive allowances in exchange for a financial commitment to combat climate change through university actions. The campus acquires California Carbon Offsets to offset up to 8 percent (i.e., the maximum allowed in the cap-and-trade program) of cap-and-trade subject emissions.

3.7.2 Environmental Impacts

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

Methods for Analysis

Construction Emissions

Construction GHG emissions would originate from off-road equipment exhaust, vehicle exhaust (on-road vehicles), and electricity consumption. Emissions from off-road equipment and on-road vehicles were quantified using CalEEMod and the methods described in Section 3.2, *Air Quality*. GHG emissions generated by electricity used to power onsite contractor trailers were quantified using activity data (e.g., megawatt hours) provided by UC Davis (Sebright pers. comm. [a]) and emission factors from the SMAQMD and the EPA (Ramboll 2020; U.S. Environmental Protection Agency 2020b). The utility emission factors were adjusted to account for implementation of SB 100.[3]

[3] SB 100 revises and extends the state's renewable resource targets under its Renewable Portfolio Standard to 50 percent by December 31, 2026; 60 percent by December 31, 2030; and 100 percent (carbon-free) by December 31, 2045.

Operational Emissions

The operational analysis evaluates GHG emissions generated by existing sources that will either be removed or modified with implementation of the project, as well as new emission sources that would be installed by the project.

- **Sources Removed**: The East Wing would be demolished by the project, and therefore all operational emissions generated by the building would cease following building demolition in 2030. Building 35 would also be removed by the project, but this building is not a material source of existing GHG emissions, as it is an unoccupied trailer.
- **Sources Modified:** Emissions generated by the existing CUP and medical helicopter transport services would be modified by the project. The project includes upgrades to the CUP needed to directly support the California Tower, as well as other planned campus growth through 2030. Likewise, helicopter activity would not only increase with the California Tower and other campus growth, but landings would be split between the existing Davis Tower heliport and the new California Tower heliport. Finally, the project would move or replace existing licensed beds at the East Wing, University Tower, Davis Tower, and Surgery and Emergency Services Pavilion. Accordingly, total emissions generated by the CUP, helicopter activity, and existing licensed beds at impacted facilities under existing and 2030 operating conditions are included in the GHG analysis.
- **New Sources***:* The California Tower, make-ready projects, and PS5 would generate additional vehicle trips to the campus, require installation of new stationary sources (e.g., generators) at the CUP, and result in area (e.g., landscaping equipment), water, waste, and fugitive emissions.

The net change in emissions among these sources between existing conditions and 2030 operating conditions represents the GHG impact analyzed in this section. Quantification methods for the sources and scenarios are further described below.

Existing Conditions

The project will demolish the existing 120,000 square foot East Wing of the main hospital. The East Wing does not operate any stationary sources, but currently generates GHG emissions from energy, area, water, and waste sources. Emissions from these sources were quantified using CalEEMod and the methods described in Section 3.2, *Air Quality.* Existing water consumption and solid waste generation data were provided by UC Davis (Davis pers. comm). Mobile source emissions generated existing licensed beds at the East Wing, University Tower, Davis Tower, and Surgery and Emergency Services Pavilion were quantified using traffic data provided by Fehr & Peers and CARB's EMFAC2021.

The CUP operates five diesel emergency generators, five steam boilers and eight hot water boilers, and one gas turbine. GHG emissions generated by these existing stationary sources at the CUP were obtained from the UC Davis' 2018 Emissions Inventory Verification Statement (UC Davis Health 2019).

REACH Air Medical Services provides medical helicopter transport services to the UC Davis Sacramento Campus. Existing annual helicopter jet fuel consumption was provided by UC Davis (Sebright pers. comm. [b]). The fuel data are inclusive of fuel burned during landing and take-off (LTO) cycles and flying. GHG emissions were calculated by multiplying the total annual jet fuel consumption by fuel-based emission factors from the Climate Registry (2020).

Project Analysis (2030 Conditions)

Operation of the project would generate GHG emissions from mobile sources (e.g., patient trips), area sources (e.g., landscaping equipment), solid waste generation, water and wastewater use. The California Tower would not directly purchase any natural gas from PG&E but would increase fuel consumption at the CUP, as discussed further below, as well require new stationary (e.g., emergency diesel generator) and fugitive (e.g., chillers) sources at the CUP. Helicopter activity is likewise expected to increase.

As discussed in Chapter 3.2, *Air Quality*, Fehr & Peers provided the forecasted vehicle trips and VMT resulting from implementation of the project (Behrens pers. comm.). GHG emissions were quantified by multiplying EMFAC2021 emission factors by the trip and VMT inventory provided by Fehr & Peers.

CalEEMod was used to estimate emissions from landscaping equipment, solid waste generation, and water and wastewater use. UC Davis provided the anticipated water and wastewater use and solid waste generation for the California Tower, which were input into CalEEMod (Davis pers. comm.). CalEEMod default values for a 890,000 square foot hospital were assumed to estimate area source emissions.

As discussed in Chapter 3.2, *Air Quality*, the CUP would provide normal and emergency electrical power, chilled and hot water for heating and cooling, and process steam to the California Tower. All existing fossil fuel–powered stationary equipment at the CUP would be maintained and continue to operate with full implementation of the California Tower and other projected growth on the UC Davis Sacramento Campus through 2030. There would be no change in activity for the existing generators, and emissions were therefore obtained from the existing emission inventory, as described above.

One new 3-megawatt (3,451-horsepower) and two new 2.5-megawatt (3,353-horsepower) Tier 4 emergency diesel generators would be installed at the CUP by 2030 to support the California Tower and other campus growth. Emissions from these new generators were quantified using emission factors from CalEEMod and the methods described in Section 3.2, *Air Quality*.

The California Tower would require one new 2,000-ton chiller at the CUP. UC Davis also plans to replace three existing chillers at the CUP with four new chillers. All chillers would use R-513a. The average annual leak rate of existing CUP chillers (1.7%) was considered representative of the new chillers and used to estimate future R-513a losses.

The existing boilers and turbine at the CUP use natural gas provided by PG&E. Electric power load served by the CUP is expected to grow commensurate with campus growth, including the California Tower. As discussed in Chapter 3.3, *Air Quality*, UC Davis provided expected fuel consumption for the boilers and turbine needed to serve the campus load in 2030, which is the first operational year for the California Tower. UC Davis also provided fuel consumption estimates for 2031 when the East Wing would be decommissioned. GHG emissions generated by the boilers and turbine were quantified by scaling existing emissions by the projected increase in fuel consumption (Sebright pers. comm. [b]).

The added load from the California Tower and other planned campus growth would increase electricity consumption at the CUP during planned and unplanned outages. However, as discussed in Section 3.7.1, *Existing Conditions*, pursuant to the UC's Sustainable Practices Policy, the UC Davis Sacramento Campus is required to obtain 100 percent clean electricity beginning in 2025. Accordingly, there would be zero GHG emissions generated by purchased electricity at the CUP under future build conditions.

Future helicopter landings at the new California Tower heliport and the Davis Tower heliport were assumed to increase commensurate with growth in expected inpatient population on the UC Davis Sacramento Campus. GHG emissions from helicopter activity were quantified using fuel-based emission factors from the Climate Registry (2020) and the methods described in Section 3.2, *Air Quality*.

Thresholds of Significance

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

- Generation of greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment.
- Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases.

The following sections summarize the thresholds used to evaluate the significance of project generated GHG emissions under each impact criteria.

Generate a Significant Amount of Greenhouse Gas Emissions

The California Supreme Court's decision in *Center for Biological Diversity v. Department of Fish and Wildlife* (62 Cal.4th 204) confirmed that there are multiple potential pathways for evaluating GHG emissions consistent with CEQA. The decision clarified that use of statewide emission reduction targets is a "permissible criterion of significance" so long as substantial evidence and reasoned explanation is provided to relate those goals to project specific emissions.

As discussed above, SMAQMD has adopted a threshold for stationary source projects and a small project screening metric for land use development projects (Ramboll 2020). Projects with operational emissions in excess of this screening metric can demonstrate a less than significant long-term GHG impact through compliance with BMPs. However, SMAQMD indicates that their land use development guidance may not be directly applicable to hospital projects (Ramboll 2020).

Given the seriousness of climate change and the regional significance of the Sacramento Campus, UC Davis has determined that for the purposes of this analysis, any increase in GHG emissions above existing conditions (net zero) would result in a significant impact on the environment. The project will therefore result in a significant GHG impact if it increases GHG emissions above existing conditions (2019).

Conflict with Plans, Policies, or Regulations for Reducing Greenhouse Gas Emissions

The following GHG reduction plans, policies, and regulations are evaluated in this analysis. These are the local, regional, and state GHG reduction plans, policies, and regulations most relevant to the project.

- UC Sustainable Practices Policy and CAP.
- SACOG's MTP/SCS GHG reduction target.
- 2017 Climate Change Scoping Plan.
- Other state GHG regulations (e.g., SB 100).
- SB 32 and EO B-55-18 GHG reduction targets.

While quantitative SB 32 and EO B-55-18 GHG thresholds were developed for the UC Davis Sacramento Campus in the 2020 LRDP Update Final SEIR, it would be inappropriate to develop similar numeric thresholds for an individual project. Accordingly, consistency of the project with GHG reduction plans and targets is assessed qualitatively.

Impacts and Mitigation Measures

Impact GHG-1: Generation of greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment (less than significant)

Summary of Impact GHG-1 by Component

Component	Level of Significance before Mitigation	Mitigation Measures Required	Level of Significance after Mitigation
Make-ready projects	LTS	None	–
California Tower construction, Surgery and Emergency Services Pavilion interior renovation, Central Utility Plant upgrades	LTS	None	–
Parking Structure 5 construction	LTS	None	–
East Main Hospital Wing demolition	LTS	None	–
Whole project	LTS	None	–

NI = no impact; LTS = less than significant; S = significant; SU = significant and unavoidable.

The project would result in construction and operational GHG emissions that could contribute to climate change on a cumulative basis. Construction emissions would originate from mobile and stationary construction equipment exhaust, employee and haul truck vehicle exhaust, and electricity consumption. Operation of the project would generate GHG emissions from mobile (e.g., patient trips), area (e.g., landscaping equipment), water, and waste sources. Planned upgrades at the CUP would result in stationary (e.g., emergency diesel generator) and fugitive (e.g., chillers) source emissions. Finally, expansion of helicopter services would result in aviation based mobile source emissions. The project includes demolition of the existing East Wing of the main hospital, which currently generates GHG emissions from mobile, energy, area, water, waste, and stationary (at the CUP) sources. Demolition would occur after one year of operation of the California Tower. Emissions from each of these sources were calculated using the methods detailed under *Methods for Analysis* above.

Table 3.7-5 summarizes the modeled construction and operational GHG emissions under existing and buildout conditions with the project. The 2030 buildout analysis includes emissions from East Wing building operations (i.e., landscaping equipment, purchased natural gas, water consumption, and waste generation). Patient population from the East Wing would be moved to the California Tower, and thus, mobile source emissions for the 2030 buildout analysis are presented under the California Tower. Emissions from East Wing building operations would cease by 2031 and are therefore not included in the 2031 buildout analysis. Demolition of the East Wing would also reduce load on the CUP, resulting in minor reductions in fuel combustion at the CUP under the 2031 buildout analysis.

The analyses presented in Table 3.7-5 reflect adopted state regulations designed to reduce GHG emissions (e.g., RPS). The analysis also includes quantifiable emissions benefits that will be achieved by the UC's Sustainable Practices Policy. As discussed above, the Sustainable Practices Policy includes a comprehensive set of strategies that will improve energy efficiency, increase renewable energy generation, reduce water consumption and waste generation, and encourage alternative transportation and low emissions vehicles. The following policies were specifically quantified and included in the operational analysis shown in Table 3.7-5.

- Demand side load reduction in buildings served by the CUP stemming from green building design and energy efficiency improvements.
- Prohibition of natural gas infrastructure in new buildings constructed after 2019 (i.e., California Tower) not served by the CUP.
- Procurement of 100 percent zero carbon electricity beginning in 2025.
- 10 percent single-occupancy vehicle employee commute trip reduction.
- Regional factors accounted for in SACOG's travel model that reduce project related VMT, such as job accessibility, job/housing density, and job/housing mix and balance.

Additional GHG reductions may be achieved by future federal and state GHG reduction policies. However, because the long-term climate change policy and regulatory changes to meet the 2045 reduction target expressed under EO B-55-18 are unknown at this time, the extent to which project emissions would be reduced through implementation of statewide (and nationwide) changes is not known, the calculation of operational emissions cannot take into account future state or federal actions that may be taken to achieve long-term reductions, beyond the Pavley vehicle standards and SB 100. Operational emissions would therefore likely be lower than those presented in Table 3.7-5.

Table 3.7-5. Estimated GHG Emissions for Implementation of the Project without University Carbon Neutrality Initiative (metric tons CO_2e per year)

Source	Scopes 1 and 2	Scope 3	Non-Scope	Total[a]
Existing (2019)				
East Wing and Campus Beds[b]	14	18,733	0	18,747
Central Utility Plant	59,800	0	0	59,800
Helicopters	0	0	762	762
Total	59,814	18,733	762	79,309
2030 Project and East Wing Building Operations				
East Wing[c]	14	327	0	341
PS5, California Tower, make-ready projects	<1	17,462	0	17,462
Central Utility Plant	98,105	0	0	98,105
Helicopters	0	0	832	832
Construction[d]	0	0	1,242	1,242
Total	98,120	17,789	2,074	117,982
2031 Project				
PS5, California Tower, make-ready projects [e]	<1	17,462	0	17,462
Central Utility Plant	95,151	0	0	95,151
Helicopters	0	0	832	832
Construction[f]	0	0	1,260	1,260
Total	95,151	17,462	2,092	114,705
Comparison to Existing				
Net Emissions from Existing (2030)				+38,673
Net Emissions from Existing (2031+)				+35,395

Source: ICF modeling 2021, Appendix E.

CO_2e = carbon dioxide equivalent.

[a] Sums in this column may have been rounded.

[b] Emissions from east wing building operations (landscaping equipment, purchased natural gas, water consumption, and waste generation). Mobile sources based on VMT and trips for the 625 licensed beds that would be moved to the new California Tower under the project.

[c] Emissions from building operations (landscaping equipment, purchased natural gas, water consumption, and waste generation). Patient population from the East Wing would be moved to the California Tower, and thus, mobile source emissions are presented under the California Tower.

[d] Construction emissions through 2030 amortized over a 30-year building lifespan.

[e] Mobile source emissions conservatively modeled using 2030 emission factors.

[f] Total construction emissions amortized over a 30-year building lifespan.

As shown in Table 3.7-5, implementation of the project would generate 117,982 metric tons CO_2e in 2030 and 114,705 metric tons CO_2e in 2031. Emissions are slightly lower under 2031 analysis conditions because demolition of the East Wing would reduce load on the CUP, resulting in minor reductions in fuel combustion and associated emissions at the CUP. While the carbon intensity of the economy is predicted to decrease over time, compared to existing conditions, implementation of the project is estimated to increase GHG emissions. Most of the emissions increase is due to additional stationary source combustion at the CUP (Scope 1 emission source).

The UC's Sustainable Practices Policy requires carbon neutrality for Scope 1 and 2 emissions by 2025 and carbon neutrality for Scope 3 emissions (commuting and business air travel) by 2050. As noted above, to the extent reductions achieved by the Sustainable Practices Policy could be quantified, they have been included in Table 3.7-5. The UC's Sustainable Practices Policy requires each campus complete an assessment of Scope 1 emissions from natural gas combustion by 2035, or sooner if the location's combined heat and power plant is planned for capital renewal or major repair.[4] The assessment must determine the best pathway to decarbonize 80 percent of Scope 1 emissions through means other than offsets (e.g., on-site carbon capture, electrification). The projected remaining emissions would be reduced and offset to achieve Scope 1 and 2 carbon neutrality starting in 2025 in accordance with the UC Sustainable Practices Policy.

As shown in Table 3.7-6, with implementation of the UC's Sustainable Practices Policy, the project would reduce GHG emissions by more than 59,000 metric tons CO_2e under 2030 and 2031 buildout conditions, compared to existing conditions. As described further below the table, these reductions would be achieved through additional onsite reductions or GHG offsets purchased to meet the requirement of carbon neutrality for Scope 1 and 2 emissions by 2025. Because the project would result in a net reduction of GHG emissions, implementation of the project would not contribute a significant amount of GHG emissions or contribute to existing cumulative emissions. Accordingly, this impact would be **less than significant**.

Table 3.7-6. Estimated GHG Emissions for Implementation of the Project with UC Sustainable Practices Policy (metric tons CO_2e per year)

Source	Scopes 1 and 2[a]	Scope 3	Non-Scope	Total
Existing (2019)	59,814	18,733	762	79,309
2030 project and East Wing building operations	0	17,789	2,074	19,862
2031 project	0	17,462	2,092	19,554
Comparison to Existing				
Net emissions from existing (2030)				-59,447
Net emissions from existing (2031+)				-59,756

Source: ICF modeling 2021, Appendix E.
CO_2e = carbon dioxide equivalent.
[a] Reduced or offset to net zero beginning in 2025 pursuant to the UC Sustainable Practices Policy.

UC Davis produces an annual GHG inventory to track GHG emission volumes and sources from covered sources. As discussed above, these inventories include all Scope 1 and Scope 2 emission sources and exclude emissions from Scope 3 and non-scope sources. The annual GHG inventory for the Sacramento Campus will be used to determine the need for purchasing carbon offsets in 2025 to ensure emission reductions match the carbon neutral 2025 requirement for Scopes 1 and 2 emissions.

A GHG offset enables development projects to compensate for their GHG emissions and associated environmental impacts by financing reductions in GHG emissions elsewhere. GHG offsets are classified as either compliance or voluntary. Compliance offsets can be purchased by covered

[4] The project includes upgrades to the CUP needed to directly support the California Tower, as well as other planned campus growth through 2030. While these upgrades will expand capacity at the CUP, they are not major capital investments that would trigger preparation of the Scope 1 decarbonization assessment.

entities subject to the cap-and-trade regulation to meet predetermined regulatory targets. Voluntary offsets are not associated with the cap-and-trade regulation and are purchased with the intent to voluntarily meet carbon neutral or other environmental obligations. Demand for voluntary offsets is driven by companies and individuals that take responsibility for offsetting their own emissions, as well as entities that purchase pre-compliance offsets before emissions reductions are required by regulation (Ecosystem Marketplace 2020). The global market for voluntary offsets transacted nearly $300 million and traded roughly 100 million metric tons of CO_2e in 2018, which is the latest year for which data are available (Ecosystem Marketplace 2019).

Measures that retain value for the campus, such as energy efficiency or additional renewable energy projects, will be prioritized over measures that send value off campus, such as purchasing offsets. Additionally, options for investing in community-based research or student engagement projects as alternative or innovative types of offsets are being investigated through a UC systemwide initiative. Table 3.7-7 provides a comparative pricing analysis assuming all estimated Scope 1 and Scope 2 emissions for the project would be reduced to net zero through the purchase of offsets. As discussed above, the Sacramento Campus may achieve carbon neutrality for Scope 1 and 2 emissions through a combination of additional onsite reductions and carbon offsets. Accordingly, the values presented in Table 3.7-7 are a conservative representation of potential offset costs. The analysis was prepared using a banded set of future compliance and voluntary market pricing values based on the economic assumptions in the Utility Master Plan (Affiliated Engineers 2019:9-27). Carbon offsets for Scope 1 and Scope 2 emissions would likely be composed of both compliance (for the CUP under its obligation as a covered entity to meet its mandated emissions cap) and voluntary offsets, and therefore would fall within the cost range shown in Table 3.7-7.

Table 3.7-7. Comparison of Carbon Offset Pricing and Costs Associated with Reducing the Project Scope 1 and Scope 2 Emissions to Zero[a]

Parameter	2030	2031
Scope 1 and 2 emissions (metric tons CO_2e) (Table 3.7-5)	98,120	95,151
Compliance offset price (per metric ton CO_2e)[b]	$30.53	$32.66
Voluntary offset price (per metric ton CO_2e)[b]	$15.96	$16.82
Estimated annual cost to the campus	$1,570,000 to $3,000,000	$1,600,000 to $3,110,000

Sources: ICF modeling 2021, Appendix E; Affiliated Engineers 2019:9-27.

[a] The cost estimates assume all Scope 1 and 2 emissions for the project would be reduced to net zero through the purchase of offsets. The Sacramento Campus may achieve carbon neutrality for Scope 1 and 2 emissions through a combination of additional onsite reductions and carbon offsets (e.g., on-site carbon capture, electrification). Accordingly, the values presented in this table are a conservative representation of potential offset costs.

[b] Forecasted offset prices in 2030 and 2031 were developed by Affiliated Engineers (2019:9-27) by escalating 2018 costs.

Mitigation Measures

No mitigation measures are necessary.

Impact GHG-2: Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases (less than significant with mitigation)

Summary of Impact GHG-2 by Component

Component	Level of Significance before Mitigation	Mitigation Measures Required	Level of Significance after Mitigation
Make-ready projects	S	LRDP-AQ-2e TRA-1e LRDP-GHG-2	LTS
California Tower construction, Surgery and Emergency Services Pavilion interior renovation, Central Utility Plant upgrades	S	LRDP-AQ-2e TRA-1e LRDP-GHG-2	LTS
Parking Structure 5 construction	S	LRDP-AQ-2e TRA-1e LRDP-GHG-2	LTS
East Main Hospital Wing demolition	LTS	None	–
Whole project	S	LRDP-AQ-2e TRA-1e LRDP-GHG-2	LTS

NI = no impact; LTS = less than significant; S = significant; SU = significant and unavoidable.

The UC Sustainable Practices Policy and the UC Davis CAP are the relevant local GHG reduction plans with which to review compliance under this impact analysis. At the regional level, this impact analysis evaluates consistency with SACOG's MTP/SCS. In the state context, consistency with the Scoping Plan, relevant GHG regulations, and state reduction targets (SB 32 and EO B-55-18) is assessed.

University of California Sustainability Practices Policy and Climate Action Plan

The UC system and the Sacramento Campus are committed to responsible stewardship of resources and leadership in climate protection. As described above under Impact GHG-1, the project would result in large-scale GHG reductions compared to existing conditions. While some of these reductions will be achieved by state actions that reduce the carbon intensity of the future economy (e.g., SB 100), a considerable amount is directly the result of the UC's Sustainable Practices Policy. For example, among other things, the California Tower is being designed to outperform ASHRAE 90.1-2010 by at least 30 percent. All electricity would also be purchased from zero carbon sources, pursuant to the UC's Sustainable Practices Policy. Any remaining Scope 1 and Scope 2 GHG emissions that need to be reduced to meet UC Davis' GHG reduction targets of their CAP would be abated by additional onsite reductions or verified carbon offset purchases made by UC Davis.

The combination of these actions would lead to the emissions reductions, relative to baseline conditions, shown in Table 3.7-6. Ultimately, the project would implement the UC Sustainable Practices Policy, which in turn supports the CAP. Therefore, there is no conflict or inconsistency with UC Davis' local GHG reduction plans and policies.

Sacramento Area Council of Governments MTP/SCS GHG Reduction Target (SB 375)

SACOG's MTP/SCS achieves a 2035 per capita GHG vehicle emissions rate of 18.9 pounds CO_2e per day (Sacramento Area Council of Governments 2019:8-21). This level is equivalent to 19 percent below 2005 per-capita mobile source GHG emissions, which meets the SB 375 target set by CARB. As shown in Table 3.7-5, Scope 3 mobile source emissions are estimated to be 17,462 metric tons CO_2e. The project does not include residential land uses. Therefore, a strict per-capita mobile source emissions rate for comparison to the MTP/SCS goal cannot be developed for the project. However, for informational purposes, a per-service population metric is quantified, where the service population is defined as the number of patients and employees generating the VMT. This value is 2,364 and the resulting per-service population mobile source emissions rate is 46.9 pounds CO_2e per day.[5] This is above the per capita emissions rate needed to meet SACOG's MTP/SCS SB 375 GHG reduction target.

UC Davis's Green Commuter Program, which provides incentives for carpooling, vanpooling, bicycling, walking, and using transit, would contribute to future mobile source emissions reductions by raising employee awareness about mode shift. The 2020 LRDP Update includes plans for UC Davis to construct and operate a new mobility hub at 45th Street north of 2nd Avenue, which will provide a centralized transit center with convenient access for employees and visitors to the California Tower. UC Davis will also coordinate with and support the City of Sacramento on new roadway transit improvements along Stockton Boulevard, including potentially bus rapid transit. Beyond planned UC Davis improvements, Mitigation Measure LRDP-AQ-2e, as described in Section 3.2, *Air Quality*, would reduce GHG emissions by reducing vehicle trips and enhancing walkability and pedestrian network connectivity. Mitigation Measure TRA-1e, as described in Section 3.15, *Transportation and Circulation*, will also support mode shifting and associated vehicle emissions reductions by facilitating service improvements that are necessary to improve transit performance and reliability. These programs will lower the per-capita emissions rate, but those reductions may not be enough to achieve consistency with SACOG's MTP/SCS GHG reduction target.

2017 Climate Change Scoping Plan

The state's near-term GHG strategy is defined by SB 32. The Scoping Plan identifies specific measures to reduce statewide GHG emissions and achieve the state's 2030 GHG reduction target pursuant to SB 32. The Scoping Plan builds on the programs set in place as part of the previous scoping plan that was drafted to meet the 2020 reduction target per AB 32. The Scoping Plan proposes meeting the 2030 goal by accelerating the focus on zero and near-zero technologies for moving freight, continued investment in renewables, greater use of low-carbon fuels including electricity and hydrogen, stronger efforts to reduce emissions of SLCP (i.e., CH_4 and fluorinated gases), further efforts to create walkable communities with expanded mass transit and other alternatives to traveling by car, continuing the cap-and-trade program, and ensuring that natural lands become carbon sinks to provide additional emissions reductions and flexibility in meeting the target.

Through implementation of the UC's Sustainable Practices Policy, the project would be designed around the concept of sustainability. This is manifested through green-building principles, including an emphasis on energy efficiency, water conservation, and waste reduction, as well as practices to

[5] Equation: (17,462 metric tons CO_2e per year from Scope 3 mobile [Table 3.7-5] * 2,204 pounds per metric ton)/347 days per year/2,364 persons.

reduce dependence on fossil fuels. Although the measures included in the Scoping Plan are necessarily broad, the project is generally consistent with the goals and desired outcomes of the plan (i.e., increasing energy efficiency, water conservation, waste diversion, and transportation sustainability). Table 3.7-8 analyzes the consistency of the project with the policies in the Scoping Plan.

Table 3.7-8. Project Consistency with Scoping Plan Policies

Policy	Primary Objective	2020 LRDP Update Consistency Analysis
SB 350	Reduce GHG emissions in the electricity sector through the implementation of the 50% RPS, doubling of energy savings, and other actions as appropriate to achieve GHG emissions reductions planning targets in the Integrated Resource Plan process.	This policy is a state program that requires no action at the project level. Nonetheless, the project would be consistent with the energy saving objective of this measure. For example, the California Tower is being designed to outperform ASHRAE 90.1-2010 by at least 30 percent. Beginning in 2025, the Central Utility Plant would also obtain 100% zero-carbon electricity.
Low Carbon Fuel Standard	Transition to cleaner/less-polluting fuels that have a lower carbon footprint.	This policy is a state program that requires no action at the project level. Nonetheless, the project would support reducing the carbon footprint associated with vehicle travel. Short- and long-term bicycle parking will be provided at the California Tower and Parking Structure 5.
Mobile Source Strategy (CTF Scenario)	Reduce GHGs and other pollutants from the transportation sector through transition to zero-emission and low-emission vehicles, cleaner transit systems and reduction of vehicle miles traveled.	This policy is a state program that requires no action at the project level. Nonetheless, the project would support its implementation through compliance with the UC's Sustainable Practices Policy, which will support alternative transportation, zero emissions vehicles, and overall reductions in vehicle trips.
SB 1383	Approve and implement short-lived climate pollutant strategy to reduce highly potent GHGs.	This policy is a state program that requires no action at the project level. Regulations stemming from the Short-Lived Climate Pollutants Reduction Strategy have not yet been developed (Ramboll 2020). The project would be required to comply with state regulations for minimizing hydrofluorocarbons that are in place at the time of construction. High GWP refrigerants currently used at the CUP (R-134a) would be transitioned to low GWP refrigerants (R-513a). Pursuant to the UC's Sustainable Practices Policy, remaining fugitive emissions of high GWP gases (Scope 1) will be offset to net zero beginning in 2025.
California Sustainable Freight Action Plan	Improve freight efficiency, transition to zero-emission technologies, and increase competitiveness of California's freight system.	This policy is a state program that requires no action at the project level, and does not directly apply to the project, which is not a freight project.

Policy	Primary Objective	2020 LRDP Update Consistency Analysis
Post-2020 Cap and-Trade Program	Reduce GHGs across largest GHG emissions sources.	Emissions generated by the boilers and turbine at the CUP are subject to the cap-and-trade program. Beginning in 2025, GHG emissions generated by the CUP will be offset to net zero pursuant to the UC Sustainable Practices Policy.

CTF = cleaner technology fuels; GWP = global-warming potential

Other State Regulations

Outside of the Scoping Plan, the state has adopted several other regulations and programs to achieve future GHG reductions, as described further in Section 3.7.1, *Existing Conditions*. Regulations, such as the SB 100-mandated 100 percent carbon-free RPS by 2045; implementation of the state's SLCP Reduction Strategy, including forthcoming regulations for composting and organics diversion; and future updates to the state's Title 24 standards (including requirements for net zero energy buildings), will be necessary to attain the magnitude of reductions required for the state's 2030 GHG target. The project would be required to comply with these regulations in new construction, or would be directly affected by the outcomes (e.g., energy consumption would be less carbon intensive due to the increasingly stringent RPSs). Unlike the Scoping Plan, which explicitly calls for additional emissions reductions from local governments and new projects, none of these state regulations identify specific requirements or commitments for new development beyond what is already required by existing regulations or will be required in forthcoming regulation. Therefore, there is no conflict or inconsistency.

Senate Bill 32 and Executive Order B-55-18 Reduction Targets

While the project is consistent with the broad policy objectives of the Scoping Plan and supporting state programs, successful implementation of SB 32 (as a regulation) and attainment of the state's long-term climate change goal of carbon neutrality (EO B-55-18) will require deep emissions reductions across all sectors.

It is important to note that some of the broad-scale shifts in how energy will be produced and used in the future are outside of the control of the project. The changes necessitated by the state's long-term climate policy will require additional policy and regulatory changes, which are unknown at this time. Therefore, the extent to which the project's emissions and resulting impacts would be mitigated through implementation of such changes is not known and cannot be known at this time. Furthermore, implementation of additional policy and regulatory changes is in the jurisdiction of state-level agencies (e.g., CARB), not UC Davis. However, some measures (e.g., decarbonization, energy efficiency, and reduced fossil-fuel-based VMT) can be facilitated, at least to some extent, through implementation of specific GHG reduction measures. Under this same rationale, if the project did not implement measures to maximize energy efficiency or decarbonize, the reductions may not be enough for an individual project to meet the aggressive long-term cumulative reduction goals.

As discussed above, the project is subject to the UC's Sustainable Practices Policy. The California Tower is being designed to outperform ASHRAE 90.1-2010 by at least 30 percent. All electricity will also be purchased from zero carbon sources. While these sustainability initiatives will achieve substantial reductions in electricity related GHG emissions, the project will increase natural gas combustion at the CUP. To meet the state's expressed 2045 climate neutrality goal (EO B-55-18), OPR (2018) recommends all electric buildings. Similarly, analysis conducted by SMAQMD shows that new development in Sacramento County must be constructed without natural gas infrastructure for Sacramento County to meet its regional 2030 GHG target for the building energy sector (Ramboll 2020). The project would also generate additional VMT, although mobile source emissions would decline relative to existing conditions (Table 3.7-5). This is because the minor increase in project VMT would be offset by improvements in vehicle efficiency and carbon intensity.

The achievement of long-term GHG reduction targets will require substantial change in terms of how energy is produced and consumed, as well as other economy-wide changes, many of which can only be implemented by the state and federal government. As such, placing the entire burden of meeting long-term reduction targets on local government or new development would be disproportionate and likely ineffective. Nevertheless, given that the project includes emissions sources that may be inconsistent with the state's long-term reduction trajectory, this impact is conservatively determined to be significant.

Mitigation Measures LRDP-AQ-2e and TRA-1e will reduce mobile source GHG emissions, as discussed above. Mitigation Measure LRDP-GHG-2 requires the UC Davis Sacramento Campus offset GHG emissions, inclusive of those generated by the project, to achieve a campus wide 40 percent reduction in 1990 emissions levels by 2030, an 80 percent reduction in 1990 emissions levels by 2040, and carbon neutrality beginning in 2045 (University of California, Davis 2020). Because emissions from the project will be reduced with implementation of Mitigation Measure LRDP-GHG-2, the project would not conflict with the SB 32 or EO B-55-18 GHG reduction targets.

Conclusion

The proposed project would not conflict with local UC Davis plans and policies, implementation of the Scoping Plan, or other general state regulations adopted for the purposes of reducing GHG emissions (e.g., SB 100). However, per capita mobile source emissions would exceed SACOG's MTP/SCS GHG reduction target. Total emissions resulting from the proposed project could also affect the state's ability to achieve its 2030 reduction target under SB 32 and future goal of carbon neutrality by 2045. This is a significant impact.

As discussed above, GHG emissions from stationary source combustion (Scope 1) will be reduced or offset to net zero beginning in 2025, pursuant to the UC Sustainable Practices Policy. UC Davis' Green Commuter Program, which provides incentives for carpooling, vanpooling, bicycling, walking, and using transit, would contribute to mobile source GHG emissions reductions by raising awareness about mode shift. Mitigation Measure LRDP-AQ-2e would likewise reduce GHG emissions by reducing vehicle trips, enhancing walkability and pedestrian network connectivity, and supporting low-emission and zero-emissions vehicles and equipment. Mitigation Measure TRA-1e will also support mode shifting and associated vehicle emissions reductions by facilitating service improvements that are necessary to improve transit performance and reliability. These measures will collectively reduce mobile source GHG emissions. However, UC Davis does not have jurisdiction over vehicle trips and the effectiveness of the measures would depend on the cooperation of visitors, employees, patients, and vendors visiting the plan area. Reductions achieved by Mitigation Measures LRDP-AQ-2e and TRA-1e likely would not be enough to achieve SACOG's MTP/SCS GHG reduction target or the SB 32 and EO B-55-18 thresholds.

The UC Sustainable Practices Policy requires Scope 3 mobile source emissions (i.e., emissions from commuting and business air travel) to be reduced or offset to net zero no later than 2050. The year of 2050 was initially declared in the UC Carbon Neutrality Initiative, and tracked the American

College and University Presidents Climate Commitment, now called the Second Nature Carbon Commitment, when it was incorporated into the UC Sustainable Practices Policy Since then, the goal post for global GHG emissions reduction has advanced, with scientific agreement that carbon neutrality must be achieved by midcentury to avoid the most catastrophic consequences of climate change. California's commitment to carbon neutrality by 2045 is articulated under EO B-55-18.

Considering the accelerated timeframe for offsetting emissions and ultimately achieving carbon neutrality, Mitigation Measure LRDP-GHG-2 is required. This measure identifies actions beyond the current UC Sustainable Practices Policy that will achieve additional GHG reductions on the Sacramento Campus. The mitigation also expands the UC's carbon neutrality commitments and disclosure requirements for annual voluntary GHG reporting. Specifically, Mitigation Measure LRDP-GHG-2 and the current UC Sustainable Practices Policy differ in the following important ways:

- Mitigation Measure LRDP-GHG-2 addresses all emissions associated with the Sacramento Campus LRDP Update as defined in the 2020 LRDP Update EIR. These include Scope 1, Scope 2, Scope 3 (commuting, business air travel, solid waste, and water and wastewater), and non-scope sources. The UC Sustainable Practices Policy addresses Scope 1, Scope 2, and Scope 3 (commuting and business air travel only) sources.
- Mitigation Measure LRDP-GHG-2 requires the Sacramento Campus to offset GHG emissions from all sources as defined in the 2020 LRDP Update EIR to achieve a 40 percent reduction in 1990 emissions levels by 2030, an 80 percent reduction in 1990 emissions levels by 2040, and carbon neutrality beginning in 2045. The UC Sustainable Practices Policy requires Scope 1 and Scope 2 emissions to be offset to net zero beginning in 2025 and Scope 3 (commuting and business air travel only) emissions to be offset to net zero beginning in 2050.
- Mitigation Measure LRDP-GHG-2 outlines a menu of options to achieve the required performance standards, including funding GHG reduction actions throughout the communities surrounding the Sacramento Campus in the City of Sacramento. While these GHG reduction projects may include actions yielding GHG credits that are tracked through the Climate Registry, the mitigation measure does not require emissions reductions achieved by offsite GHG reduction actions be registered through the Climate Registry, only that the reduction projects meet the standards outlined in Mitigation Measure LRDP-GHG-2. In contrast, the UC Sustainable Practices Policy requires all GHG reductions claimed to achieve the UC carbon neutrality goals be registered and tracked through the Climate Registry.
- Mitigation Measure LRDP-GHG-2 requires the annual GHG inventory for the Sacramento Campus to track and report all emissions associated with the Sacramento Campus LRDP Update (Scope 1, Scope 2, Scope 3, and non-source). UC Davis's voluntary GHG inventory tracks and reports emissions generated by Scope 1 and Scope 2 sources.
- Mitigation Measure LRDP-GHG-2 requires the annual GHG inventory for the Sacramento Campus to specify the amount of metric ton CO_2e reduction achieved by GHG reduction actions implemented pursuant to the mitigation, including and if pursued, offsite GHG reduction actions and GHG credits. UC Davis's voluntary GHG inventory is restricted to accounting for only those GHG reductions generated by actions registered and tracked through the Climate Registry.
- Mitigation Measure LRDP-GHG-2 requires an annual report with the Sacramento Campus GHG inventory be submitted to the Regents. UC Davis's voluntary GHG inventory is not submitted separately to the Regents.

Given these differences, Mitigation Measure LRDP-GHG-2 will be implemented alongside the UC

Sustainable Practices Policy, leveraging UC Davis's reporting and tracking requirements where applicable. Additional emissions generated by Scope 3 and non-scope sources on the Sacramento Campus will be tracked separately, as required by Mitigation Measure LRDP-GHG-2. Likewise, any additional GHG reductions that are needed to meet the 2030, 2040, and 2045 performance standards that are beyond the UC system's carbon neutrality goals will be achieved through the strategies outlined in the mitigation measure. These reductions will be tracked and reported relative to attainment of the measure performance standards, and depending on the types of strategies pursued, may not be reflected in UC Davis' voluntary GHG inventory (which as described above, requires all reductions be achieved by actions registered and tracked through the Climate Registry).

Because Mitigation Measure LRDP-GHG-2 will reduce campus-wide GHG emissions to 40 percent below 1990 emissions levels by 2030, 80 percent reduction below 1990 emissions levels by 2040, and carbon neutral by 2045, the project would not conflict with the GHG reduction targets of SACOG's MTP/SCS, SB 32, or EO B-55-18. Consequently, this impact is **less than significant with mitigation**.

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

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

- **Parking**: Limit parking capacity to meet onsite demand and provide preferential parking to carpool vehicles, vanpool vehicles, and EVs. The program will implement the following parking related sub-measures.
  a. Provide no more onsite parking spaces than necessary to accommodate the number of employees working at a project site and/or the number of residents living at a project site, as determined by the project size and design.
  b. Where feasible, for future residential units (on-campus and Aggie Square Phase I), lease/sell parking space separately from the unit and provide the tenant the option of not purchasing/owning a space.
  c. Nonresidential land uses with 20 or more onsite parking spaces will dedicate preferential parking spaces to vehicles with more than one occupant and zero emission vehicles (including battery electric vehicles and hydrogen fuel cell vehicles). The number of dedicated spaces should be no less than two spaces or 5 percent of the total parking spaces on the project site, whichever is greater. These dedicated spaces will be in preferential locations such as near the main entrances to the buildings served by the parking lot and/or under the shade of a structure or trees. These spaces will be clearly marked with signs and pavement markings. This measure will not be implemented in a way that prevents compliance with requirements in the California Vehicle Code regarding parking spaces for disabled persons or disabled veterans.
  d. Maintain a virtual or real "ride board" for employees and students to organize carpools and incentives for employees using public transit to commute to and from campus.

- **Vendor Trips**: Implement a program that incentivizes vendors to reduce the emissions associated with vehicles and equipment serving the UC Davis Sacramento Campus. The program will implement the following sub-measures to reduce vendor-related, mobile-source emissions.
  a. Incentivize the use of electric vehicles or other clean fuels in their trucks and equipment.
  b. Work with vendors, especially those using trucks, to reduce the number of vendor trips made to the campus through trip chaining, reducing the number of shipments, or other methods.
- **Campus Shuttles**: Work with Fleet Services to convert Med-Transit (onsite) shuttles to electric or lower-emission fuels or implement emission control technologies to reduce criteria air pollutant emissions from existing conditions.
- **Pedestrian and Bicycle Infrastructure**: Enhance walkability and connectivity of the Sacramento Campus to surrounding residential and commercial uses. The program will implement the following site design related sub-measures.
  a. Ensure all new external connections from the Sacramento Campus to existing or planned streets include bicycle/pedestrian access.
  b. Eliminate physical barriers such as walls, landscaping, and slopes that impede pedestrian circulation throughout the Sacramento Campus.
  c. Require all new sidewalks internal and adjacent to the Sacramento Campus to be at least 5 feet wide. Provide grade separation and wider sidewalks (e.g., 7 feet), wherever feasible.
  d. Require all new sidewalks on the Sacramento Campus to include vertical curbs or a planting strip to separate the sidewalk from the parking or travel lane.
  e. Construct new roads on the Sacramento Campus to include at least one traffic calming feature, such as street parking, chicanes, horizontal shifts (lane centerline that curves or shifts), bollards, rumble strips, or woonerfs. Coordinate with the City of Sacramento to encourage these features on external roads connecting to the campus.
  f. Construct new intersections on the Sacramento Campus to include marked crosswalks, count-down signal timers, curb extensions, channelization islands, speed tables, raised crosswalks, raised intersections, median islands, tight corner radii, traffic circles or mini-circles. Coordinate with the City of Sacramento to encourage these features on external intersections connecting to the campus.
- **Landscaping Equipment**: Reduce emissions from landscaping equipment through the following sub-measures.
  a. Beginning in 2030, require UC Davis landscapers and contracted landscaping companies that maintain campus greenspaces to utilize electric or alternatively fueled mowers and handheld equipment (e.g., trimmers, blowers).
  b. Encourage xeriscape landscaping in all new campus greenspaces.

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

Refer to measure description in Section 3.15, *Transportation and Circulation*.

Mitigation Measure LRDP-GHG-2: Implement Verifiable Actions or Activities or Purchase the Equivalent GHG Credits from a CARB Approved Registry or a Locally Approved Equivalent Program to Reduce GHG Emissions Generated by the Sacramento Campus

As part of this mitigation measure, UC Davis is making the following separate, though overlapping, GHG emission reduction commitments: (1) As a CARB-covered entity, UC Davis will ensure emissions generated by the Central Energy Plant comply with CARB's cap and trade program; (2) Per the UC Sustainable Practices Policy, Scope 1 and Scope 2 GHG emissions generated by the Sacramento Campus shall, commencing in 2025, be entirely carbon neutral; (3) Also per the UC Sustainable Practices Policy, commencing in 2050, Scope 1, Scope 2, and Scope 3 (commuting and air travel) emissions generated by the Sacramento Campus shall be offset; and (4) UC Davis shall undertake additional action to achieve the following GHG reduction performance standards for the Sacramento Campus:

- By 2030, GHG emissions generated by the Sacramento Campus shall not exceed 60 percent of emissions generated by the campus in 1990.
- By 2040, GHG emissions generated by the Sacramento Campus shall not exceed 20 percent of emissions generated by the campus in 1990.
- By 2045 and thereafter, the Sacramento Campus shall achieve carbon neutrality (i.e., net zero emissions).

GHG emissions generated by the Sacramento Campus in 1990 were quantified as part of the 2020 LRDP Update Supplemental EIR and total 50,404 metric tons CO_2e. This yields the following GHG targets for the above performance standards.

- By 2030, GHG emissions generated by the Sacramento Campus shall not exceed 30,242 metric tons CO_2e.
- By 2040, GHG emissions generated by the Sacramento Campus shall not exceed 10,081 metric tons CO_2e.
- By 2045 and thereafter, GHG emissions generated by the Sacramento Campus shall not exceed net 0 metric tons CO_2e.

The 2030, 2040, and 2045 reduction targets are required to be achieved based on actual emission calculations as completed in the future, as discussed below under *Measure Monitoring and Reporting*, and may therefore change overtime.

It is possible that some strategies implemented under the below commitments could independently achieve the performance standards of this measure. Various combinations of strategies could also be pursued to optimize total costs or community co-benefits. UC Davis will be responsible for determining the overall mix of strategies necessary to ensure the performance standards to mitigate GHG generated by the Sacramento Campus. Each of the measure commitments is described in more detail below.

Compliance with the California Air Resources Board Cap and Trade Program

Any carbon credits purchased for the purpose of compliance with CARB's cap and trade program shall be purchased from an accredited carbon credit market. Such credits (or California Carbon Offsets) shall be registered with, and retired[6] by an Offset Project Registry, as defined in 17 California Code of Regulations § 95802(a), approved by CARB such as, but not limited to, Climate Action Reserve (CAR), American Carbon Registry, or Verra (formerly Verified Carbon Standard). In order to demonstrate that the carbon credits provided are real, permanent, additional, quantifiable, verifiable, and enforceable, as those terms are defined in the California Health and Safety Code Sections 38562(d)(1) and (2), UC Davis shall document in its annual report: (i) the protocol used to develop those credits, and (ii) the third-party verification report concerning those credits. As and when the credits are retired, UC Davis shall document in its annual report the unique serial numbers of those credits showing that they have been retired.

Compliance with the University of California Sustainable Practices Policy

Compliance with the UC Sustainable Practices Policy for carbon neutrality will be accomplished through reductions in direct emissions, the purchase of renewable electricity and possibly biomethane, and the purchase of carbon credits. UC Davis will purchase voluntary carbon credits as the final action to reach the GHG emission reduction targets outlined in the UC Sustainable Practices Policy. As part of the University Carbon Neutrality Initiative, internal guidelines have been developed to ensure that any use of credits for this purpose will result in additional, verified GHG emissions reductions from actions that align, as much as possible, with the University's research, teaching, and public service mission. Specifically, any voluntary carbon credits used by UC Davis to comply with the UC Sustainable Practices Policy will:

1. Prioritize local (within the Sacramento region) and in-state credits over national credits. Credits shall be third-party verified by a major registry recognized by CARB such as CAR. If sufficient local and in-state credits are not available, UC Davis will purchase CARB conforming national credits registered with an approved registry.
1. Be reported publicly and tracked through the Climate Registry (TCR) as required by the UC Sustainable Practices Policy.[7] TCR is a non-profit organization governed by U.S. states and Canadian provinces and territories. UC Davis TCR reports will be third-party verified and posted publicly.

Additional Greenhouse Gas Reduction Actions

UC Davis shall do one or more of the following options to reduce GHG emissions generated by the Sacramento Campus to achieve the measure performance standards.

1. Implement onsite GHG reduction actions on the Sacramento Campus (Option 1).
2. Implement GHG reduction actions throughout the communities surrounding the Sacramento Campus in the City of Sacramento (Option 2).

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[6] When Climate Reserve Tonnes (CRTs) are transferred to a retirement account in the Reserve System, they are considered retired. Retirement accounts are permanent and locked to prevent a retired CRT from being transferred again. CRTs are retired when they have been used to offset an equivalent ton of emissions or have been removed from further transactions on behalf of the environment.

[7] Reports can be accessed at: https://cris4.org/.

3. Purchase CARB verified GHG credits (Option 3).

Each of the options is described in more detail below.

Onsite Greenhouse Gas Reduction Actions

Actions to reduce GHG emissions on the Sacramento Campus (Option 1) must exceed or not duplicate activities implemented pursuant to the UC Sustainable Practices Policy. Potential actions may include, but are not limited to the following.

- **(1)-1**: All campus fleet vehicles scheduled for retirement shall be replaced with fuel efficient, LEV, ZEV, and/or alternative-fueled vehicles consistent with the needs of the campus.
- **(1)-2**: New construction shall be required to employ solar roofs on at least 30 percent of roof square footage, unless mechanical equipment or other building specifications safely prohibit inclusion of solar roofs. The inclusion of solar roofs may be part of meeting LEED Silver or equivalent requirements.
- **(1)-3**: Require use of natural alternatives to HFCs that are feasible and readily available for refrigeration and air conditioning. Natural refrigerants include ammonia, CO_2, or hydrocarbons. UC Davis shall require all future development to meet CARB regulations restricting HFCs, if and when adopted.

If UC Davis complies with the performance standards of this measure, as specified above, through implementation of onsite GHG reduction actions (Option 1), then no further action shall be required. If additional GHG reductions are required to meet the performance standards, they may be achieved through offsite GHG reduction actions (Option 2) or procurement of GHG credits (Option 3).

Offsite GHG Reduction Actions

Actions to reduce GHG emissions throughout the surrounding community (Option 2) may include, but are not limited to the following.

- **(2)-1:** Develop a residential energy retrofit package in conjunction with the SMUD to achieve reductions in natural gas and electricity usage by the surrounding community. The retrofit package may include identification and sealing of dust and air leaks, installation of programmable thermostats, replacement of interior high use incandescent lamps with compact florescent lamps or LEDs, replacement of natural gas dryers with electric clothes dryers, replacement of windows with double-pane or triple-pane solar-control low-E argon gas filled wood frame windows, or other strategies selected by UC Davis in consultation with SMUD.
- **(2)-2:** Develop a commercial energy RCx package in conjunction with SMUD to improve the energy efficiency of surrounding commercial buildings by at least 15 percent, relative to current (2019) energy consumption levels.
- **(2)-3:** Develop a residential rooftop solar installation program in conjunction with SMUD. The installation program will allow surrounding homeowners to install solar photovoltaic systems at zero or minimal up-front cost. All projects installed under this measure must be designed for high performance (e.g., optimal full-sun location, solar orientation) and additive to utility RPS goals.

- **(2)-4:** Develop a commercial rooftop solar installation program in conjunction with SMUD. The installation program will allow surrounding business owners to install solar photovoltaic systems at zero or minimal up-front cost. All projects installed under this measure must be designed for high performance (e.g., optimal full-sun location, solar orientation) and additive to utility RPS goals.
- **(2)-5:** Partner with Sacramento Regional Transit to assess the feasibility of improving high-quality, regional transit serving the Sacramento Campus.

GHG reductions achieved by all offsite projects must be real, permanent, quantifiable, verifiable, enforceable, and additional (per the definition in California Health and Safety Code Sections 38562(d)(1)), as defined further below under Option 3. If UC Davis complies with the performance standards of this measure, as specified above, through implementation of offsite GHG reduction actions (Option 2), then no further action shall be required. If additional GHG reductions are required to meet the performance standards, they may be achieved through onsite GHG reduction actions (Option 1) or procurement of GHG credits (Option 3).

GHG Credits

UC Davis may purchase GHG credits from a voluntary GHG credit provider that has an established protocol that requires projects generating GHG credits to demonstrate that the reduction of GHG emissions are real, permanent, quantifiable, verifiable, enforceable, and additional (per the definition in California Health and Safety Code Sections 38562(d)(1) and (2)). Definitions for these terms are as follows.

- **Real:** Estimated GHG reductions should not be an artifact of incomplete or inaccurate emissions accounting. Methods for quantifying emission reductions should be conservative to avoid overstating a project's effects. The effects of a project on GHG emissions must be comprehensively accounted for, including unintended effects (often referred to as "leakage")[8].
- **Additional:** GHG reductions must be additional to any that would have occurred in the absence of the Climate Action Reserve, or of a market for GHG reductions generally. "Business as usual" reductions (i.e., those that would occur in the absence of a GHG reduction market) should not be eligible for registration.
- **Permanent:** To function as offsets to GHG emissions, GHG reductions must effectively be "permanent." This means, in general, that any net reversal in GHG reductions used to offset emissions must be fully accounted for and compensated through the achievement of additional reductions.
- **Quantifiable:** The ability to accurately measure and calculate GHG reductions or GHG removal enhancements relative to a project baseline in a reliable and replicable manner for all GHG emission sources, GHG sinks, or GHG reservoirs included within the offset project boundary, while accounting for uncertainty and activity-shifting leakage and market-shifting leakage.

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

- **Verified:** GHG reductions must result from activities that have been verified. Verification requires third-party review of monitoring data for a project to ensure the data are complete and accurate.
- **Enforceable**: The emission reductions from offset must be backed by a legal instrument or contract that defines exclusive ownership and the legal instrument can be enforced within the legal system in the country in which the offset project occurs or through other compulsory means. Please note that per this mitigation measure, only credits originating within the United States are allowed.

GHG credits may be in the form of GHG offsets for prior reductions of GHG emissions verified through protocols or forecasted mitigation units for future committed GHG emissions meeting protocols. All credits shall be documented per protocols functionally equivalent in terms of stringency to CARB's protocol for offsets in the cap and trade program. If using credits not from CARB protocols, UC Davis must provide the protocols from the credit provider and must document why the protocols are functionally equivalent in terms of stringency to CARB protocols.

UC Davis shall identify GHG credits in geographies closest to the Sacramento Campus first and only go to larger geographies (i.e., California, United States) if adequate credits cannot be found in closer geographies, or the procurement of such credits would create an undue financial burden. UC Davis shall provide the following justification for not using credits in closer geographies in terms of either availability or cost prohibition.

- Lack of enough credits available in closer geographies (i.e., Sacramento County).
- Prohibitively costly credits in closer geographies defined as credits costing more than 300 percent the amount of the current costs of credits in the regulated CARB offset market.
- UC Davis documentation submitted supporting GHG credit proposals shall be prepared by individuals qualified in GHG credit development and verification and such individuals shall certify the following.
    - Proposed credits meet the criteria in California Health and Safety Code Section 38562(d)(1) and (d)(2).
    - Proposed credits meet the definitions for the criteria provided in this measure.
    - The protocols used for the credits meet or exceed the standards for stringency used in CARB protocols for offsets under the California cap-and-trade system.

Measure Monitoring and Reporting

As a CARB-covered entity, UC Davis will ensure emissions generated by the Central Energy Plant comply with CARB's cap and trade program. Likewise, UC Davis will implement the UC Sustainable Practices Policy to meet the requirement of carbon neutrality for Scope 1 and 2 emissions by 2025 and carbon neutrality for Scope 3 emissions by 2050, as described above. These commitments will be incorporated into UC Davis' annual GHG inventory, which is used to track GHG emissions and sources on the Sacramento Campus. As part of the annual GHG inventory for the Sacramento Campus, UC Davis shall submit a report to The Regents specifying the annual amount of metric ton CO_2e reduction achieved by additional GHG reduction actions implemented pursuant to this mitigation (i.e., Option 1, onsite actions, and Option 2, offsite actions). The report must include evidence that these actions are not being used to mitigate GHG for any other project or entity.

GHG reductions achieved by the onsite and offsite actions should be incorporated into the Sacramento Campus' annual GHG inventory. The estimated annual emissions shall then be compared to the measure performance standards described above to determine the level of additional GHG reductions (if any). For the identified amount of exceedance of the performance standard(s), UC Davis shall purchase carbon credits according to the requirements established above under Option 3. As and when the credits are retired, UC Davis shall document in its annual report the unique identifier of those credits showing that they have been retired and accepted by TCR.

3.8 Hazards and Hazardous Materials

This section describes the regulatory and environmental setting for hazards and hazardous materials on the project site and in the project vicinity, analyzes effects on hazards and hazardous materials that would result from implementation of the project, and provides mitigation measures, if applicable, to reduce the effects of any significant impacts.

Written comments received on the Notice of Preparation include a letter from the Department of Toxic Substances Control requesting that analysis in the EIR includes analysis on hazardous materials on the project site including the following:

- Potential for historic or future activities to result in the release of hazardous wastes/substances
- Testing for soil samples for lead analysis prior to ground disturbance
- Surveys be conducted for hazardous materials on structures to be demolished
- Investigation of pesticides

3.8.1 Existing Conditions

Regulatory Setting

University of California

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

Emergency Action & Evacuation Plan

UC Davis Health Education & Research Emergency Action & Evacuation Plan (EAP) (2019) complies with the California Code of Regulations, Title 8, and Section 3220. The EAP represents an emergency procedure action plan intended to provide guidance in the initial response to unexpected events and emergency situations. The EAP includes contact information, emergency protocols for notification and evacuation, assigned job responsibilities, and actions in the event of emergencies related but not limited to fire, power failure, earthquakes, flooding, fumes and toxic spills, bomb threats and disruptive behavior, riots, injuries, evacuations, etc.

Biosafety Program

Most biological research conducted at the UC Davis Sacramento Campus involves the use of relatively low-level biohazardous materials. The UC Davis Sacramento Campus has a Biosafety Program based on national standards to ensure that work with biological materials is conducted in a safe, ethical, environmentally sound, and compliant manner using the principles and functions of integrated safety management and work authorization.

Federal

The U.S. Environmental Protection Agency (EPA) is the principal federal regulatory agency responsible for the safe use and handling of hazardous materials. The key federal regulations pertaining to hazardous wastes relevant to the project site are described below.

Hazardous Materials Transportation Act

The U.S. Department of Transportation, the Federal Highway Administration, and the Federal Railroad Administration are the three entities that regulate the transport of hazardous materials at the federal level. The Hazardous Materials Transportation Act (49 Code of Federal Regulations [CFR] Section 171[C]) governs the transportation of hazardous materials. These regulations are promulgated by the U.S. Department of Transportation and enforced by the EPA.

Resource Conservation and Recovery Act of 1976

Resource Conservation and Recovery Act (RCRA; 42 United States Code 6901–6987) provides for "cradle to grave" regulation of hazardous wastes and includes the Hazardous and Solid Waste Amendments of 1984 (HSWA). RCRA and HSWA protect human health and the environment and impose regulations on hazardous waste generators, transporters, and operators of treatment, storage, and disposal facilities (TSDFs). HSWA also requires the EPA to establish a comprehensive regulatory program for underground storage tanks (USTs). The corresponding regulations in 40 CFR 260–299 provide the general framework for managing hazardous waste, including requirements for entities that generate, store, transport, treat, and dispose of hazardous waste.

Toxic Release Inventory

The Emergency Planning and Community Right-to-Know Act of 1986 and the Pollution Prevention Act of 1990 established the Toxic Release Inventory, a publicly available database that has information on toxic chemical releases and other waste management activities. The EPA updates the inventory annually.

Occupational Safety and Health Standards

Occupational safety standards exist in federal and state laws to minimize worker safety risks from both physical and chemical hazards in the workplace. The Occupational Safety and Health Administration (OSHA) is responsible for ensuring worker safety in the workplace.

OSHA regulations concern the use of hazardous materials in the workplace and during construction and mandate employee safety training, safety equipment, accident and illness prevention programs, hazardous substance exposure warnings, emergency action and fire prevention plan preparation, and a hazard communication program. The hazard communication program regulations contain training and information requirements, including procedures for identifying and labeling hazardous substances, and communicating hazard information relating to hazardous substances and their handling. The hazard communication program also requires that Material Safety Data Sheets or equivalent safety information be available to employees, and that employee information and training programs be documented. These regulations require preparation of emergency action plans (escape and evacuation procedures, rescue and medical duties, alarm systems, and training in emergency evacuation).

OSHA regulations include special provisions for hazard communication to employees in research laboratories, including training in chemical work practices. Specific and more detailed training and monitoring is required for the use of carcinogens, ethylene oxide, lead, asbestos, and certain other chemicals. Emergency equipment and supplies, such as fire extinguishers, safety showers, and eye washes, must also be provided and maintained in accessible places as the need dictates.

OSHA asbestos regulations are contained in 29 CFR. Lead-based paint regulations are described in the Lead-Based Paint Elimination Final Rule (24 CFR 33), governed by the U.S. Department of Housing and Urban Development.

Spill Prevention, Control, and Countermeasures Plan

The UC Davis Sacramento Campus has prepared a spill prevention, control, and countermeasures (SPCC) plan pursuant to 40 CFR 112—Oil Pollution Prevention. The goal of this regulation is to prevent oil from reaching navigable waters and adjoining shorelines and to contain discharges of oil. The areas of the Sacramento Campus subject to the SPCC regulation threshold include the Central Utility Plant (CUP), Parking Structure 1 (emergency diesel fire pump), Fleet Services, Lot 7 (emergency diesel generator), the Hazardous Waste Consolidation Facility, and the portable diesel generators. There are various transformers and elevator hydraulic systems located throughout the campus that are also subject to the SPCC regulation. The last SPCC update was completed in June 2019 (University of California, Davis Medical Center 2019).

State

California hazardous materials and wastes regulations are equal to or more stringent than federal regulations. EPA has granted the state primary oversight responsibility to administer and enforce hazardous waste management programs. State regulations require planning and management to ensure that hazardous materials are handled, stored, and disposed of properly to reduce risks to human health and the environment.

California Accidental Release Prevention Program

As specified in 19 California Code of Regulations (CCR) 2, Chapter 4.5, Articles 1 through 11, all businesses that handle specific quantities of hazardous materials are required to prepare a California Accidental Release Prevention (CalARP) Program risk management plan (RMP). CalARP Program RMPs are required to be updated at least every 5 years and when there are significant changes to the stored chemicals. In accordance with these provisions, the UC Davis Sacramento Campus is required to prepare an RMP for the use of aqueous ammonia above the California threshold quantity of 500 pounds at the CUP. The last RMP update was completed in July 2019 (UC Davis Sacramento Campus 2019).

California Health and Safety Codes

The California Environmental Protection Agency (Cal-EPA) has been granted primary responsibility by the EPA for administering and enforcing hazardous materials management plans within California. Cal-EPA, more generally than the EPA, defines a hazardous material as a material that, because of its quantity, concentration, or physical or chemical characteristics, poses a significant present or potential hazard to human health and safety or to the environment if released (26 CCR 25501).

Chapter 6.95 of the California Health and Safety Code requires facilities that use, produce, store, or generate hazardous substances or have a change in business inventory to have a hazardous materials management plan or business plan.

State regulations include detailed planning and management requirements to ensure that hazardous materials are properly handled, stored, and disposed of to reduce human health risks. In particular, the state has acted to regulate the transfer and disposal of hazardous waste. Hazardous waste haulers are required to comply with regulations that establish numerous standards, including criteria for handling, documenting, and labeling the shipment of hazardous waste (26 CCR 25160 *et seq*.).

Cortese List

Cal-EPA maintains the Hazardous Wastes and Substances Site (Cortese) List, a planning document used by state and local agencies and developers to comply with CEQA requirements in providing information about the locations of hazardous materials release sites. Per Government Code Section 65962.5, the Cortese List must be updated at least once annually. The California Department of Toxic Substances Control, State Water Resources Control Board (State Water Board), and California Department of Resources Recycling and Recovery contribute to the hazardous material release site listings.

Fire Hazard Severity Zones

Government Code Section 51178 requires the California Department of Forestry and Fire Protection (CAL FIRE) to identify fire hazard severity zones in the state. Government Code Section 51179 requires a local agency to designate, by ordinance, fire hazard severity zones in its jurisdiction. Specifically, the state is required to designate Very High Fire Severity Zones in Local Responsibility Areas. Local Responsibility Areas consist of areas where local agencies, rather than the state, are responsible for fire suppression.

Worker Safety

The California Division of Occupational Safety and Health (Cal-OSHA) is the state agency responsible for assuring worker safety in the workplace.

Cal-OSHA assumes primary responsibility for developing and enforcing standards for safe workplaces and work practices within the state. At sites known to be contaminated, a site safety plan must be prepared to protect workers. The site safety plan establishes policies and procedures to protect workers and the public from exposure to potential hazards at the contaminated site. Cal-OSHA regulations include extensive, detailed requirements for worker protection applicable to any activity that could disturb asbestos-containing materials, including maintenance, renovation, and demolition. These regulations are also designed to ensure that people working near the maintenance, renovation, or demolition activity are not exposed to asbestos.

The Sacramento Campus complies with these state requirements related to occupational safety.

Regional and Local

Certified Uniform Program Agency

Cal-EPA can delegate responsibility for many of its programs to a local government through certification as a certified uniform program agency (CUPA). A CUPA is responsible for implementing a unified hazardous materials and hazardous waste management program. Sacramento County, through its CUPA program, requires any business that handles hazardous materials above certain thresholds to prepare a hazardous materials business plan, which must include, in part, a hazardous materials inventory, a site map, emergency response plan, and contact information.

Sacramento County Environmental Management Department

The Sacramento County Environmental Management Department (EMD) is the CUPA—the agency certified by the California Secretary of Environmental Protection—to implement the Unified Hazardous Waste and Hazardous Materials Management Regulatory Program specified in Health and Safety Code Chapter 6.11 for Sacramento County. As such, EMD administers several programs, including the Hazardous Waste Generator, Hazardous Waste Onsite Treatment (Tiered Permitting), Spill Prevention Control and Countermeasure Plan, and the Underground Storage Tank programs.

City of Sacramento 2035 General Plan

As noted above, the University, as a constitutionally created state entity, is not subject to municipal regulations of surrounding local governments for uses on property owned or controlled by the UC that are in furtherance of its educational purposes. However, the following goals and policies from the *City of Sacramento 2035 General Plan* are presented for informational purposes. Relevant goals and policies pertaining to hazards and hazardous materials are listed in the Public Health and Safety element of the *City of Sacramento 2035 General Plan* (City of Sacramento 2015).

Goal: Reduce exposure to hazardous materials and waste. Protect and maintain the safety of residents, businesses, and visitors by reducing, and where possible, eliminating exposure to hazardous materials and waste.

Policies:

PHS-3.1.1. Investigate Sites for Contamination. The City shall ensure buildings and sites are investigated for the presence of hazardous materials and/or waste contamination before development for which City discretionary approval is required. The City shall ensure appropriate measures are taken to protect the health and safety of all possible users and adjacent properties.

PHS-3.1.2 Hazardous Material Contamination Management Plan. The City shall require that property owners of known contaminated sites work with Sacramento County, the State, and/or Federal agencies to develop and implement a plan to investigate and manage sites that contain or have the potential to contain hazardous materials contamination that may present an adverse human health or environmental risk.

PHS-3.1.5. Clean Industries. The City shall strive to maintain existing clean industries in the city and discourage the expansion of businesses, with the exception of health care and related medical facilities that require on-site treatment of hazardous industrial waste.

PHS-3.1.8. Risks from Hazardous Materials Facilities. The City shall review proposed facilities that would produce or store hazardous materials, gas, natural gas, or other fuels to identify, and require feasible mitigation for, any significant risks. The review shall consider, at a minimum, the following: presence of seismic or geologic hazards; presence of hazardous materials; proximity to residential development and areas in which substantial concentrations of people would occur; and nature and level of risk and hazard associated with the proposed project.

Environmental Setting

Hazardous Materials Sites

To identify potential hazardous sites within the project vicinity, government databases of hazardous waste sites and facilities were reviewed. This search of the Department of Toxic Substances Control's EnviroStor database and the State Water Board's GeoTracker database covered the project site and adjacent properties (Department of Toxic Substances Control 2020). This assessment resulted in the identification of three potentially hazardous materials sites. However, these sites have been investigated and remedial efforts completed. As such, these sites no longer pose a threat.

The first site is located at 2751 Stockton Boulevard. Soil contamination from a leaking UST containing gasoline was reported in 1994. No other information was found in the records search. The GeoTracker database shows the site status as closed in 2004 (State Water Resources Control Board 2020a).

The second site is located at 2800 49th Street. A release of gasoline/diesel through a leaking UST was reported in June 2003. Petroleum hydrocarbons were found in soil samples collected below tank dispensers. Modifications to stop the leak commenced the same day, and the case was closed on March 3, 2005 (State Water Resources Control Board 2020b).

Contamination of aquifer from gasoline was reported at 2978 Stockton Boulevard on March 18, 1987. Site assessment and remediation was conducted in June 1987, and the site re-assessed in September the same year. This case was closed as of November 8, 1997 (State Water Resources Control Board 2020c).

Hazardous Chemicals

Because the UC Davis Sacramento Campus houses a health care facility and research center, various chemical and radioactive materials are used on campus. The UC Davis Office of Environmental Health and Safety (UC Davis EH&S) maintains a computerized inventory of hazardous chemical materials stored onsite. UC Davis EH&S submits applicable portions of this inventory to the County of Sacramento Department of Environmental Management as part of its hazardous materials business plans (HMBPs). There are four HMBPs for the UC Davis Sacramento Campus, and each of them apply to the California Hospital Tower Project: CUP, Fleet Services, School of Medicine facilities, and the remainder of the campus. The HMBPs list the names and quantities of all hazardous chemical materials found on campus in the following quantities per building: greater than 55 gallons (for liquids), 500 pounds (for solids), or 200 cubic feet (for gases).

Six USTs and aboveground storage tanks are located on campus and contain fuel, waste oil, and aqueous ammonia. All tanks meet federal, state, and local regulatory standards.

Radioactive Materials and Wastes

Radioactive materials contain atoms with unstable nuclei that spontaneously emit ionizing radiation to increase their stability. Radioactive wastes are radioactive materials that are discarded, including waste in storage, or abandoned. Radioactive materials used at the UC Davis Sacramento Campus are also monitored by the UC Davis EH&S in accordance with the federal Radiation Control Law and by the California Department of Public Health (CDPH). Radioactive materials are used at the UC Davis Sacramento Campus in research or diagnostic applications as well as for patient treatment. These activities involve handling relatively small quantities of radioactive materials. Radioactive materials are monitored closely by UC Davis EH&S in accordance with the federal Radiation Control Law and by the CDPH. As required by the Radiation Control Law, the UC Davis Sacramento Campus has a Radiation Safety Program providing protective measures and a routine monitoring program.

Biohazardous Materials and Wastes

Biohazardous materials are materials that contain certain infectious agents (microorganisms, bacteria, molds parasites, viruses) that normally cause or significantly contribute to increased human mortality, or organisms that are capable of being communicated by invading and multiplying in body tissues. Biohazardous materials used for research at the UC Davis Sacramento Campus include infectious agents, parasites, and other biological agents. Different types of biohazardous materials are used for hospital and clinical operations and for a wide range of biological and related research performed onsite. Research activities on the UC Davis Sacramento Campus may also involve recombinant technology, recombinant genomic materials, and genetically modified organisms. Transgenic organisms result when the deoxyribonucleic acid (DNA) from different existing organisms (plants, animals, insects, etc.) is combined using recombinant DNA techniques.

Lead-Based Paint and Asbestos-Containing Materials

Hazardous materials are commonly found in building materials that may be affected during demolition and renovation activities associated with redevelopment. Prior to 1978, lead compounds were commonly used in interior and exterior paints. Prior to the 1980s, building materials often contained asbestos fibers, which were used to provide strength and fire resistance.

Demolition of older buildings has the potential to release lead particles, asbestos fibers, and/or other hazardous materials to the air where they may be inhaled by construction workers and the general public. Federal and state regulations govern the demolition of structures where lead or material containing lead is present. During demolition, lead-based paint that is securely adhering to wood or metal may be disposed of as demolition debris, which is a non-hazardous waste. Loose and peeling paint must be disposed of as a California and/or federal hazardous waste if the concentration of lead exceeds applicable waste thresholds. State and federal construction worker health and safety regulations require air monitoring and other protective measures during demolition activities where lead-based paint is present.

Schools

Hazardous emissions and accidental release or combustion of hazardous materials near existing schools could result in health risks or other dangers to students. The closest school to the project site is the Language Academy of Sacramento Charter School (formerly Marian Anderson Elementary School) located at 2850 49th Street.

Airports

Airport-related hazards are generally associated with aircraft accidents, particularly during takeoff and landing. Airport operation hazards include incompatible land uses, power transmission lines, wildlife hazards (e.g., bird strikes), and tall structures that penetrate the imaginary surfaces surrounding an airport. The closest airport is the Executive Airport located approximately

2.75 miles southwest of the Sacramento Campus. Sacramento International Airport is approximately 11 miles northwest of the Sacramento Campus.

Evacuation and Emergency Routes

The EAP outlines the preparation and response to a variety of threats and hazards including the need for evacuation procedures. Access to the campus for general traffic from V Street is limited to 45th and 49th Streets. Access from Stockton Boulevard is on X Street, Y Street, 2nd Avenue, and 4th Avenue. Access on the south side of campus on Broadway is at 49th Street.

Fire-Related Hazards

The project site is an urban area consisting of primarily paved surfaces and landscaped open space. CAL FIRE has designated the project site as a Local Responsibility Area, and it is not considered to have a high fire risk (California Department of Forestry and Fire Protection 2008).

3.8.2 Environmental Impacts

This section describes the environmental impacts associated with hazards and hazardous materials that would result from implementation of the California Hospital Tower Project. It describes the methods used to determine the effects of the California Hospital Tower Project and lists the thresholds used to conclude whether an impact would be significant. Measures to mitigate (i.e., avoid, minimize, rectify, reduce, eliminate, or compensate for) any significant impacts are provided, if available.

Methods for Analysis

To establish existing conditions and analyze the potential risks involving hazards and hazardous materials as a result of the project, a review of existing hazardous materials sites was conducted, as well as a review of UC Davis plans and policies related to hazardous materials.

Issues Not Evaluated Further

The project is not located in or near a state responsibility area or in a Very High Fire Hazard Severity Zone. The project site is designated as a Local Responsibility Area (California Department of Forestry and Fire Protection2008) and is in a developed, urban setting consisting primarily of paved surfaces and landscaping. As a result, the project would not expose people or structures to a significant risk associated with wildland fires; therefore no further analysis is required.

Thresholds of Significance

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

- Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials.
- Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment.

- Result in hazardous emissions or involve handling hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school.
- Place project-related facilities on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and resulting creation of a significant hazard to the public or the environment.
- Place project-related facilities within an airport land use plan area or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, resulting in a safety hazard or excessive noise for people residing or working in the project area.
- Impair implementation of or physical interference with an adopted emergency response plan or emergency evacuation plan.
- Expose people or structures, either directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires.

Impacts and Mitigation Measures

Impact HAZ-1: Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials (less than significant)

Summary of Impact AS-HAZ-1 by Component

Component	Level of Significance before Mitigation	Mitigation Measures Required	Level of Significance after Mitigation
Make-ready projects	LTS	None	–
California Tower construction, Surgery and Emergency Services Pavilion interior renovation, Central Utility Plant upgrades	LTS	None	–
Parking Structure 5 construction	LTS	None	–
East Main Hospital Wing demolition	LTS	None	–
Whole project	LTS	None	–

NI = no impact; LTS = less than significant; S = significant; SU = significant and unavoidable.

Construction

The proposed project would include construction of facilities that could result in the routine transport, use, or disposal of hazardous materials. Construction of the California Hospital Tower Project would involve commonly used materials, such as fuels and oils, to operate construction equipment. Accidental releases of small quantities of these substances during construction could contaminate soils and degrade the quality of surface water and groundwater, or be released into the air, resulting in a potential public safety hazard. However, the transportation, handling, and disposal of these materials would be compliant with regulations enforced by the Certified Unified Program Agency and Cal-OSHA. In addition, the implementation of standard best management practices under the storm water pollution prevention plan (SWPPP) (see Section 3.9, *Hydrology and Water Quality*, for a discussion of SWPPPs) would further reduce the potential of accidental release or exposure. This impact would be **less than significant**.

Operation

Operation of the California Hospital Tower Project would result in the continued transport, use, and disposal of hazardous materials to and from the project site. The addition of the California Tower, renovation of the area between California Tower and the Surgery and Emergency Services Pavilion, PS5, and CUP upgrades, could lead to an increase in the use and transport of hazardous materials over existing conditions.

The types of hazardous materials used at the California Tower would be comparable to those currently used in the existing laboratories and hospitals, including biohazardous chemicals and wastes.

Biohazardous, medical, and radioactive wastes are currently used, disposed of, and transported to and from the Sacramento Campus. Accidental release of a hazardous material could cause a significant hazard to the public or the environment. However, hazardous materials or waste generated during operation of the California Hospital Tower Project would comply with existing safety controls, plans, and procedures, as well as all applicable federal and state regulations and standards. Therefore, the potential to expose campus occupants to substantial health or safety risks is low.

The volume of hazardous materials transported to and from campus would likely increase as a result of the project due to the expansion of existing services for approximately 75 net new licensed beds. However, the Healthcare Workers' Compensation Fund (HWCF) handles most hazardous materials generated at the existing hospital, clinics, and laboratories, thereby limiting offsite transportation. The same would hold true for any new facility, including the proposed project. Adherence to existing regulations and compliance with the safety procedures mandated by applicable federal, state, UC, and local laws and regulations would minimize the risks resulting from the routine transportation, use, storage, or disposal of hazardous materials or hazardous wastes associated with construction and implementation of the project. Based on the above analysis, the California Hospital Tower Project would not create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials. The impact would be **less than significant**.

Mitigation Measures

No mitigation measures are necessary.

Impact HAZ-2: Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment (less than significant with mitigation)

Summary of Impact AS-HAZ-2 by Component

Component	Level of Significance before Mitigation	Mitigation Measures Required	Level of Significance after Mitigation
Make-ready projects	S	LRDP-HAZ-2	LTS
California Tower construction, Surgery and Emergency Services Pavilion interior renovation, Central Utility Plant upgrades	S	LRDP-HAZ-2	LTS
Parking Structure 5 construction	S	LRDP-HAZ-2	LTS
East Main Hospital Wing demolition	S	LRDP-HAZ-2	LTS
Whole project	S	LRDP-HAZ-2	LTS

NI = no impact; LTS = less than significant; S = significant; SU = significant and unavoidable.

Construction and Operation

Construction of the California Hospital Tower Project would include construction of new facilities, renovation of existing facilities, and demolition activity that could result in the routine transport, use, or disposal of hazardous materials. Construction and operation of these projects would involve small quantities of commonly used materials, such as fuels and oils, to operate construction equipment. This type of use is not considered routine such that the use is regularly or frequently conducted. Accidental releases of small quantities of these substances during construction, operation, and maintenance could contaminate soils and degrade the quality of surface water and groundwater, or be released into the air, resulting in a potential public safety hazard. However, consistent with applicable laws and regulations, as discussed above in Section 3.8.1, *Existing Conditions*, the transportation, handling, and disposal of these materials would comply with regulations enforced by CUPA and Cal-OSHA. In addition, the implementation of standard best management practices under the SWPPP (see Section 3.9.1, *Hydrology and Water Quality*, for a discussion of SWPPPs) would further reduce the potential of accidental release or exposure.

Demolition activities could expose construction workers and the public to asbestos-containing building materials, lead-based paint, and other hazardous building materials containing polychlorinated biphenyls. Asbestos or lead-based paint could be found in buildings constructed before the 1980s, when these materials were still being manufactured and used. The proposed project includes demolition of the East Main Hospital Wing (constructed in 1982) and Building #35. Although the hospital was constructed after lead-based paint was banned in the United States (circa 1978), asbestos-containing materials were still used in construction until a partial ban was enacted in 1989 (U.S. Environmental Protection Agency 2013, 2020). Despite the partial ban, asbestos is still used today for various industrial applications, including packing and gaskets for pipes and pumps. Therefore, demolition activities could expose workers to asbestos-containing materials during either demolition or construction. Potential exposure of construction workers to hazardous materials or wastes is considered to be a significant impact because of the possible threat to human health from the handling of these materials.

The UC Davis Sacramento Campus has standard procedures that include a pre-demolition survey of structures to determine if any contain hazardous materials. If hazardous materials are identified, special handling of these materials would be managed and/or they would be removed and disposed of by qualified contractors in accordance with applicable regulations.

Contaminated Sites

As described in under *Environmental Setting* above, there are three known hazardous sites located near the project site. These sites have been investigated, and cleanup of contaminated soils and/or groundwater has been completed. As a result, these cases are considered closed and would no longer pose a threat to the public or environment. Historically, there was less stringent oversight regarding the disposal of hazardous materials. As such, it is possible that other, previously unknown sites of soil and/or groundwater contamination exist in the project site. Ground-disturbing activities, such as grading and excavation, could expose construction workers and the general public to hazardous materials that may result in health effects. Potential hazards to human health include ignition of flammable liquids or vapors, inhalation of toxic vapors in confined spaces such as trenches, and skin contact with contaminated soil or water. Implementation of Mitigation Measure LRDP-HAZ-2 would reduce this impact to a **less-than-significant** level.

Mitigation Measure LRDP-HAZ-2: Prepare a Phase I Environmental Site Assessment

To minimize the risk of encountering unknown contamination during construction of the project under the 2020 LRDP Update, the UC Davis Sacramento Campus would retain an environmental professional to prepare a Phase I Environmental Site Assessment before all ground-disturbing construction in areas not previously investigated. A Phase I Environmental Site Assessment would conform with the American Society for Testing and Materials Standard Practice E1527-05 and include at a minimum the following site assessment requirements.

- An onsite visit to identify current conditions (e.g., vegetative dieback, chemical spill residue, presence of above- or underground storage tanks).
- An evaluation of possible risks posed by neighboring properties.
- Interviews with persons knowledgeable about the site's history (e.g., current or previous property owners, property managers).
- An examination of local planning files to check prior land uses and any permits granted.
- File searches with appropriate agencies (e.g., State Water Board, fire department, county health department) having oversight authority relative to water quality and groundwater and soil contamination.
- Examination of historical aerial photography of the site and adjacent properties.
- A review of current and historic topographic maps of the site to determine drainage patterns.
- An examination of chain-of-title for environmental liens and/or activity and land use limitations.

If the Phase I Environmental Site Assessment indicates likely site contamination, a Phase II Environmental Site Assessment would be performed (also by an environmental professional).

A Phase II Environmental Site Assessment would comprise the following:

- Collection of original surface and/or subsurface samples of soil, groundwater, and building materials to analyze for quantities of various contaminants.
- An analysis to determine the vertical and horizontal extent of contamination (if the evidence from sampling shows contamination).

If contamination is uncovered as part of Phase I or II Environmental Site Assessments, remediation per EPA's RCRA regulations in 40 CFR Parts 260–299 will be required, and materials will be properly managed and disposed of prior to construction.

Any contaminated soil identified on a project site must be properly disposed of in accordance with Department of Toxic Substances Control regulations in effect at the time.

If, during construction, soil or groundwater contamination is suspected, construction activities in the vicinity of the discovery will cease and appropriate health and safety procedures will be implemented, including the use of appropriate personal protective equipment (e.g., respiratory protection, protective clothing, helmets, goggles).

Impact HAZ-3: Result in hazardous emissions or handling of hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school (less than significant with mitigation)

Summary of Impact AS-HAZ-3 by Component

Component	Level of Significance before Mitigation	Mitigation Measures Required	Level of Significance after Mitigation
Make-ready projects	S	LRDP-AQ-2a LRDP-AQ-2b LRDP-AQ-2c LRDP-AQ-3a AQ-2a AQ-2b	LTS
California Tower construction, Surgery and Emergency Services Pavilion interior renovation, Central Utility Plant upgrades	S	LRDP-AQ-2a LRDP-AQ-2b LRDP-AQ-2c LRDP-AQ-3a AQ-2a AQ-2b	LTS
Parking Structure 5 construction	S	LRDP-AQ-2a LRDP-AQ-2b LRDP-AQ-2c LRDP-AQ-3a AQ-2a AQ-2b	LTS

Component	Level of Significance before Mitigation	Mitigation Measures Required	Level of Significance after Mitigation
East Main Hospital Wing demolition	S	LRDP-AQ-2a LRDP-AQ-2b LRDP-AQ-2c LRDP-AQ-3a AQ-2a AQ-2b	LTS
Whole project	S	LRDP-AQ-2a LRDP-AQ-2b LRDP-AQ-2c LRDP-AQ-3a AQ-2a AQ-2b	LTS

NI = no impact; LTS = less than significant; S = significant; SU = significant and unavoidable.

The Language Academy of Sacramento Charter School (Formally Marian Anderson Elementary School) is located approximately 0.3 mile south of the California Tower at 2850 49th Street. Hazardous materials and waste would continue to be handled at the California Tower. The school is just south of the existing CUP which is the project component closest to the school. Additional generators and boiler and turbine capacity would be installed at the CUP. The additional emergency generators and equipment could result in additional emissions (see Section 3.2, *Air Quality*). The UC Davis Sacramento Campus has been operating adjacent to the school since 1978, and there have been no incidents involving the release of hazardous materials that have affected the school or required evacuation or any other emergency response to the school site. Continued compliance with existing safety plans, programs, practices, and procedures, as discussed in Section 3.8.1, *Existing Conditions* (e.g., UC Davis Environmental Health & Safety Plan), would reduce potential impacts involving hazardous materials/wastes within 0.25 mile of a school. Furthermore, Mitigation Measures LRDP-AQ-2a, LRDP-AQ-2b, LRDP-AQ-2c, LRDP-AQ-3a, AQ-2a, and AQ-2b would reduce impacts related to construction and operational emissions. With implementation of these mitigation measures, this impact would be **less than significant.**

LRDP-AQ-2a, Reduce construction-generated fugitive dust

LRDP-AQ-2b, Reduce construction-generated emissions from equipment and vehicle exhaust

LRDP-AQ-2c, Reduce evaporative emissions during architectural coatings

LRDP-AQ-3a, Reduce receptor exposure to construction generated diesel particulate matter

Mitigation Measure AQ-2a, Electrify cranes used during construction

Mitigation Measure AQ-2b, Offset construction-generated NO_X emissions in excess of SMAQMD's threshold of significance

Impact HAZ-4: Place project-related facilities on a site that is included on a list of hazardous materials sites, and resulting in creation of a significant hazard to the public or the environment (no impact)

Summary of Impact HAZ-4 by Component

Component	Level of Significance before Mitigation	Mitigation Measures Required	Level of Significance after Mitigation
Make-ready projects	NI	None	–
California Tower construction, Surgery and Emergency Services Pavilion interior renovation, Central Utility Plant upgrades	NI	None	–
Parking Structure 5 construction	NI	None	–
East Main Hospital Wing demolition	NI	None	–
Whole project	NI	None	–

NI = no impact; LTS = less than significant; S = significant; SU = significant and unavoidable.

There are three sites located in the project vicinity on the Cortese List. However, these sites have been investigated, and cleanup of contaminated soils and/or groundwater has been completed. As a result, these cases are considered closed and would no longer pose a threat to the public or environment. There would be **no impact.**

Mitigation Measures

No mitigation measures are necessary.

Impact HAZ-5: Place project-related facilities within an airport land use plan area or, where such a plan has been adopted, within 2 miles of a public airport or public use airport, resulting in a safety hazard or excessive noise for people residing or working in the project area (less than significant)

Summary of Impact HAZ-5 by Component

Component	Level of Significance before Mitigation	Mitigation Measures Required	Level of Significance after Mitigation
Make-ready projects	LTS	None	–
California Tower construction, Surgery and Emergency Services Pavilion interior renovation, Central Utility Plant upgrades	LTS	None	–
Parking Structure 5 construction	LTS	None	–
East Main Hospital Wing demolition	LTS	None	–
Whole project	LTS	None	–

NI = no impact; LTS = less than significant; S = significant; SU = significant and unavoidable.

The California Hospital Tower Project includes construction of two new emergency helipads on top of the California Tower for helicopter air ambulances. While the project would not directly result in an increase in emergency helicopter operations, it would increase hospital capacity by 75 licensed beds, and therefore an increase in emergency helicopter activity compared to existing conditions is anticipated. Existing (2019) conditions include 2,347 annual helicopter operations; future (2030) with-project conditions are estimated to include 2,563 annual helicopter operations, assuming a 9.2 percent growth rate. Existing and future flightpaths are discussed in Section 3.11, *Noise*. Appendix C includes detailed information on existing and projected helicopter noise. In general, the distribution of flightpaths would change with construction of the California Tower, which would block some existing flightpaths and the development of new helipads. Currently, 100 percent of the helicopter traffic lands on the Davis Tower helipads. Under future conditions, approximately 15 percent of helicopter landings would be at the existing Davis Tower, and 85 percent of helicopter landings would be at the California Tower. After construction of the California Tower is complete, it is anticipated that both existing helipads on the Davis Tower would remain on the Davis Tower, one for active operations and one relegated for use only during maintenance of the other helipads.

During project construction, helicopters would continue to land on the Davis Tower. It is anticipated that construction cranes would obstruct the flightpath of the eastern portion of the touchdown and liftoff area (TLOF) on the Davis Tower. Therefore, the western TLOF would become the primary location and approach for helicopter operations. The northern approach may also be used by larger aircraft under windy conditions. Although aircraft operations could be temporarily rerouted during construction for a period of approximately 4 years, advance notice would be given to emergency responders and alternative routes established before construction. Access to the helipad would be maintained at all times.

During construction of the California Tower, a temporary ambulance area would be constructed along V Street at 45th Street. This would ensure that emergency access at the hospital is maintained during the extended construction period. During project operations, California Tower is designed to maximize facility adjacency and efficiency so that airlifted patients can be transported directly from the helicopter landing area, into the elevator, and directly to both adult and pediatric Intensive Care Units.

As stated above, people will be working and living within immediate proximity to the California Tower. These residents already experience helicopter traffic due to the helipads on the Davis Tower. However, the California Tower will result in approximately 9.2% more helicopter fly-overs than existing conditions. Even though the number of fly-overs will increase, the noise levels will be similar to existing conditions and would not be hazardous to nearby residents. Additional detailed information on and assessment of helicopter and ambulance noise along with conclusions regarding the aircraft noise levels is presented in Section 3.11, *Noise*. Therefore, the impact is **less than significant.**

Mitigation Measures

No mitigation measures are necessary.

Impact HAZ-6: Impair implementation of or physical interference with an adopted emergency response plan or emergency evacuation plan (less than significant)

Summary of Impact HAZ-5 by Component

Component	Level of Significance before Mitigation	Mitigation Measures Required	Level of Significance after Mitigation
Make-ready projects	LTS	None	–
California Tower construction, Surgery and Emergency Services Pavilion interior renovation, Central Utility Plant upgrades	LTS	None	–
Parking Structure 5 construction	LTS	None	–
East Main Hospital Wing demolition	LTS	None	–
Whole project	LTS	None	–

NI = no impact; LTS = less than significant; S = significant; SU = significant and unavoidable.

As stated above, construction may result in the rerouting of some helicopter operations on the Davis Tower. Due to the use of tower cranes and due to the height of the hospital tower proposed for construction, helicopters may not be able to approach from the east (or potentially other directions) while cranes are located on the site, or as the height of the proposed project building becomes tall enough to interfere with the eastern helicopter flightpath during construction. Although aircraft operations would be temporarily limited during construction, advance notice would be given to emergency responders and alternative routes established before construction. Access to the helipad would be maintained at all times.

The project would not interfere with emergency response or evacuation plans because existing emergency response plans are adequate to prepare, mitigate, and respond to any type of threat or hazard or incident that could affect the demand for services provided by the Sacramento Campus. The project would comply with the EAP.

Further, the project would not result in the construction of any facilities that would interfere with emergency vehicle access to the campus. If needed, alternate routes would be established before any temporary closures and routes for evacuation, in case of an emergency, would be established and remain open. The impact is **less than significant**.

Mitigation Measures

No mitigation measures are necessary.

3.9 Hydrology and Water Quality

This section describes the regulatory and environmental setting for hydrology and water quality on the project site and in the project vicinity, analyzes effects on hydrology and water quality that would result from implementation of the project, and provides mitigation measures, if applicable, to reduce the effects of any significant impacts.

No comments related to hydrology and water quality were received during the scoping period.

3.9.1 Existing Conditions

Regulatory Setting

University of California

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

Sustainable Practices Policy

The following procedure pertaining to water quality and stormwater is listed in the UC Sustainable Practices Policy (University of California 2020).

> **Sustainable Water Systems – Water Action Plans**: Each Water Action Plan will include a section on Water Usage and Reduction Strategies that describes the applicable types of water comprising water systems, including but not limited to potable water, non-potable water, industrial water, sterilized water, reclaimed water, stormwater, and wastewater. Each Water Action Plan will include a section on Stormwater Management developed in conjunction with the location stormwater regulatory specialist that: a. Addresses stormwater management from a watershed perspective in a location-wide, comprehensive way that recognizes stormwater as a resource and aims to protect and restore the integrity of the local watershed(s); b. References the location's best management practices for preventing stormwater pollution from activities that have the potential to pollute the watershed (e.g., construction; trenching; storage of outdoor equipment, materials, and waste; landscaping maintenance; outdoor cleaning practices; vehicle parking); c. Encourages stormwater quality elements such as appropriate source control, site design (low impact development), and stormwater treatment measures to be considered during the planning stages of projects in order to most efficiently incorporate measures to protect stormwater quality. d. If feasible, cites relevant and current location stormwater-related plans and permits in an appendix or reference list accompanying the Water Action Plan; and e. Includes, to the extent feasible, full cost evaluation of stormwater management initiatives similar to the approach in the Water Usage and Reduction Strategies.

Federal

Clean Water Act

The federal Clean Water Act (CWA) was enacted with the primary purpose of restoring and maintaining the chemical, physical, and biological integrity of the nation's waters. The CWA directs states to establish water quality standards for all "waters of the United States" and to review and update such standards on a triennial basis.

The U.S. Environmental Protection Agency (EPA) has delegated responsibility for implementation of portions of the CWA, including water quality control planning and control programs, such as the National Pollutant Discharge Elimination System (NPDES) program (discussed below), to the State Water Resources Control Board (State Water Board) and the Regional Water Quality Control Boards (Regional Water Boards). The State Water Board establishes statewide policies and regulations for the implementation of water quality control programs mandated by federal and state water quality statutes and regulations. The Regional Water Boards develop and implement water quality control plans (basin plans) that identify the beneficial uses of surface water and groundwater, water quality characteristics, and water quality problems.

Section 303(d) and Total Maximum Daily Loads. The CWA contains two strategies for managing water quality. One is a technology-based approach that includes requirements for states to maintain a minimum level of pollutants using the best available technology. The other is a water quality-based approach that relies on evaluating the condition of surface waters and setting limitations on the amount of pollution that the water can be exposed to without adversely affecting the beneficial uses of those waters. Section 303(d) of the CWA bridges these two strategies. Section 303(d) requires that states make a list of waters that are not attaining standards after the technology-based limits are put into place. For waters on this list (and where the EPA administrator deems they are appropriate), states develop total maximum daily loads (TMDLs). TMDLs are established at the level necessary to implement the applicable water quality standards. The CWA does not expressly require the implementation of TMDLs. However, federal regulations require that an implementation plan be developed along with the TMDL and Sections 303(d), and 303(e), and their implementing regulations require that approved TMDLs be incorporated into basin plans. EPA has established regulations (40 Code of Federal Regulations [CFR] 122) that require that NPDES permits be revised to be consistent with any approved TMDL.

Section 401—Water Quality Certification. Section 401 of the CWA requires that an applicant pursuing a federal permit to conduct an activity that may result in a discharge of a pollutant obtain a Water Quality Certification (or waiver). A Water Quality Certification requires the evaluation of water quality considerations associated with dredging or placement of fill materials into waters of the United States. Water Quality Certifications are issued by one of the nine geographically separated Regional Water Boards in California. Under the CWA, the Regional Water Board must issue or waive a Section 401 Water Quality Certification for a project to be permitted under CWA Section 404.

Section 402—National Pollutant Discharge Elimination System. The 1972 amendments to the federal Water Pollution Control Act established the NPDES permit program to control discharges of pollutants from point sources (Section 402). The 1987 amendments to the CWA created a new section of the CWA devoted to stormwater permitting (Section 402[p]). The EPA has granted the State Water Board and Regional Water Boards primacy in administering and enforcing the provisions of the CWA and NPDES. NPDES is the primary federal program that regulates point-source and nonpoint-source discharges to waters of the United States.

NPDES General Permit for Construction Activities. Most construction activities that disturb 1 acre of land or more are required to obtain coverage under the NPDES General Permit for Construction Activities (Construction General Permit). The State Water Board has issued a statewide Construction General Permit (Order No. 2009-0009-DWQ, NPDES No. CAR000002, as amended by 2010-0014-DWQ and 2012-0006-DWQ), adopted September 2, 2009. Construction activities subject to the NPDES Construction General Permit include clearing, grading, and disturbances to the ground, such as stockpiling or excavation, that result in soil disturbances of at least 1 acre of total land area. The NPDES Construction General Permit requires the applicant to file a notice of intent (NOI) to discharge stormwater and to prepare and implement a stormwater pollution prevention plan (SWPPP). The SWPPP includes a site map and a description of proposed construction activities, along with a demonstration of compliance with relevant local ordinances and regulations, and an overview of the best management practices (BMPs) that would be implemented to prevent soil erosion and discharge of other construction-related pollutants that could contaminate nearby water resources. Permittees are further required to conduct annual monitoring and reporting to ensure that BMPs are correctly implemented and effective in controlling the discharge of stormwater-related pollutants.

Safe Drinking Water Act

The 1986 federal Safe Drinking Water Act requires each state to develop a wellhead protection plan to describe how areas around wells will be protected from potential contamination. A major element of a wellhead protection program is the determination of protection zones around public supply wellheads. Within these zones, potential protection measures could include limitations on land uses to preclude industrial or agricultural uses with the potential to result in spills of chemicals or overuse of fertilizers and other chemicals.

National Flood Insurance Program

The Federal Emergency Management Agency (FEMA) is responsible for determining flood elevations and floodplain boundaries based on U.S. Army Corps of Engineers studies. FEMA is also responsible for distributing the Flood Insurance Rate Maps (FIRMs), which are used in the National Flood Insurance Program (NFIP). These maps identify the locations of special flood hazard areas, including the 100-year floodplain. FEMA allows non-residential development in the floodplain; however, construction activities are restricted within the flood hazard areas, depending on the potential for flooding within each area.

State

Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act (Porter-Cologne Act) is established and implemented by the State Water Board and nine Regional Water Boards. “Waters of the state” are defined more broadly than “waters of the United States;” they are defined as any surface water or groundwater, including saline waters, within the boundaries of the state. This includes waters in both natural and artificial channels. The act requires projects that are discharging, or proposing to discharge, wastes that could affect the quality of the state’s water to file a waste discharge report with the appropriate Regional Water Board. The Porter-Cologne Act also requires that the State Water Board or a

Regional Water Board adopt basin plans for the protection of water quality. The *Water Quality Control Plan for the Sacramento River Basin and The San Joaquin River Basin* (Basin Plan) specifies region-wide and water body–specific beneficial uses and sets numeric and narrative water quality objectives for several substances and parameters in numerous surface waters in its region (Central Valley Regional Water Quality Control Board 2018). The Basin Plan also establishes beneficial water uses for groundwater basins within the region. The project site is in the jurisdiction of the Central Valley Regional Water Board. The Basin Plan was last updated in 2018.

Sustainable Groundwater Management Act

The Sustainable Groundwater Management Act of 2014 (SGMA) is a comprehensive three-bill package that Governor Edmund "Jerry" Brown signed into California state law in September 2014. The SGMA provides a framework for sustainable management of groundwater supplies by local authorities, with a limited role for state intervention only if necessary to protect the resource. The plan is intended to ensure a reliable groundwater water supply for California for years to come. SGMA requires the formation of local Groundwater Sustainability Agencies (GSAs), which are required to adopt groundwater sustainability plans (GSPs) to manage the sustainability of groundwater basins. GSAs for all high- and medium-priority basins, as identified by the California Department of Water Resources, must adopt a GSP or submit an alternative to a GSP. SGMA also requires governments and water agencies of high- and medium-priority basins to halt overdraft and bring groundwater basins into balanced levels of pumping and recharge.

The UC Davis Sacramento Campus overlies the South American groundwater subbasin, which is designated as a high-priority basin. Groundwater in the basin is managed under the Sacramento Central Groundwater Authority (SCGA) GSA. SCGA adopted its groundwater management plan on November 8, 2006. The Central Sacramento County Groundwater Management Plan manages groundwater basins in Sacramento County including the South American groundwater subbasin. The SCGA submission of an alternative to a GSP for the South American Subbasin was denied in 2019. A new GSP for the basin is currently in process.

Regional and Local

Sacramento Municipal Separate Storm Sewer Systems

Phase I Municipal Separate Storm Sewer Systems (MS4) regulations cover municipalities with more than 100,000 residents, certain industrial processes, or construction activities that disturb an area of 5 or more acres. Phase II "small" MS4 regulations require stormwater management plans (SWMPs) to be developed by municipalities with fewer than 100,000 residents and construction activities that disturb 1 or more acres.

MS4 permits require cities and counties to develop and implement programs and measures, including management practices, control techniques, system design and engineering methods, and other measures, as appropriate, to reduce the discharge of pollutants in stormwater discharges to the maximum extent possible. As part of permit compliance, permit holders create SWMPs, also known as stormwater quality improvement programs (SQIPs), for their respective locations. These plans outline the requirements for municipal operations, industrial and commercial businesses, construction sites, and planning and land development. The requirements may include multiple measures to control pollutants in stormwater discharges. During implementation of specific projects under the program, project applicants are required to follow the guidance contained in the SWMPs/SQIPs, as defined by the permit holder in that location. Sacramento County is considered a

Phase I MS4 permittee under the State Water Board's waste discharge requirements for stormwater discharges (NPDES Order R5 2015-0023; NPDES No. CAS082597).

Older sections of Sacramento also collect stormwater in the combined sewer pipes, as described in Section 3.9.1, *Environmental Setting*, which conveys both wastewater and storm drain runoff in a single pipe. Discharges from the combined system would comply with the waste discharge requirements for the City of Sacramento Combined Wastewater Collection and Treatment System (NPDES Order R5-2015-0045; NPDES No. CA0079111).

However, facilities with no exposure of the facility's industrial activities, equipment, and materials to stormwater may submit a No Exposure Certification (NEC) to the State Water Board, in accordance with the requirements of the Industrial Activities Stormwater General Permit (General Permit 97-03-DWQ). Under the NEC, the Sacramento Campus is required to eliminate unauthorized non-storm water discharges such as leaks or spills and protect industrial materials and activities from exposure to precipitation and/or runoff. Facility operators are required to inspect and evaluate their facilities annually, maintain records of those evaluations, and certify annually that the NEC eligibility requirements for the campus are continuously being met. If the Regional Water Board denies the NEC, or if the facility operator determines that NEC eligibility requirements are no longer being met, the facility operator must collect and analyze samples from two storm events during each wet season and report results to the State Water Board. Stormwater runoff from the project site is managed under the requirements of an NEC, and not via the Sacramento County Phase I MS4 permit. The Sacramento Campus's first NEC evaluation was completed in 2015.

General Waste Discharge Requirements/NPDES Permit for Limited Threat Discharges to Surface Waters

The Central Valley Regional Water Board is no longer accepting applications for coverage under the Low Threat General Order. New applicants must apply for coverage under the Limited Threat General Order (General Waste Discharge Requirements/NPDES Permit for Limited Threat Discharges to Surface Waters, Order R5-2016-0076/NPDES Permit No. CAG995002; amended by Order R5-2018-0002).

Discharges of the following wastewaters may obtain authorization under this General Order. To obtain authorization for discharges to surface water, Dischargers must submit a complete an NOI.

- Tier 1A: Relatively clean discharges of less than 0.25 million gallons per day (mgd) and/or less than 4 months in duration.
- Tier 1B: Relatively clean discharges greater than or equal to 0.25 mgd and/or greater than or equal to 4 months in duration.
- Tier 2: Discharges that may contain toxic organic constituents, volatile organic compounds, pesticides, inorganic constituents, chlorine, and/or other chemical constituents that require treatment prior to discharge.
- Tier 3: Discharges of wastewater from hard rock mines.

Sacramento Area Flood Control Agency

The Sacramento Area Flood Control Agency (SAFCA) was formed in 1989 to address the Sacramento area's vulnerability to catastrophic flooding. This vulnerability was exposed during the record flood of 1986, when Folsom Dam exceeded its normal flood control storage capacity and several area levees nearly collapsed under the strain of the storm. In response, the City of Sacramento, Sacramento County, Sutter County, the American River Flood Control District, and Reclamation District (RD) No. 10000 created SAFCA through a Joint Exercise of Powers Agreement to provide the Sacramento region with increased flood protection along the American and Sacramento Rivers.

City of Sacramento 2035 General Plan

As a state entity, the UC is exempted by the state constitution from compliance with local land use regulations, including general plans and zoning, whenever using property under its control in furtherance of its educational mission. Accordingly, references to the *City of Sacramento 2035 General Plan* (General Plan) are only to provide context for the impact analysis. Relevant goals and policies pertaining to water quality, hydrology, and floodplains are listed in the Environmental Resources element and the Environmental Constraints element of the General Plan (City of Sacramento 2015a, 2015b).

GOAL ER 1.1: Water Quality Protection. Protect local watersheds, water bodies and groundwater resources, including creeks, reservoirs, the Sacramento and American Rivers, and their shorelines.

Policy ER 1.1.1: Conservation of Open Space Areas. The City shall conserve and where feasible create or restore areas that provide important water quality benefits such as riparian corridors, buffer zones, wetlands, undeveloped open space areas, levees, and drainage canals for the purpose of protecting water resources in the city's watershed, creeks, and the Sacramento and American rivers.

Policy ER 1.1.2: Regional Planning. The City shall continue to work with local, State, and Federal agencies and private watershed organizations to improve water quality.

Policy ER 1.1.3: Stormwater Quality. The City shall control sources of pollutants and improve and maintain urban runoff water quality through storm water protection measures consistent with the City's National Pollution Discharge Elimination System (NPDESP Permit).

Policy ER 1.1.4: New Development. The City shall require new development to protect the quality of water bodies and natural drainage systems through site design (e.g., cluster development), source controls, storm water treatment, runoff reduction measures, best management practices (BMPs) and Low Impact Development (LID), and hydromodification strategies consistent with the city's NPDES Permit.

Policy ER 1.1.5: Limit Stormwater Peak Flows. The City shall require all new development to contribute no net increase in stormwater runoff peak flows over existing conditions associated with a 100-year storm event.

Policy ER 1.1.6: Post-Development Runoff. The City shall impose requirements to control the volume, frequency, duration, and peak flow rates and velocities of runoff from development projects to prevent or reduce downstream erosion and protect stream habitat.

Policy ER 1.1.7: Construction Site Impacts. The City shall minimize disturbances of natural water bodies and natural drainage systems caused by development, implement measures to protect areas from erosion and sediment loss, and continue to require construction contractors to comply with the City's erosion and sediment control ordinance and stormwater management and discharge control ordinance.

Policy ER 1.1.9: Groundwater Recharge. The City shall protect open space areas that are currently used for recharging groundwater basins, have the potential to be used for recharge, or may accommodate floodwater or stormwater. (City of Sacramento 2015a)

GOAL EC 2.1: Flood Protection. Protect life and property from flooding.

Policy EC 2.1.1: Interagency Flood Management. The City shall work with local, regional, State, and Federal agencies to maintain an adequate information base, prepare risk assessments, and identify strategies to mitigate flooding impacts.

Policy EC 2.1.3: Interagency Levee Management. The City shall work with local, regional, State, and Federal agencies to ensure new and existing levees are adequate in providing flood protection.

Policy EC 2.1.4: 200-year Flood Protection. The City shall work with local, regional, State, and Federal agencies in securing funding to achieve by 2025 at least 200-year flood protection for all areas of the city.

Policy EC 2.1.5: Funding for 200-year Flood Protection. The City shall continue to cooperate with local, regional, State, and Federal agencies in securing funding to obtain the maximum level of flood protection that is practical, with a minimum goal of achieving at least 200-year flood protection as quickly as possible.

Policy EC 2.1.6: Floodplain Capacity. The City shall preserve urban creeks and river to maintain existing floodplain capacity.

Policy EC 2.1.8: Floodplain Requirements. The City shall regulate development within floodplains in accordance with State and Federal requirements and maintain the City's eligibility under the National Flood Insurance Program.

Policy EC 2.1.11: New Development. The City shall require evaluation of potential flood hazards prior to approval of development projects and shall regulate development in urban and urbanizing areas per state law addressing 200-year level of flood protection. (City of Sacramento 2015b)

City of Sacramento Stormwater Ordinances

Sacramento Municipal Code Section 13.16, Stormwater Management and Discharge Control, and Section 15.88, Grading, Erosion, and Sediment Control, are pertinent to hydrology and water quality on the Sacramento Campus. The purposes of the stormwater management and discharge control ordinance are controlling non-stormwater discharges to the stormwater conveyance system; eliminating discharges to the stormwater conveyance system from spills, dumping, or disposal of materials other than stormwater; and reducing pollutants in urban stormwater discharges to the maximum extent practicable. The ordinance is consistent with the federal CWA, Porter-Cologne Act, and the Sacramento County NPDES Phase I MS4 permit.

The purpose of the grading ordinance is to regulate grading to avoid pollution of watercourses with nutrients, sediments, or other materials generated or caused by surface water runoff. The ordinance complies with the Sacramento County NPDES Phase I MS4 permit. The grading ordinance ensures that the intended use of a graded site within the city limits is consistent with the General Plan and is intended to control all aspects of grading operations in the city.

City of Sacramento Stormwater Quality Improvement Program

The City of Sacramento Stormwater Quality Improvement Program is a comprehensive program composed of various program elements and activities designed to reduce stormwater pollution to the maximum extent practicable and eliminate prohibited non-stormwater discharges through a NPDES municipal stormwater discharge permit. The SQIP is a partner in the larger "Sacramento Stormwater Quality Partnership" that covers Sacramento County including the cities of Citrus Heights, Elk Grove, Folsom, Galt, and Rancho Cordova.

The City of Sacramento established the SQIP in 1990 to reduce the pollution carried by stormwater into local creeks and rivers in compliance with the municipal stormwater NPDES permit. The comprehensive plan includes pollution reduction measures for construction sites, industrial sites, illegal discharges and illicit connections, new development, and municipal operations. The SQIP also includes an extensive public education effort, target pollutant reduction strategy, and monitoring program.

Sacramento Region Stormwater Quality Design Manual

The *Stormwater Quality Design Manual for Sacramento Region* provides locally adapted information for design and selection of multiple categories of stormwater quality control measures: source control, hydromodification control, treatment control, and low-impact development measures (Carmel et al. 2018). The 2018 edition of the manual is based on the *2007 Stormwater Quality Design Manual for the Sacramento and South Placer Regions*, but it has been revised to incorporate hydromodification management and low-impact development design standards.

Environmental Setting

Surface and Ground Water Hydrology

The UC Davis Sacramento Campus is in the 27,000-square-mile Sacramento River Basin, approximately 1.5 miles south of the American River and 3 miles east of the Sacramento River. The city of Sacramento, including the Sacramento Campus, uses surface water from the Sacramento and American Rivers and groundwater pumped from the North American and South American subbasins to meet its water demands.

The campus is within the South American groundwater subbasin, within the larger Sacramento Valley Groundwater Basin. The South American groundwater subbasin is considered a high-priority basin. The intensive use of groundwater in the basin has resulted in a general lowering of groundwater elevations near the center of the basin away from the sources of recharge; however, the basin is not in critical overdraft. Two existing groundwater wells on the Sacramento Campus are used for irrigation and emergency purposes.

The 146-acre Sacramento Campus consists of approximately 80 percent impervious and 20 percent pervious surfaces. The project site is paved. Both the California Tower and Parking Structure 5 (PS5) would be constructed on surface parking lots. Stormwater flows from the campus are collected in drain inlets, catch basins, and gutters before being discharged into the City of Sacramento's storm drain system. Storm drains convey stormwater runoff from parking lots and building roofs to the public storm drain mains and combined storm-sewer mains. Storm drainpipes on campus range in size from 6 inches to 18 inches in diameter. The utility networks are split into public and private sections. The public sections are operated and maintained by Sacramento public utility agencies and run under the public rights-of-way that cross the campus, connecting to offsite networks along the campus boundary at several locations. The layout of the campus results in a natural division of the site into 10 separate zones. All utilities within each zone, outside of the right-of-way, are maintained by UC Davis. The majority of the campus is served by a network of combined sewer pipes. These pipes, maintained by the City of Sacramento, convey a combination of stormwater and sanitary sewage from the campus to public wastewater treatment plants. The largest combined sewer main is up to 72 inches in diameter. Within each zone, Sacramento Campus storm and sewer mains are kept separated until the connections to the public combined sewer mains within the public rights-of-way (Affiliated Engineers 2019).

Stormwater from the western half of the campus site is held in an underground stormwater detention facility before it is discharged into the City's combined sewer system. The stormwater detention facility is designed to accommodate runoff from 10-year storm events. The detention system was designed and constructed to handle flows from the development of more than 6 million gross square feet of building space on the campus. Stormwater from the eastern half of the campus is collected in a separate storm drain system that discharges into the American River. During large storm events in which the separate storm drain system cannot handle runoff and to avoid localized flooding, excess stormwater from the eastern half of the campus is held in separate chambers in the stormwater detention facility and ultimately discharged into the storm drain system at a rate that the system can handle. If flows are very high, the excess stormwater is pumped from the separate stormwater chambers to the City's combined sewer system and treated at the Sacramento Regional Wastewater Treatment Plant (University of California 2010).

Surface Water Quality

Stormwater flows from the western half and excess flows from the eastern half of the Sacramento Campus are detained onsite before they are discharged into the City's combined sewer system or to the American River. The (Lower) American River is 303(d)-listed for impairments of bifenthrin, indicator bacteria, mercury, PCBs (polychlorinated biphenyl), pyrethroids, and toxicity (State Water Resources Control Board 2018). Beneficial uses of the American River include municipal and domestic water supply, agriculture (irrigation only), industrial service supply, power, contact and non-contact recreation, warm and cold freshwater habitat, warm and cold migration, warm and cold spawning, and wildlife habitat (Central Valley Regional Water Quality Control Board 2018).

The combined sewer system is considered at or near capacity and requires all additional inflow to be offset. During smaller storms, the City sends up to 60 mgd of wastewater to the Sacramento Regional Wastewater Treatment Plant, which treats stormwater and sanitary sewage prior to discharge into the Sacramento River. When the flows exceed 60 mgd, flows are routed to Pioneer Reservoir, a primary treatment facility adjacent to the Sacramento River. Once the capacity of Pioneer Reservoir is reached, flows are routed to the City's Combined Wastewater Treatment Plant, before ultimately being treated and discharged to the Sacramento River. Under extreme high-flow conditions, discharge of untreated combined wastewater from the combined sewer system may occur (City of Sacramento 2009:6.7-7).

Generally, groundwater quality within the South American sub-basin meets the primary and secondary drinking water standards for municipal use, including levels of iron, manganese, arsenic, chromium, and nitrates. The groundwater in the subbasin is described as a calcium magnesium bicarbonate with minor fractions of sodium magnesium bicarbonate (California Department of Water Resources 2004).

Flood Hazards

The project site is outside of the 100-year floodplain, within FEMA Zone X (Federal Emergency Management Agency 2012). FEMA Zone X (unshaded) is an area of minimal flood hazard, usually depicted on FIRMs as above the 500-year flood level. The area west of the Sacramento Campus is within FEMA Zone X (shaded), base floodplains areas with reduced flood risk due to levee protection. The project site is approximately 90 miles east of the Pacific Ocean. Therefore, the project is not subject to inundation by a tsunami. No large waterbodies are near the campus; therefore, the project site would not be prone to inundation by a seiche.

3.9.2 Environmental Impacts

This section describes the environmental impacts associated with hydrology and water quality that would result from implementation of the California Hospital Tower Project. It describes the methods used to determine the effects of the California Hospital Tower Project and lists the thresholds used to conclude whether an impact would be significant. Measures to mitigate (i.e., avoid, minimize, rectify, reduce, eliminate, or compensate for) any significant impacts are provided, if available.

Methods for Analysis

All project elements were analyzed by comparing conditions during construction and operations of the California Hospital Tower Project to baseline conditions. Evaluation of potential hydrologic and water quality impacts is based on a review of existing documents and studies that address water resources in the project vicinity. The analysis focuses on issues related to surface hydrology, groundwater supply, surface and groundwater quality, and flood hazards. The key construction-related impacts were identified and evaluated qualitatively based on the physical characteristics of the project components and the magnitude, intensity, location, and duration of activities.

Thresholds of Significance

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

- Violation of any water quality standards or waste discharge requirements or other substantial degradation of surface or groundwater quality.
- Substantial decrease of groundwater supplies or substantial interference with groundwater recharge such that the project may impede sustainable groundwater management of the basin.
- Substantial alteration of the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner that would result in substantial erosion or siltation onsite or offsite.
- Substantial alteration of the existing drainage pattern of the site or area that would increase the rate or amount of surface runoff in a manner that would result in flooding onsite or offsite.
- Creation of or contribution to runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff.
- Alteration of the existing drainage pattern in a manner that would impede or redirect flood flows.
- In flood hazard, tsunami, or seiche zones, risk of release of pollutants as a result of project inundation.
- Conflict with or obstruction of implementation of a water quality control plan or sustainable groundwater management plan.

Issues Not Evaluated Further

The project site is not located within the FEMA 100-year floodplain and would not be subject to a risk of flooding. Due to the distance from the coast and because no large waterbodies are located close to the Sacramento Campus, the project site is not subject to inundation by a tsunami or seiche. In addition, BMPs would be implemented, as required by federal and county policies to minimize degradation of water quality associated with stormwater runoff during construction. Further, construction and maintenance activities would comply with local stormwater ordinances, stormwater requirements established by the NEC, UC sustainability practices and procedures for stormwater management, and regional waste discharge requirements. Because the project site is not subject to flooding due to flood hazard, tsunami, or seiche inundation, the impact of risk of release of pollutants as a result of project inundation is not evaluated further.

Impacts and Mitigation Measures

Impact WQ-1: Violation of any water quality standards or waste discharge requirements or other degradation of surface or groundwater quality (less than significant)

Summary of Impact WQ-1 by Component

Component	Level of Significance before Mitigation	Mitigation Measures Required	Level of Significance after Mitigation
Make-ready projects	LTS	None	–
California Tower construction, Surgery and Emergency Services Pavilion interior renovation, Central Utility Plant upgrades	LTS	None	–
Parking Structure 5 construction	LTS	None	–
East Main Hospital Wing demolition	LTS	None	–
Whole project	LTS	None	–

NI = no impact; LTS = less than significant; S = significant; SU = significant and unavoidable.

Construction

Project construction activities, such as demolition of the East Wing, excavation, grading, and other construction-related earth-disturbing activities, could result in short-term water quality impacts associated with soil erosion and sediment transport on roadways or waterbodies through storm drains. Construction activities could also generate dust, litter, oil, and other pollutants that could temporarily contaminate runoff.

As stated above, stormwater from the western portion of campus, which includes both the California Tower and PS5 sites, is detained on site prior to discharge into the City's combined sewer system. To reduce the potential for discharge of pollutants into the receiving water, end-of-line treatment pollutant controls are in place. In addition, standard methods for erosion and runoff control, including filtration at the site perimeter would continue to be used during construction.

Construction equipment may also contain toxic or hazardous substances, including fuels, lubricants, oil, grease, and paint. Other potential water quality impacts include chemical spills into storm drains or groundwater aquifers if proper minimization measures are not implemented. Implementation of a project-specific SWPPP and BMPs such as non-stormwater management, proper waste handling, secondary containment for hazardous materials, and waste management would reduce release of contaminants and associated impacts to water quality.

In addition, temporary erosion and sediment control measures would be implemented, as required by the City of Sacramento and the Central Valley Regional Water Board. Temporary BMPs include straw wattles, silt fences, or silt/sediment basins and traps to protect catch basins and drain inlets from silt runoff.

In addition, temporary erosion and sediment control measures that comply with Central Valley Regional Water Board requirements would be implemented. Temporary BMPs would include installing or creating the following at the project site.

- Filter barriers
- Sediment silt fence
- Inlet protection
- Construction entrance
- Dust suppressors
- Erosion control matting

Implementation of temporary BMPs would also include addressing source control, which would reduce onsite erosion, offsite runoff, and sedimentation. These measures would be required to reduce pollutants in stormwater and other nonpoint-source runoff.

All project construction activities would be subject to existing regulatory requirements. Construction of the project components would result in approximately 1.65 acres of ground disturbance. Because land disturbance of the California Hospital Tower Project would be more than 1 acre, coverage under the NPDES Construction General Permit would be required. As part of compliance with the NPDES Construction General Permit, standard erosion control measures and other BMPs would be identified in a SWPPP. The SWPPP details measures to control soil erosion and waste discharges from project construction areas. These measures would be implemented during construction to reduce contamination of waterways. BMPs for inclusion in the SWPPP would be required to represent the best available technology that is economically achievable and the best conventional pollutant control technology to reduce pollutants. Commonly practiced BMPs may consist of a wide variety of measures implemented to reduce pollutants in stormwater and other nonpoint-source runoff.

As required by the Construction General Permit, a SWPPP must be submitted before a project's grading permit is issued. The NPDES Construction General Permit would require use of BMPs to restrict soil erosion and sedimentation and restrict non-stormwater discharges from the construction site as well as release of hazardous materials. The California Hospital Tower Project must also comply with UC sustainability practices and procedures for stormwater management. The sustainability procedures include Water Action Plans to address stormwater management and BMPs and encourage stormwater quality elements such as source control, site design (low impact development), and stormwater treatment measures.

In addition, construction activities may comply with the NEC submitted to the State Water Board each year, Sacramento's General Plan, and local stormwater and construction site runoff ordinances. These requirements involve developing and implementing an erosion and sedimentation control plan specific to a construction site that will minimize water quality impacts and specify standards to ensure water quality is not degraded. Compliance with these requirements would ensure that construction activities do not result in violation of water quality standards or waste discharge requirements, or otherwise result in water quality degradation.

Excavation would be required to construct the temporary ambulance area, the California Tower, and PS5. In the event that dewatering is required, the SWPPP would include a dewatering plan, which would establish measures to minimize contaminant releases into groundwater during excavation. Coverage under the NPDES Construction General Permit typically includes dewatering activities as authorized non-stormwater discharges, provided that dischargers prove the quality of water to be adequate and not likely to affect beneficial uses. Although small amounts of construction-related dewatering are covered under the NPDES Construction General Permit, the Central Valley Regional Water Board also has regulations related to dewatering activities (Order R5-2016-0076/NPDES Permit No. CAG995002; amended by Order R5-2018-0002). Compliance with Central Valley Regional Water Board dewatering requirements would ensure proper treatment measures are implemented prior to discharge to prevent potential water quality impacts on surface waters. All requirements of dewatering would be met to ensure water quality is not affected.

Therefore, construction of the California Hospital Tower Project would not violate any water quality standards or waste discharge requirements or otherwise degrade surface or groundwater quality. Construction-related water quality impacts would be **less than significant**.

Operation

The California Hospital Tower Project would involve operation and maintenance of the California Tower, PS5, Central Utility Plant upgrades, and landscaped areas. These land uses and operational activities could increase existing or generate new levels of potential pollutants of concern within the project site, such as trash, sediments, pesticides, bacteria, nutrients, metals, oils, and other toxins. Operation and maintenance activities under the California Hospital Tower Project would generate pollutants of concern from landscape maintenance, building maintenance, the storage of materials and substances, and vehicle use. Runoff from impervious surfaces could contain nonpoint pollution sources that are typical of urban setting. These are normally associated with automobiles, trash, cleaning solutions, and landscaped areas. Impervious surface is not anticipated to increase with the project, as the California Tower and PS5 would be constructed on existing surface parking lots. In addition, good housekeeping practices (such as regular trash collection) would be implemented onsite. Pollutants would be drained by new drainage inlets, which would convey runoff to the separate onsite storm drainage network. Stormwater flows from the campus are collected in drain inlets, catch basins, and gutters before being discharged into the City of Sacramento's storm drain system. If flows are very high, the excess stormwater is pumped from the separate stormwater chambers to the City's combined sewer system and treated at the Sacramento Regional Wastewater Treatment Plant (University of California 2010).

UC Davis is required to attenuate flows prior to entering the City's combined sewer system. The addition of sustainable site design features, such as increased landscaped areas, would increase infiltration of stormwater for groundwater recharge and allow pollutant filtration of stormwater, therefore reducing and treating surface runoff and associated pollutants. Reduced storm runoff would also reduce the potential for erosion and sedimentation. However, the site is largely impervious and would continue to be so.

In addition, the California Hospital Tower Project would comply with campus stormwater management practices, as required. Water Action Plans would provide practices, as required by UC sustainability practices and procedures, for stormwater management to control the discharge of pollutants into stormwater. In addition, stringent post-construction water quality requirements would be in place that control for pH and turbidity as required by the NPDES Construction General Permit. The Sacramento Campus, which includes the project site, uses only EPA-registered landscape maintenance products and intends to use products with the lowest toxicity (University of California 2010).

All excess flows would be detained in the onsite detention basin before discharge. In addition, the NPDES Construction General Permit emphasizes runoff reduction through onsite stormwater reuse. Sustainability measures for the site include greywater harvesting and rainwater recovery for non-potable water reuse in buildings. The California Hospital Tower Project would be designed and maintained in accordance with State Water Board water quality requirements, such as the NEC and UC sustainability practices and procedures.

Therefore, operation of the California Hospital Tower Project would not violate any water quality standards or waste discharge requirements or otherwise degrade surface or groundwater quality and these impacts would be **less than significant**.

Mitigation Measures

No mitigation measures are necessary.

Impact WQ-2: Substantial decrease of groundwater supplies or substantial interference with groundwater recharge such that the project may impede sustainable groundwater management of the basin (less than significant)

Summary of Impact WQ-2 by Component

Component	Level of Significance before Mitigation	Mitigation Measures Required	Level of Significance after Mitigation
Make-ready projects	LTS	None	–
California Tower construction, Surgery and Emergency Services Pavilion interior renovation, Central Utility Plant upgrades	LTS	None	–
Parking Structure 5 construction	LTS	None	–
East Main Hospital Wing demolition	LTS	None	–
Whole project	LTS	None	–

NI = no impact; LTS = less than significant; S = significant; SU = significant and unavoidable.

Groundwater would not be used for construction or operation of the California Hospital Tower Project except as a source for landscape irrigation. It is assumed that well water used for irrigation purposes would be similar to existing conditions, or less with more water-efficient plantings. The potential for construction dewatering may occur during excavation activities, which could result in a temporary reduction in groundwater volumes. However, in the event that groundwater is encountered during construction, dewatering would be conducted on a one-time or temporary basis and would not result in a loss of water that would substantially deplete groundwater supplies. The water supply for construction activities (e.g., dust control, concrete mixing, material washing) would come from existing surface supplies and/or would be trucked to the site.

The East Wing currently gets water from surface water, not groundwater. Operation of the California Tower would require approximately 21,245,000 gallons of water per year (Sebright pers. comm.). Currently, the project site is developed and largely impervious. Impervious area after implementation of the California Hospital Tower Project would be similar to existing conditions. The addition of sustainable site design features, such as landscaped open spaces, would allow for infiltration of stormwater for groundwater recharge and reducing surface runoff. Therefore, the project would not substantially interfere with groundwater recharge, decrease the size of groundwater recharge areas, or impede sustainable groundwater management of the basin. During operations, water supply would be obtained from the existing City of Sacramento water infrastructure, similar to existing conditions. Therefore, the project would not substantially increase groundwater demand.

Therefore, the California Hospital Tower Project would not result in a substantial decrease of groundwater supplies or substantial interference with groundwater recharge such that the project may impede sustainable groundwater management of the basin. Groundwater impacts would be **less than significant**.

Mitigation Measures

No mitigation measures are necessary.

Impact WQ-3: Substantial alteration of existing drainage patterns in a manner that would result in substantial erosion or siltation onsite or offsite; Substantial increase in the amount of surface runoff in a manner that would result in flooding onsite or offsite; Creation of or contribution to runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; Obstruction or redirection of flood flows caused by drainage modifications (less than significant)

Summary of Impact WQ-3 by Component

Component	Level of Significance before Mitigation	Mitigation Measures Required	Level of Significance after Mitigation
Make-ready projects	LTS	None	–
California Tower construction, Surgery and Emergency Services Pavilion interior renovation, Central Utility Plant upgrades	LTS	None	–
Parking Structure 5 construction	LTS	None	–
East Main Hospital Wing demolition	LTS	None	–
Whole project	LTS	None	–

NI = no impact; LTS = less than significant; S = significant; SU = significant and unavoidable.

Construction

During construction, stormwater drainage patterns could be temporarily altered. However, the project would implement BMPs, as required by the NPDES Construction General Permit and the associated project SWPPP, to minimize the potential for erosion or siltation and temporary changes in drainage patterns during construction. Implementation of BMPs would capture and infiltrate small amounts of sheet-flow such that offsite runoff from the construction site would not increase, ensuring that drainage patterns are not significantly altered. BMPs would be implemented to control construction site runoff, ensure proper stormwater control and treatment, and reduce the discharge of polluted runoff to the storm drain system. Therefore, construction of the project would not alter the existing drainage pattern in a manner which would result in substantial erosion or siltation or increase the rate or amount of surface runoff in a manner that would result in flooding onsite or offsite or provide substantial additional sources of polluted runoff.

Therefore, California Hospital Tower Project construction would not result in an exceedance of drainage system capacities, and the associated impact would be **less than significant**.

Operation

Currently the California Tower and PS5 project sites are paved. Impervious area after implementation of the California Hospital Tower Project and PS5 would be similar to existing conditions. Large areas of impervious surface are associated with larger volumes and flows of stormwater runoff. However, surface improvements to the project site include a landscape buffer along the northern boundary of the project site along V Street and additional landscaping around the perimeter of the California Tower and PS 5. Incorporating sustainable site design features for California Tower and PS5 would reduce stormwater runoff associated with impervious surfaces (Section 2.6, *Sustainability*). Sustainable site design features such as surface landscaping design are incorporated into project design and would increase permeability and reduce stormwater runoff flows and associated pollutants (Figure 2-7). Although drainage patterns would be altered, the additional landscaping would also reduce the potential for onsite or offsite flooding and ultimately improve drainage. The project would be designed around existing landscaped areas such as the hospital courtyard and West Arrival Garden and would include additional landscaping in the 40-foot landscape buffer, which would include plantings and trees as well as a rooftop garden on top of the West Wing. Any trees removed would be replaced at a 1:1 ratio.

The existing onsite drainage system consists of a series of existing inlets that are connected to a piped network draining to the southeast and ultimately to the City's combined sewer system. With project implementation, all existing utilities on the site would be demolished. A separate onsite storm drainage network would be constructed to discharge flows to the City of Sacramento's combined sewer system infrastructure. The California Tower would be built over existing storm drainpipes that serve an existing parking lot and the south side of the hospital site. A new 15-inch storm drain around the building under 45th Street is proposed, which would connect to the combined sewer system at V Street (Affiliated Engineers 2019). Excess stormwater would continue to be detained onsite before it is released to the receiving waterbody, reducing peak flows that could result in downstream flooding. In addition, the NPDES Construction General Permit requires dischargers to maintain pre-development drainage rates.

Therefore, operational drainage associated with the California Hospital Tower Project including PS5 would not result in flooding or exceedance of drainage system capacities, and the associated impact would be **less than significant.**

Mitigation Measures

No mitigation measures are necessary.

Impact WQ-4: Conflict with or obstruction of implementation of a water quality control plan or sustainable groundwater management plan (no impact)

Summary of Impact WQ-4 by Component

Component	Level of Significance before Mitigation	Mitigation Measures Required	Level of Significance after Mitigation
Make-ready projects	NI	None	–
California Tower construction, Surgery and Emergency Services Pavilion interior renovation, Central Utility Plant upgrades	NI	None	–
Parking Structure 5 construction	NI	None	–
East Main Hospital Wing demolition	NI	None	–
Whole project	NI	None	–

NI = no impact; LTS = less than significant; S = significant; SU = significant and unavoidable.

During construction, commonly practiced BMPs would be implemented to control site runoff and reduce the discharge of pollutants to storm drain systems. As part of compliance with permit requirements during ground-disturbing or construction activities, implementation of water quality control measures and BMPs would ensure that water quality standards are maintained, including the water quality objectives that protect designated beneficial uses of surface and groundwater, as defined in the Basin Plan. Construction runoff would also comply with the appropriate water quality objectives for the region. The NPDES Construction General Permit requires stormwater discharges not to contain pollutants that cause or contribute to an exceedance of any applicable water quality objectives or water quality standards, including designated beneficial uses. Incorporation of sustainable site design features, such as landscaped open spaces and green roofs is proposed and would also reduce stormwater runoff flows and associated pollutants.

Therefore, the California Hospital Tower Project would not conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan, and there would be **no impact**.

Mitigation Measures

No mitigation measures are necessary.

3.10 Land Use and Planning

This section describes the regulatory and environmental setting for land use and planning on the project site and in the project vicinity, analyzes effects on land use and planning that would result from implementation of the project, and provides mitigation measures, if applicable, to reduce the effects of any significant impacts.

3.10.1 Existing Conditions

Regulatory Setting

University of California

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

University of California Davis Sacramento Campus 2020 Long Range Development Plan (Existing)

The Sacramento Campus Long Range Development Plan (LRDP) was updated in 2020 to support projected growth predominantly through redevelopment of existing facilities and construction on previously developed land. UC Davis anticipates that, under the 2020 LRDP Update, the on-campus population could grow over the next 20 years to include approximately 21,200 people and anticipates up to 7.07 million gross square feet of building space by 2040. To accommodate the projected population increase, the 2020 LRDP Update proposes facility renewal; improved seismic safety, including demolition of certain existing hospital facilities; and construction of new additional building space and new on-campus housing. The 2020 LRDP Update also removes the height restrictions by land use designation and proposes a campus-wide maximum height of 200 feet with setback requirements to ensure there is a buffer between the Sacramento Campus and the residential neighborhoods to the north and east of the campus. The 2020 LRDP Update includes the following principle that applies to land use and planning.

> **Principle #1: Ensure Appropriate Adjacencies.** Intentionality in facility adjacencies will help create communities of practice on campus, enhance efficiencies in operations, and ease the movement of patients, visitors, students, faculty, staff, and partners. Recognizing existing major building investments, new facilities will be located in reasonable proximity to the current primary UC Davis Health System mission-related uses (Figure 4.1): Education and Academic Research; Hospital; Ambulatory Care; Research and Partnerships (University of California 2020).

Figure 3.10-1 shows existing land use under the 2020 LRDP Update.

Federal

There are no federal plans or policies addressing land use and planning that pertain to the project.

State

There are no state plans or policies addressing land use and planning that pertain to the project.

Regional and Local

City of Sacramento General Plan

For areas surrounding the UC Davis Sacramento Campus, the *Sacramento 2030 General Plan* set a new direction for the future of Sacramento based on the City's Smart Growth Principles. The *Sacramento 2035 General Plan* (General Plan) included technical policy updates and technical review, and it updated and reset the planning horizon for the general plan from 2030 to 2035.

The General Plan also promotes Smart Growth principles to accommodate the projected population increase while improving quality of life in the city. The General Plan was adopted by the City Council on March 3, 2015. Six themes underlie and support the Smart Growth vision as outlined below.

- Making great places
- Growing smarter
- Maintaining a vibrant economy
- Creating a healthy city
- Living lightly—reducing our carbon footprint
- Developing a sustainable future

The City's *2040 General Plan Update* is currently in process and is anticipated to be adopted in 2021. The current General Plan emphasizes compact growth, infill development and reuse of underutilized properties, intensifying development near transit and mixed-use activity centers, and locating jobs closer to housing. It also endorses land use patterns and densities that foster pedestrian and bicycle use and recreation and takes steps to reduce carbon emissions that contribute to climate change.

For the lands immediately adjacent to the Sacramento Campus, the General Plan uses the land use designations of Traditional Neighborhood Low Density for the areas north, south, and east of the campus; Traditional Neighborhood High Density for a portion of the area east of the campus just north of Broadway; and Urban Center Low for the land immediately west of the campus and across from Stockton Boulevard. To the west of the Urban Center Low land use is another residential neighborhood designated Traditional Neighborhood Low Density. The Sacramento Campus itself is in an area designated as Urban Center Low (Figure 3.10-2). For each of these land use designations, the General Plan identifies allowable density, floor area ratio, allowed uses, and certain urban form guidelines. The detailed mapping for these designations is contained in the General Plan's Land Use and Urban Form Diagram, and in the associated planning guidelines (City of Sacramento 2015:2-131 and following). The City of Sacramento Zoning Map (Figure 3.10-3) shows the Sacramento Campus comprises various zoning designations including residential, hospital, office building, and commercial (City of Sacramento 2019).

Environmental Setting

The project site is on the UC Davis Sacramento Campus located in Sacramento, approximately 2.5 miles southeast of downtown Sacramento, 17 miles east of the UC Davis main campus in Davis, and

90 miles northeast of San Francisco (Figure 2-1). The Sacramento Campus is bounded by V Street on the north, Stockton Boulevard on the west, Broadway on the south, and a residential neighborhood to the east.

The LRDP boundary has expanded to include the Rehabilitation Hospital site at the northwest corner of Broadway and 49th Street. The UC also owns some properties surrounding the project site, including buildings along Stockton Boulevard and on Broadway, and leases offsite facilities in Sacramento for clinics and offices totaling over 500,000 square feet. Leased spaces and other off-campus buildings are located west of Stockton Boulevard and south of Broadway.

The California Hospital Tower project site occupies an approximate 39-acre area within the UC Davis Sacramento Campus. The area is currently a surface parking lot and the eastern portion of the East Wing of the Main Hospital. The site is currently designated Hospital, Ambulatory Care, and Parking Structure according to the 2020 LRDP Update.

Existing Land Uses on the University of California Davis Sacramento Campus

Existing land uses on the Sacramento Campus have been developed over time, and most recently through implementation of the 2020 LRDP Update. The development and land uses on the Sacramento Campus currently are intended to support UC's continued mission to provide a world-class medical institution at the Sacramento Campus that includes ambulatory care, education, research and housing, hospital, landscape buffer, major open space, parking structures, and support. Figure 3.10-1 shows the distribution of existing land use designations across the Sacramento Campus. The California Hospital Tower Project would be spread out over several on-campus land use designations. The California Tower would be located in the Hospital land use designation, parking structure 5 (PS5) would be located in the Parking Structure land use designation, and the Central Utility Plant (CUP) would be located in the Support land use designation.

Surrounding Land Uses

The land uses surrounding the Sacramento Campus include urban corridor, low-density suburban neighborhoods, and a high-density traditional neighborhood. Stockton Boulevard, along the western boundary of the campus, is lined mostly with one- to three-story office buildings and a small amount of retail. A Shriners Hospital is located on Stockton Boulevard just south of X Street across from the UC Davis Health System Main Hospital.

The Elmhurst neighborhood is located north of V Street and north of the proposed California Tower and PS5. This neighborhood consists primarily of single-family homes. To the west of the Sacramento Campus are commercial business buildings along Stockton Boulevard and the North Oak Park neighborhood, with a mix of single-family and multi-family residences. These neighborhoods can be characterized as pre-World War II traditional neighborhoods. Single and multi-family residential are the predominant land use in the Fairgrounds neighborhood to the southwest of the campus.

3.10.2 Environmental Impacts

This section describes the environmental impacts associated with land use and planning that would result from implementation of the California Hospital Tower Project. It describes the methods used to determine the effects of the project and lists the thresholds used to conclude whether an impact would be significant. Measures to mitigate (i.e., avoid, minimize, rectify, reduce, eliminate, or compensate for) any significant impacts are provided, if available.

Methods for Analysis

This analysis is based on review of documents pertaining to the project site and potential compatibility of the project with existing and planned land uses near the project site. Local planning documents and land use plans were reviewed to determine whether implementation of the project would conflict with any plans adopted for the purpose of avoiding or mitigating an environmental effect. In determining the level of significance, this analysis assumes that the project would comply with relevant local general plan policies, where feasible.

Thresholds of Significance

In accordance with Appendix G of the State CEQA Guidelines, the California Hospital Tower Project would be considered to have a significant land use and planning effect if it would result in any of the conditions listed below.

- Physically divide an established community.
- Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect.

Issues Not Evaluated Further

As the project will be constructed and operated within the boundaries of the existing Sacramento Campus, no aspect of the project would physically divide a community and this issue is not discussed further. There would be no impact.

Impacts and Mitigation Measures

Impact LU-1: Cause a significant environmental impact due to a conflict with any applicable land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect (no impact)

Summary of Impact LU-1 by Component

Component	Level of Significance before Mitigation	Mitigation Measures Required	Level of Significance after Mitigation
Make-ready projects	NI	None	–
California Tower construction, Surgery and Emergency Services Pavilion interior renovation, Central Utility Plant upgrades	NI	None	–
Parking Structure 5 construction	NI	None	–
East Main Hospital Wing demolition	NI	None	–
Whole project	NI	None	–

NI = no impact; LTS = less than significant; S = significant; SU = significant and unavoidable.

The 2020 LRDP Update identified most of the land in between 42nd Street and 45th Street as Hospital land use. The California Tower and East Wing demolition would be in this location and would, therefore, be consistent with the land use designation under the 2020 LRDP Update. A 40-foot landscape buffer is identified along the entire northern border of the campus (Figure 3.10-1), which will provide some separation between the project and the adjacent neighborhood.

UC Davis also proposes to revise the height restriction in the Main Hospital Zone (defined as the western edge of PS3 to the eastern edge of 45th Street) within the Hospital land use designation as a part of the California Hospital Tower Project. Under the 2020 LRDP Update, the height restriction is 200 feet in areas 180 feet beyond the property line. UC Davis proposes to revise this height restriction to 270 feet within the Main Hospital Zone. The 2020 LRDP Update building height guidelines include step-backs to address the surrounding land uses and ensure that taller buildings are located closer to the interior of the Sacramento Campus. In addition, there are already multiple high-rise buildings in the Hospital land use designation, including the existing East Wing (to be demolished), University Tower, and Davis Tower. This is consistent with the 2020 LRDP Update, which requires buildings on the edges of campus to be limited in height to respect the scale of the surrounding neighborhood. Increasing the height restriction by 70 feet is not anticipated to conflict with any land use plan or policy. Amending the 2020 LRDP Update to increase the permissible height in this land use designation would ensure consistency of the California Tower Hospital Project with the 2020 LRDP Update. Additional impacts related to the height restriction revision are described in Section 3.1, *Aesthetics*.

The 2020 LRDP Update identified a parking structure at the northeast corner of X Street and 48th Street, and the current use is a surface parking lot. The California Hospital Tower Project includes PS5 as a project element in that location. The site is currently designated Parking Structure consistent with the land use designation under the 2020 LRDP Update. As shown in Figure 3.10-1, a 40-foot landscape buffer would be located between the parking garage and V Street to provide some separation between the campus and surrounding residential uses.

The CUP upgrades entail adding new generators and chiller capacity, which would not require major construction. These upgrades would take place at the existing CUP, which is in the Support land use category and would be compatible with existing uses.

Development of the California Hospital Tower Project including PS5 and other components would not conflict with the land uses identified in the 2020 LRDP Update. As shown in Figure 3.10-2, the entire Sacramento Campus is designated as Urban Center Low in the General Plan. As shown in Figure 3.10-3, portions of the project site are zoned by the City of Sacramento for Hospital and the surrounding land is zoned for Residential. While UC Davis is not subject to municipal land use regulations when using property under its control in furtherance of its educational mission, the California Hospital Tower Project is generally consistent with the City's General Plan land use designations and the City's zoning map.

The California Hospital Tower Project would not conflict with any applicable existing plans, policies and regulations adopted for the purposes of reducing or mitigating environmental impacts, nor would it result in land use conflicts. There would be **no impact**.

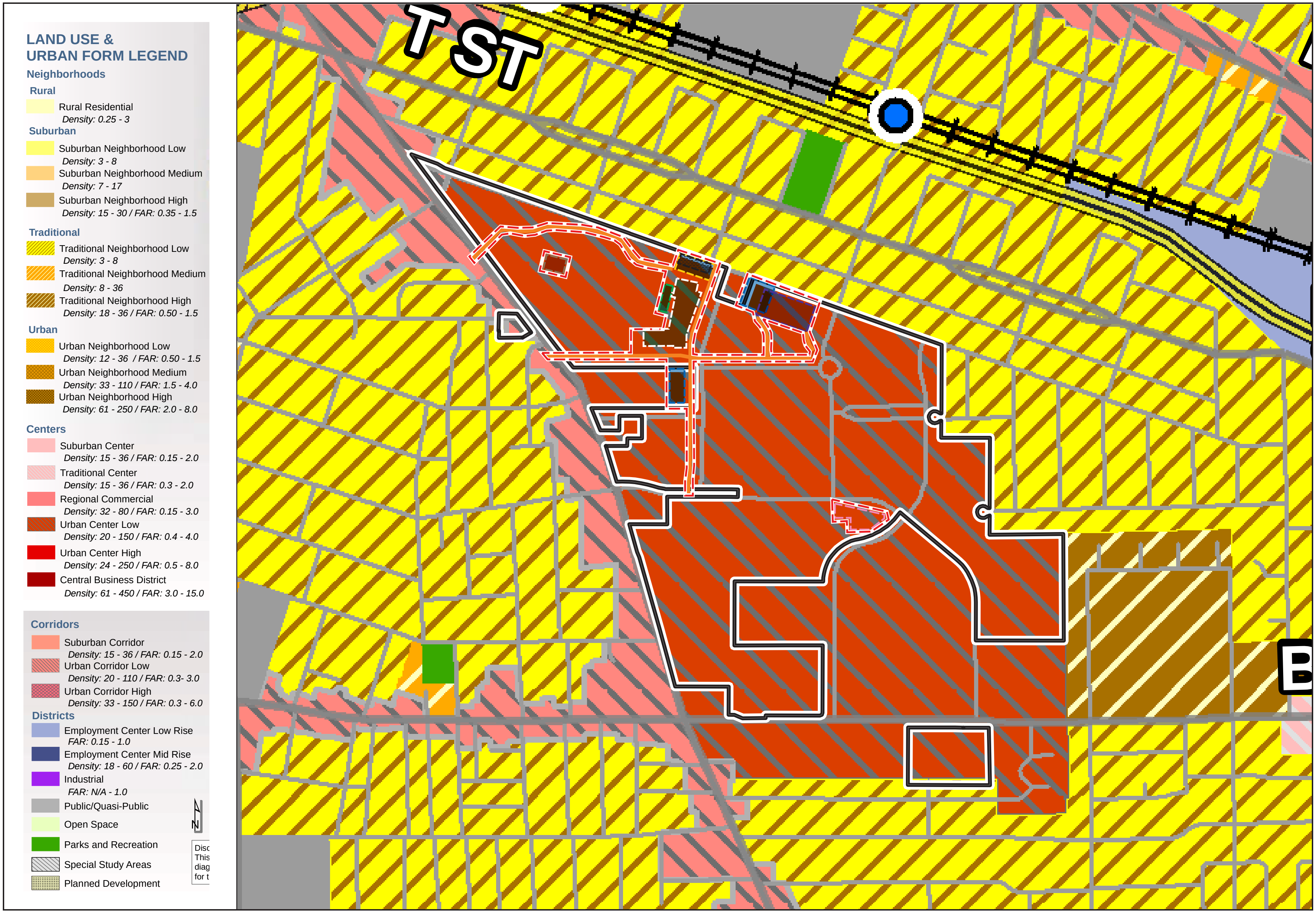
Mitigation Measures

No mitigation measures are necessary.

Graphics ... 00643.19 (7/9/20) AB

UC DAVIS

Figure 3.10-1
Existing 2020 LRDP Update Land Use



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UCDAVIS

Figure 3.10-2
City of Sacramento Land Use

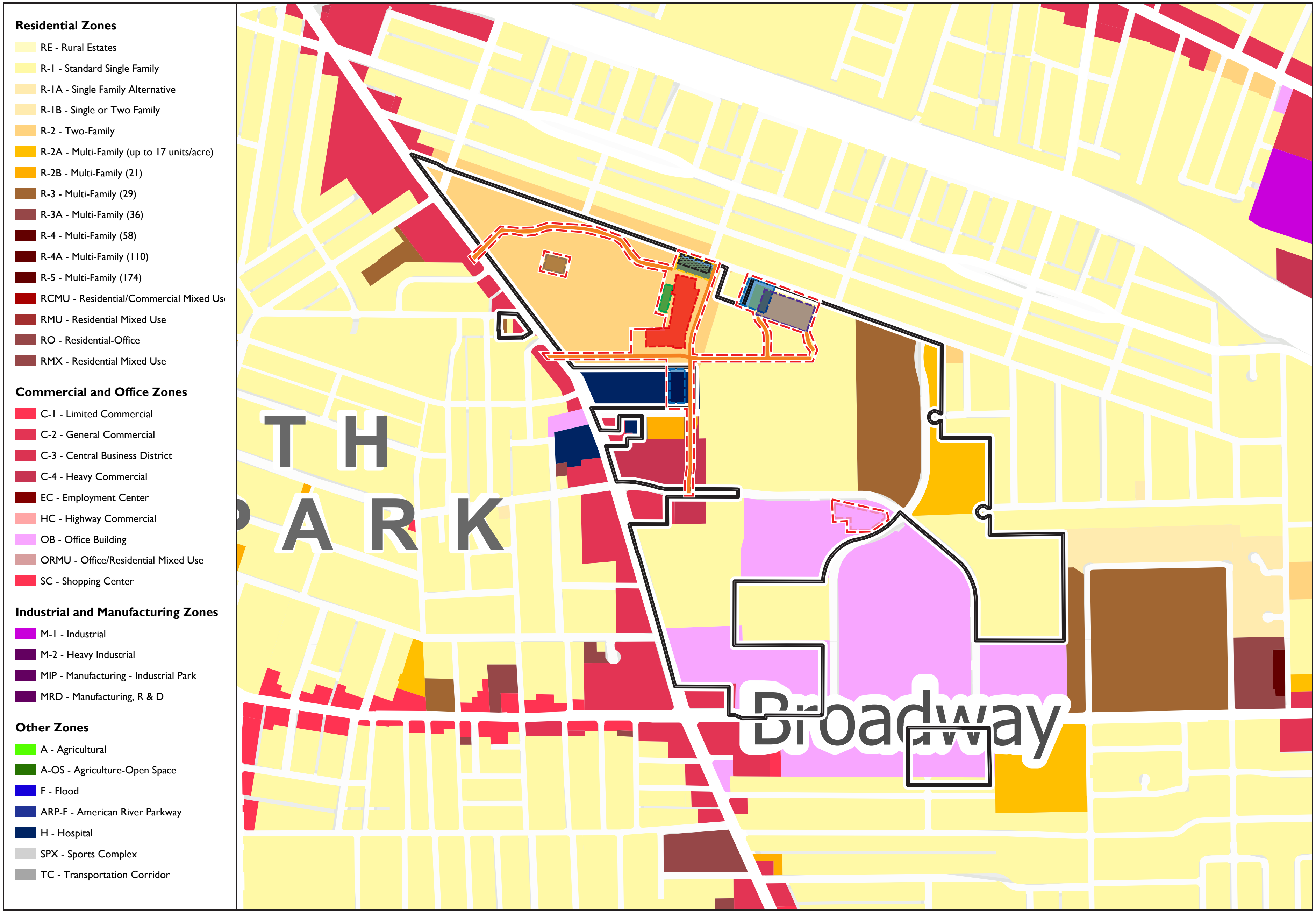

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Figure 3.10-3
City of Sacramento Zoning

3.11 Noise

This section describes the regulatory and environmental setting for noise on the project site and in the project vicinity, analyzes effects on noise that would result from implementation of the project, and provides mitigation measures, if applicable, to reduce the effects of any significant impacts.

In response to the Notice of Preparation for this EIR, concerns related to helicopter noise were expressed. Specifically, commenters expressed concerns about noise and safety from altered helicopter flight paths should a helipad be construction on the California Tower. Commenters also requested UC Davis select recommended or preferred flight paths for arriving and departing helicopters and consider flight path monitoring for helicopter flights. In addition, concerns about traffic noise from U.S. Route 50 to be reflected into the neighborhood from the new building were expressed. Further, a comment also expressed concerns about pile driving vibration effects on nearby structures; note that no pile driving is proposed for the project. These concerns are considered in the analysis of project noise and vibration effects included in this section.

3.11.1 Fundamentals of Environmental Noise and Vibration

Overview of Noise and Sound

Noise is commonly defined as unwanted sound that annoys or disturbs people and potentially causes an adverse psychological or physiological effect on human health. Because noise is an environmental pollutant that can interfere with human activities, an evaluation of noise is necessary when considering the environmental impacts of a proposed project.

Sound is mechanical energy (vibration) transmitted by pressure waves over a medium such as air or water. Sound is characterized by various parameters, including the rate of oscillation of sound waves (frequency), the speed of propagation, and the pressure level or energy content (amplitude). In particular, the sound pressure level is the most common descriptor for characterizing the loudness of an ambient (existing) sound level. Although the decibel (dB) scale, a logarithmic scale, is used to quantify sound intensity, it does not accurately describe how sound intensity is perceived by human hearing. The human ear is not equally sensitive to all frequencies in the entire spectrum, so noise measurements are weighted more heavily for frequencies to which humans are sensitive in a process called “A-weighting,” written as “dBA” and referred to as “A-weighted decibels.” Table 3.11-1 defines sound measurements and other terminology used in this chapter, and Table 3.11-2 summarizes typical A-weighted sound levels for different noise sources.

In general, human sound perception is such that a change in sound level of 1 dB cannot typically be perceived by the human ear, a change of 3 dB is barely noticeable, a change of 5 dB is clearly noticeable, and a change of 10 dB is perceived as doubling or halving the sound level as it increases or decreases, respectively.

Different types of measurements are used to characterize the time-varying nature of sound. These measurements include the equivalent sound level (L_{eq}), the minimum and maximum sound levels (L_{min} and L_{max}), percentile-exceeded sound levels (such as L_{10}, L_{20}), the day-night sound level (L_{dn}), and the community noise equivalent level (CNEL). L_{dn} and CNEL values differ by less than 1 dB. As a matter of practice, L_{dn} and CNEL values are considered to be equivalent and are treated as such. These measurements are defined in Table 3.11-1.

Table 3.11-1. Noise and Vibration Terms

Sound Measurements	Definition
Decibel (dB)	A unitless measure of sound on a logarithmic scale that indicates the squared ratio of sound pressure amplitude with respect to a reference sound pressure amplitude. The reference pressure is 20 micropascals.
A-Weighted Decibel (dBA)	An overall frequency-weighted sound level in decibels that approximates the frequency response of the human ear.
C-Weighted Decibel (dBC)	The sound pressure level in decibels as measured using the C-weighting filter network. The C-weighting is very close to an unweighted or “flat” response. C-weighting is used only in special cases (i.e., when low-frequency noise is of particular importance). A comparison of the measured A- and C-weighted level gives an indication of low-frequency content.
Maximum Sound Level (L_{max})	The maximum sound level measured during the measurement period.
Minimum Sound Level (L_{min})	The minimum sound level measured during the measurement period.
Equivalent Sound Level (L_{eq})	The equivalent steady-state sound level that in a stated period of time would contain the same acoustical energy.
Percentile-Exceeded Sound Level (L_{xx})	The sound level exceeded X% of a specific time period. L_{10} is the sound level exceeded 10% of the time, and L_{90} is the sound level exceeded 90% of the time. L_{90} is often considered to be representative of the background noise level in a given area.
Day-Night Level (L_{dn})	The energy average of the A-weighted sound levels occurring during a 24-hour period, with 10 dB added to the A-weighted sound levels occurring during the period from 10:00 p.m. to 7:00 a.m.
Community Noise Equivalent Level (CNEL)	The energy average of the A-weighted sound levels occurring during a 24-hour period, with 5 dB added to the A-weighted sound levels occurring during the period from 7:00 p.m. to 10:00 p.m. and 10 dB added to the A-weighted sound levels occurring during the period from 10:00 p.m. to 7:00 a.m.
Vibration Velocity Level (or Vibration Decibel Level, VdB)	The root-mean-square velocity amplitude for measured ground motion expressed in dB.
Sound Exposure Level (SEL)	Sound Exposure Level is similar to the Leq in that the total sound energy is averaged over the measurement period. The difference is that Leq is averaged over the measurement period, whereas SEL is averaged over a reference duration of 1 second. For example, a noise level of 90 dBA lasting 1 second would have a SEL of 90 dBA, but if the event lasted 2 seconds the SEL would be 93 dBA.
Peak Particle Velocity (Peak Velocity or PPV)	A measurement of ground vibration, defined as the maximum speed (measured in inches per second) at which a particle in the ground is moving relative to its inactive state. PPV is usually expressed in inches per second (in/sec).
Frequency: Hertz (Hz)	The number of complete pressure fluctuations per second above and below atmospheric pressure.

Table 3.11-2. Typical A-weighted Sound Levels

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
	—110—	Rock band
Jet flyover at 1,000 feet		
	—100—	
Gas lawnmower at 3 feet		
	—90—	
Diesel truck at 50 feet at 50 mph		Food blender at 3 feet
	—80—	Garbage disposal at 3 feet
Noisy urban area, daytime		
Gas lawnmower at 100 feet	—70—	Vacuum cleaner at 10 feet
Commercial area		Normal speech at 3 feet
Heavy traffic at 300 feet	—60—	
		Large business office
Quiet urban daytime	—50—	Dishwasher in next room
Quiet urban nighttime	—40—	Theater, large conference room (background)
Quiet suburban nighttime		
	—30—	Library
Quiet rural nighttime		Bedroom at night, concert hall (background)
	—20—	
		Broadcast/recording studio
	—10—	
	—0—	

Source: California Department of Transportation 2013.
dBA = A-weighted decibels; mph = miles per hour.

For a point source, such as a stationary compressor or a piece of construction equipment, sound attenuates (lessens in intensity), based on geometry, at a rate of 6 dB per doubling of distance. For a line source, such as free-flowing traffic on a freeway, sound attenuates at a rate of 3 dB per doubling of distance perpendicular to the source (California Department of Transportation 2013). Atmospheric conditions, including wind, temperature gradients, and humidity, can change how sound propagates over distance and can affect the level of sound received at a given location. The degree to which the ground surface absorbs acoustical energy also affects sound propagation. Sound that travels over an acoustically absorptive surface such as grass attenuates at a greater rate than sound that travels over a hard surface such as pavement. The increased attenuation is typically in the range of 1 to 2 dB per doubling of distance. Barriers such as buildings or topographic features that block the line of sight between a source and receiver also increase the attenuation of sound over distance.

Community noise environments are generally perceived as quiet when the 24-hour average noise level is below 45 dBA, moderate in the 45 to 60 dBA CNEL range, and loud above 60 dBA CNEL. Very noisy urban residential areas are usually around 70 dBA CNEL. Along major thoroughfares, roadside noise levels are typically between 65 and 75 dBA CNEL. Incremental changes of 3 to 5 dB in the existing 1-hour L_{eq}, or the CNEL, are commonly used as thresholds for an adverse community reaction to a noise increase. However, there is evidence that incremental thresholds in this range may not be sufficiently protective in areas where noise-sensitive uses are located and CNEL is already high (i.e., above 60 dBA). In these areas, limiting noise increases to 3 dB or less is recommended (Federal Transit Administration 2018).

Noise from Multiple Sources

Because the measurement of sound pressure levels in decibels is based on a logarithmic scale, decibels cannot be added or subtracted in the usual arithmetical way. Adding a new noise source to an existing noise source, with both producing noise at the same level, will not double the noise level. For instance, if two identical noise sources each produce noise levels of 50 dBA, the combined sound level would be 53 dBA, not 100 dBA. Table 3.11-3 demonstrates the result of adding noise from multiple sources.

Table 3.11-3. Rules for Combining Sound Levels by Decibel Addition

When two decibel values differ by…	…add the following amount to the higher decibel value	Example
0 to 1 dB	3 dB	60 dB + 61 dB = 64 dB
2 to 3 dB	2 dB	60 dB + 63 dB = 65 dB
4 to 9 dB	1 dB	60 dB + 69 dB = 70 dB
10 dB or more	0 dB	60 dB + 75 dB = 75 dB

Source: California Department of Transportation 2013.

Overview of Groundborne Vibration

Vibration is an oscillatory motion through a solid medium in which the motion's amplitude can be described in terms of displacement, velocity, or acceleration. Construction-related vibration primarily results from the use of impact equipment such as pile drivers (both impact and vibratory), hoe rams, vibratory compactors, and jack hammers, although heavily loaded vehicles may also result in substantial groundborne vibration. Operations-related vibration results primarily from the passing of trains, buses, and heavy trucks. Vibration is measured by peak particle velocity (PPV), defined as the maximum instantaneous peak of the vibration signal in inches per second. PPV is the metric typically used to describe vibration from sources that may result in structural stresses in buildings (Federal Transit Administration 2018). Groundborne vibration can also be quantified by the root-mean-square velocity amplitude, which is useful for assessing human annoyance. The root-mean-square amplitude is expressed in terms of VdB, a metric that is sometimes used in evaluating human annoyance resulting from groundborne vibration. Vibration traveling through typical soil conditions may be estimated at a given distance by the following formula, where LV_{ref} is the reference VdB vibration level at 25 feet and D is the distance at which the vibration level is being estimated (Federal Transit Administration 2018):

$$LV_{(distance)} = LV_{ref} - 30 \times \log (D/25)$$

The operation of heavy construction equipment, particularly pile-drivers and other heavy-duty impact devices (such as pavement breakers), creates seismic waves that radiate along the surface of the ground and downward. These surface waves can be felt as ground vibration and result in effects that range from annoyance for people to damage to structures. Groundborne vibration generally attenuates rapidly with distance from the source of the vibration. This attenuation is a complex function of how energy is imparted into the ground as well as the subsurface soil and/or rock conditions through which the vibration is traveling. Variations in geology can result in different vibration levels, with denser soils generally resulting in more rapid attenuation over a given distance. The effects of ground-borne vibration on buildings include movement of building floors, rattling of windows, shaking of items on shelves or hanging on walls, and rumbling sounds. Groundborne noise is the rumbling sound generated by the vibration of building surfaces such as floors, walls, and ceilings that radiate noise from the motion of the room surfaces. Groundborne noise can also occur because of the low-frequency components from a specific source of vibration, such as a rail line.

Vibration traveling through typical soil conditions may be estimated at a given distance by the following formula, where PPV_{ref} is the reference PPV at 25 feet (Federal Transit Administration 2018).

$$PPV = PPV_{ref} \times (25/\text{distance})^{1.5}$$

The background vibration velocity level in residential areas is usually 50 VdB or lower. The vibration velocity level of perception for humans is approximately 65 VdB, and human response to vibration is not usually substantial unless the vibration exceeds 70 VdB. Most perceptible indoor vibration is caused by sources within buildings, such as the operation of mechanical equipment, the movement of people, or the slamming of doors. Typical outdoor sources of perceptible groundborne vibration are heavy construction equipment, steel-wheeled trains, and vehicular traffic on rough roads. Groundborne noise and vibration are the most significant problems for tunnels that are under residential areas or other noise-sensitive structures.

3.11.2 Existing Conditions

Regulatory Setting

University of California

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

There are no UC regulations specifically related to noise that apply to the proposed project.

Federal

The U.S. Environmental Protection Agency (EPA) Office of Noise Abatement and Control was originally established to coordinate federal noise control activities. After its inception, the EPA's Office of Noise Abatement and Control issued the Federal Noise Control Act of 1972, establishing programs and guidelines to identify and address the effects of noise on public health, welfare, and the environment. In 1981, the EPA administrators determined that subjective issues such as noise would be better addressed at more local levels of government. Consequently, in 1982 responsibilities for regulating noise control policies were transferred to state and local governments. However, noise control guidelines and regulations contained in EPA rulings in prior years remain in place by designated federal agencies where relevant.

Federal Aviation Administration

The Federal Aviation Administration establishes 65 dBA CNEL as the maximum noise exposure limit associated with aircraft noise measured at exterior locations in noise-sensitive land uses (e.g., land uses where quiet environments are essential such as residential areas, churches, and hotels).

Federal Transit Administration Vibration Impact Criteria

The Federal Transit Administration (FTA) provides guidance on evaluating effects of vibration levels on humans from various vibration-inducing events, including construction activities and vibration from railroads. The impact criteria are based on receptor categories and frequency of events occurring in one day. Table 3.11-4 summarizes the FTA vibration impact criteria.

Table 3.11-4. Federal Transit Administration Groundborne Vibration Impact Criteria

	GBV Impact Levels (VdB re 1 micro-inch /sec)		
Land Use Category	Frequent Events[a]	Occasional Events[b]	Infrequent Events[c]
Category 1: Buildings where vibration would interfere with interior operations	65 VdB[d]	65 VdB	65 VdB
Category 2: Residences and buildings where people normally sleep	72 VdB	75 VdB	80 VdB
Category 3: Institutional land uses with primarily daytime use	75 VdB	78 VdB	80 VdB

Source: Federal Transit Administration 2018.

GBV = groundborne vibration; VdB = vibration decibels.

[a] "Frequent Events" is defined as more than 70 vibration events of the same source per day. Most rapid transit projects fall into this category.

[b] "Occasional Events" is defined as between 30 and 70 vibration events of the same source per day. Most commuter trunk lines have this many operations.

[c] "Infrequent Events" is defined as fewer than 30 vibration events of the same kind per day. This category includes most commuter rail branch lines.

[d] This criterion limit is based on levels that are acceptable for most moderately sensitive equipment such as optical microscopes. For equipment that is more sensitive, a detailed vibration analysis must be performed.

American National Standards Institute for Sleep Disturbance

For environmental noise screening purposes, the commonly accepted metric for assessing sleep disturbance is an outdoor SEL that exceeds 95 dBA. Former American National Standards Institute (ANSI) standard S12.9-2008 is used to predict awakenings from aircraft noise. ANSI standard S12.9-2008 Part 6 provides a method for predicting sleep disturbance (refer to Appendix C). It considers awakenings, expressed as either a percentage or the number of people awakened, associated with the indoor A-weighted sound exposure level. With this method, an indoor noise level of SEL 83 dBA would result in an awakening occurrence of 8 percent. Assuming a typical outdoor-to-indoor noise level reduction of 12 dB with open windows, this would result in an outdoor sleep disturbance criterion of SEL 95 dBA.

State

The State of California has adopted noise standards in areas of regulation not preempted by the federal government. State standards regulate noise levels of motor vehicles, sound transmission through buildings, occupational noise control, and noise insulation.

California Code of Regulations

The California Noise Insulation Standards found in the California Code of Regulations, Title 24 Section 1207.4, establish requirements for new residential units that may be subject to relatively high levels of exterior noise. In this case, the noise insulation criterion is 45 dB L_{dn}/CNEL inside noise-sensitive spaces.

California Department of Transportation

The California Department of Transportation (Caltrans) provides guidelines regarding vibration associated with construction and operation of transportation infrastructure. Table 3.11-5 provides Caltrans' vibration guidelines for potential damage to different types of structures.

Table 3.11-5. Caltrans Vibration Guidelines for Potential Damage to Structures

	Maximum Peak Particle Velocity (PPV, in/sec)	
Structure Type and Condition	Transient Sources	Continuous/Frequent Intermittent Sources
Extremely fragile historic buildings	0.12	0.08
Fragile buildings	0.2	0.1
Historic and some old buildings	0.5	0.25
Older residential structures	0.5	0.3
New residential structures	1.0	0.5
Modern industrial/commercial buildings	2.0	0.5

Source: California Department of Transportation 2020.

Note: Transient sources create a single, isolated vibration event (e.g., blasting or drop balls). Continuous/frequent intermittent sources include impact pile drivers, pogo-stick compactors, crack-and-seat equipment, vibratory pile drivers, and vibratory compaction equipment.

PPV = peak particle velocity; in/sec = inches per second.

Groundborne vibration and noise can also disturb people, who are generally more sensitive to vibration during nighttime hours when sleeping than during daytime waking hours. Numerous studies have been conducted to characterize the human response to vibration. Table 3.11-6 provides guidelines from Caltrans regarding vibration annoyance potential (expressed here as PPV).

Table 3.11-6. Caltrans Guidelines for Vibration Annoyance Potential

	Maximum PPV (in/sec)	
Human Response	Transient Sources	Continuous/Frequent Intermittent Sources
Barely perceptible	0.04	0.01
Distinctly perceptible	0.25	0.04
Strongly perceptible	0.9	0.10
Severe	2.0	0.4

Source: California Department of Transportation 2020.

Note: Transient sources create a single, isolated vibration event (e.g., blasting or drop balls). Continuous/frequent intermittent sources include impact pile drivers, pogo-stick compactors, crack-and-seat equipment, vibratory pile drivers, and vibratory compaction equipment.

PPV = peak particle velocity; in/sec = inches per second.

California Department of Transportation Aeronautics Division

The Aeronautics Division of Caltrans is responsible for regulating aircraft noise at the state level. According to Caltrans standards (California Code of Regulations, Title 21, Division 2.5, Chapter 6), annualized aircraft noise is considered compatible with all land uses, provided it has a CNEL lower than 65 dBA.

State Aeronautics Act

The State Aeronautics Act (Public Utilities Code Section 21001 *et seq*.) covers a range of aeronautical issues governed by the State of California. With respect to noise issues, the act references the California Airport Noise Regulations as well as the Caltrans *Airport Land Use Planning Handbook.* The act specifically exempts individual emergency aircraft flights from restrictions regarding time of departure and arrival, as described below. Section 21662.4(a) of the State Aeronautics Act, Emergency Flights for Medical Purposes, states the following.

> Emergency aircraft flights for medical purposes by law enforcement, firefighting, military, or other persons who provide emergency flights for medical purposes are exempt from local ordinances adopted by a city, county, or city and county, whether general law or chartered, that restrict flight departures and arrivals to particular hours of the day or night, that restrict the departure or arrival of aircraft based upon the aircrafts noise level, or that restrict the operation of certain types of aircraft.

"Emergency flights for medical purposes" are defined as those flights in which undue delay would threaten a patient's life. "Emergency aircraft flights for medical purposes" include, but are not limited to, flights for the transportation of any of the following.

1. Patients accompanied by licensed or certificated medical attendants such as paramedics, nurses, physicians, and respiratory therapists.
2. Surgical transplant teams for the purpose of procuring human organs for reimplantation in recipients.
3. Organ procurement agency coordinators responding to a potential donor.
4. Temporarily viable human organs such as a heart, liver, lungs, kidneys, and pancreas, and human tissue, blood, or blood components.

5. Human tissue and blood samples for clinical testing to determine compatibility between a donor and a recipient.
6. Mechanical adjuncts or biological replacements for human organs.
7. Medical equipment and supplies.
8. Aircraft or equipment used during a medical emergency, or emergency personnel and first responders involved in treating the medical emergency, for the purpose of returning to its base of operation.

"Emergency aircraft flights for medical purposes" do not include the transportation of medical personnel to attend seminars, conferences, or speaking appearances in which undue delay would not jeopardize any patient's medical condition (Cal. Leg. Code Chapter 151 § 21662.4).

Regional and Local

The Sacramento Campus is a UC campus that conducts work within the University's mission on land that is owned or controlled by The Board of Regents of the UC. As a state entity, the UC is exempt under the state constitution from compliance with local land use regulations, including general plans, zoning, and ordinances whenever using property under its control in furtherance of its educational mission. However, the UC seeks to develop its property in a manner that minimizes potential conflicts with the land use policies and plans of local jurisdictions to the extent feasible. The Sacramento Campus is in the city of Sacramento. The following subsection summarizes policies contained in Sacramento's general plan regarding noise, as well as the City of Sacramento Noise Ordinance.

City of Sacramento General Plan

The most recent update to *Sacramento 2035 General Plan* was adopted in March 2015. The goals and policies related to noise are intended to help control and reduce environmental noise in the city. The general plan also includes land use compatibility guidelines to help direct new development to occur only in areas with noise levels that are suitable for the types of development proposed. The compatible noise level is 60 dBA L_{dn} for single-family residential uses and is 65 dBA L_{dn} for multi-family residential and hotel/motel uses. Schools, hospitals, and nursing homes are considered compatible with exterior noise levels of up to 70 dBA L_{dn}. Refer to Table 3.11-7 for the exterior noise compatibility standards for all land uses in the city. The Sacramento general plan noise policies pertaining to the project include the following (City of Sacramento 2015).

Policy EC 3.1.1: Exterior Noise Standards. The City shall require noise mitigation for all development where the projected exterior noise levels exceed those shown in Table EC 1 [Table 3.11-7, General Plan Exterior Noise Compatibility Standards for Various Land Uses, below], to the extent feasible.

Policy EC 3.1.2: Exterior Incremental Noise Standards. The City shall require noise mitigation for all development that increases existing noise levels by more than the allowable increment shown in Table EC 2 [Table 3.11-8, General Plan Exterior Incremental Noise Impact Standards for Noise-Sensitive Uses (dB(A)), below], to the extent feasible.

Policy EC 3.1.3: Interior Noise Standards. The City shall require new development to include noise mitigation to assure acceptable interior noise levels appropriate to the land use type: 45 dB(A) L_{dn} for residential, transient lodgings, hospitals, nursing homes and other uses where people normally sleep; and 45 dB(A) L_{dn} (peak hour) for office buildings and similar uses.

Policy EC 3.1.4: Interior Noise Review for Multiple, Loud Short-Term Events. In cases where new development is proposed in areas subject to frequent, high-noise events (such as aircraft over-flights, or train and truck pass-bys), the City shall evaluate noise impacts on any sensitive receptors from such events when considering whether to approve the development proposal, taking into account potential for sleep disturbance, undue annoyance, and interruption in conversation, to ensure that the proposed development is compatible within the context of its surroundings.

Policy EC 3.1.5: Interior Vibration Standards. The City shall require construction projects anticipated to generate significant amount of vibration to ensure acceptable interior vibration levels at nearby residential and commercial uses based on the current City or Federal Transit Administration (FTA) criteria.

Policy EC 3.1.7: Vibration. The City shall require an assessment of the damage potential of vibration-induced construction activities, highways, and rail lines in close proximity to historic buildings and archaeological sites and require all feasible mitigation measures be implemented to ensure no damage would occur.

Policy EC 3.1.8: Operational Noise. The City shall require mixed-use, commercial, and industrial projects to mitigate operational noise impacts to adjoining sensitive uses when operational noise thresholds are exceeded.

Policy EC 3.1.10: Construction Noise. The City shall require development projects subject to discretionary approval to assess potential construction noise impacts on nearby sensitive uses and to minimize impacts on these uses, to the extent feasible. (City of Sacramento 2015)

Table 3.11-7. General Plan Exterior Noise Compatibility Standards for Various Land Uses

Land Use Type	Highest Level of Noise Exposure regarded as “Normally Acceptable”[a] (L_{dn}[b] or CNEL[c])
Residential—Low Density Single Family, Duplex, Mobile Homes	60 dBA[d, e]
Residential—Multi-family[f]	65 dBA
Urban Residential Infill[g] and Mixed-Use Projects[h, i]	70 dBA
Transient Lodging—Motels, Hotels	65 dBA
Schools, Libraries, Churches, Hospitals, Nursing Homes	70 dBA
Auditoriums, Concert Halls, Amphitheaters	Mitigation based on site-specific study
Sports Arena, Outdoor Spectator Sports	Mitigation based on site-specific study
Playgrounds, Neighborhood Parks	70 dBA
Golf Courses, Riding Stables, Water Recreation, Cemeteries	75 dBA
Office Buildings—Business, Commercial and Professional	70 dBA
Industrial, Manufacturing, Utilities, Agriculture	75 dBA

Source: City of Sacramento 2015.

[a] As defined in the Governor’s Office of Planning and Research Guidelines, “Normally Acceptable” means that the “specified land use is satisfactory, based upon the assumption that any building involved is of normal conventional construction, without any special noise insulation requirements.”

[b] Ldn, or day night average level, is an average 24-hour noise measurement that factors in day and night noise levels.

[c] CNEL, or community noise equivalent level, measurements are a weighted average of sound levels gathered throughout a 24-hour period.

[d] Applies to the primary open space area of a detached single-family home, duplex, or mobile home, which is typically the backyard or fenced side yard, as measured from the center of the primary open space area (not the property line). This standard does not apply to secondary open space areas, such as front yards, balconies, stoops, and porches.

[e] dBA, or A-weighted decibel scale, is a measurement of noise levels.

[f] Applies to the primary open space areas of townhomes and multi-family apartments or condominiums (private year yards for townhomes; common courtyards, roof gardens, or gathering spaces for multi-family developments). These standards do not apply to balconies or small attached patios in multistoried multi-family structures.

[g] With land use designations of Central Business District, Urban Neighborhood (Low, Medium, or High) Urban Center (Low or High), Urban Corridor (Low or High).

h All mixed-use projects located anywhere in the city of Sacramento.

i See notes d and g above for definition of primary open space areas for single-family and multi-family developments.

Table 3.11-8. General Plan Exterior Incremental Noise Impact Standards for Noise-Sensitive Uses (dBA)

Residences and Buildings Where People Normally Sleep[a]		Institutional Land Uses with Primarily Daytime and Evening Uses[b]	
Existing L_{dn}	Allowable Noise Increment	Existing Peak Hour L_{eq}	Allowable Noise Increment
45	8	45	12
50	5	50	9
55	3	55	6
60	2	60	5
65	1	65	3
70	1	70	3
75	0	75	1
80	0	80	0

Source: City of Sacramento 2015.

dBA = A-weighted decibel; L_{dn} = day night average level; L_{eq} = equivalent sound level.

[a] This category includes homes, hospitals, and hotels where a nighttime sensitivity to noise is assumed to be of utmost importance.

[b] This category includes schools, libraries, theaters, and churches where it is important to avoid interference with such activities as speech, meditation, and concentration on reading material.

Sacramento City Code Noise Ordinance

Chapter 8.68 of the Sacramento City Code governs noise and vibration within the city. Noise thresholds from the Sacramento City Code that are relevant to the proposed project are presented below.

8.68.060 Exterior Noise Standards

A. The following noise standards unless otherwise specifically indicated in this article shall apply to all agricultural and residential properties.

   1. From 7 AM to 10 PM the exterior noise standard shall be 55 dBA.

   2. From 10 PM to 7 AM the exterior noise standard shall be 50 dBA.

B. It is unlawful for any person at any location to create any noise which causes the noise levels when measured on agricultural or residential property to exceed for the duration of time set forth following [shown in Table 3.11-9], the specified exterior noise standards in any 1 hour by:

Table 3.11-9. City of Sacramento Noise Ordinance Cumulative Intrusive Sound Limits

Cumulative Duration of the Intrusive Sound	Allowable Decibels
Cumulative period of 30 minutes per hour	0
Cumulative period of 15 minutes per hour	+5
Cumulative period of 5 minutes per hour	+10
Cumulative period of 1 minute per hour	+15
Level not to be exceeded for any time per hour	+20

Source: Sacramento City Code, Chapter 8.68, Section 8.68.060, 2009.

C. Each of the noise limits specified in subsection B of this section shall be reduced by five dBA for impulsive or simple tone noises, or for noises consisting of speech or music.

D. If the ambient noise level exceeds that permitted by any of the first four noise limit categories specified in subsection B of this section, the allowable noise limit shall be increased in five dBA increments in each category to encompass the ambient noise level. If the ambient noise level exceeds the fifth noise level category, the maximum ambient noise level shall be the noise limit for that category. (Prior code § 66.02.201)

8.68.080 Exemptions

The following applicable activities shall be exempted from the provisions of this chapter:

A. School bands, school athletic and school entertainment events. School entertainment events shall not include events sponsored by student organizations.

B. Activities conducted on parks and public playgrounds, provided such parks and public playgrounds are owned and operated by a public entity.

C. Any mechanical device, apparatus or equipment related to or connected with emergency activities or emergency work.

D. Noise sources due to the erection (including excavation), demolition, alteration or repair of any building or structure between the hours of 7 AM and 6 PM, on Monday, Tuesday, Wednesday, Thursday, Friday and Saturday, and between 9 AM and 6 PM on Sunday; provided, however, that the operation of an internal combustion engine shall not be exempt pursuant to this subsection if such engine is not equipped with suitable exhaust and intake silencers which are in good working order. The director of building inspections may permit work to be done during the hours not exempt by this subsection in the case of urgent necessity and in the interest of public health and welfare for a period not to exceed three days. Application for this exemption may be made in conjunction with the application for the work permit or during progress of the work.

G. Noise sources associated with maintenance of street trees and residential area property provided said activities take place between the hours of 7 AM and 6 PM.

8.68.100 Schools, hospitals and churches

It is unlawful for any person to create any noise which causes the noise level at any school, hospital or church while the same is in use to exceed the noise standards specified in Section 8.68.060 of this chapter or to create any noise which unreasonably interferes with the use of such institution or unreasonably disturbs or annoys patients in the hospital. In any disputed case, interfering noise which is 10 dBA or more, greater than the ambient noise level at the building, shall be deemed excessive and unlawful.

8.68.110 Residential pumps, fans and air conditioners

A. It is unlawful for any person to operate any residential fans, air conditioners, stationary pumps, stationary cooling towers, stationary compressors, similar mechanical device or any combination thereof installed after the effective date of this chapter in any manner so as to create any noise which would cause the maximum noise level to exceed:

1. 60 dBA at any point at least one foot inside the property line of the affected residential or agricultural property and three to five feet above ground level;
2. 55 dBA in the center of a neighboring patio three to five feet above ground level;
3. 55 dBA outside of the neighboring living area window nearest the equipment location, measurements shall be taken with the microphone not more than three feet from the window opening but at least three feet from any other surface.

8.68.160 Outdoor recreational activities

A. It is unlawful for any person to conduct, or permit to be conducted on its property, any outdoor recreational activity, including, but not limited to, athletic events, sporting events, entertainment events and concerts at which amplified noise, amplified music, or amplified sound exceeding the following levels is created: ninety-six (96) dBA L_{eq} during the months of September and October; ninety-eight (98) dBA L_{eq} during the months of November through August. The noise, music or sound shall be measured at the sound booth or other reasonable location which is not more than one hundred fifty (150) feet from the source. Every person conducting, or permitting to be conducted, on its property, any outdoor recreational activity shall, upon request, permit the chief of the environmental health division, Sacramento environmental management department, or the chief's designee, to place a sound level monitor (with or without an accompanying staff member) at a location described in this subsection to monitor sound levels.

B. Time Limits.

1. Sunday through Thursday. Except as provided in subsection (B)(2) of this section, the amplified sound associated with the outdoor activities described in subsection A of this section shall commence not earlier than nine a.m. and shall be terminated no later than ten p.m. on Sunday, Monday, Tuesday, Wednesday and Thursday.
2. Friday, Saturday and the Day Before Specified Holidays. The amplified sound associated with the outdoor activities described in subsection A of this section shall commence not earlier than nine a.m. and shall be terminated no later than eleven p.m. on Friday, Saturday and the day before the specified holidays listed below. For purposes of this provision, the specified holidays are the holidays specified in Government Code Sections 6700 and 6701, as those sections may be amended from time to time. (Prior code § 66.02.211)

8.68.200 Specific unlawful noises

Notwithstanding any other provision of the chapter to the contrary, the following acts, among others, are declared to be loud, disturbing, and unnecessary noises in violation of this chapter, but such enumeration shall not be deemed to be exclusive, namely:

A. Pile Drivers, Hammers, Etc. The operation between the hours of ten p.m. and seven a.m. of any pile driver, steam shovel, pneumatic hammer, derrick, steam or electric hoist or other appliance, the use of which is attended by loud or unusual noise.

B. Tools. The use or operation between the hours of ten p.m. and seven a.m. of any power saw, power planer, or other powered tool or appliance or saw or hammer, or other tool, so as to disturb the quiet, comfort, or repose of persons in any dwelling, hotel, motel, apartment, or other type of residence, or of any person in the vicinity.

Environmental Setting

Project Site and Surrounding Land Uses

The UC Davis Sacramento Campus is approximately 146 acres and is approximately 2.5 miles southeast of downtown Sacramento and 17 miles east of the UC Davis main campus in Davis. The Sacramento Campus is bounded by V Street on the north, Stockton Boulevard on the west, Broadway to the south, and a residential neighborhood to the east (Figures 2-4a and 2-4b). The proposed project is located in the northern portion of the campus, south of V Street, north of X Street, and west of 45th Street. Onsite land uses include hospital, research, and limited commercial uses, and nearby offsite land uses include single-family residential land uses located north of the project site.

Existing Noise Sources

Major and local roadways in the project area, including Stockton Boulevard, V Street, and the nearby freeway, contribute to the overall ambient noise level in the project vicinity. In addition, the project site is currently exposed to noise from helicopter takeoff and landing operations associated with the transport of patients requiring urgent care. Helicopters arriving at the Sacramento Campus come from several different agencies and private services, as the UC Davis Medical Center does not operate its own helicopter service. The emergency helipad is on the rooftop of the 13-story Davis Tower. Other sources of noise sources in the project area include loading dock activity, landscaping equipment, and other mechanical equipment (e.g., HVAC equipment) in the project vicinity.

Characterization of Ambient Noise Levels

Project Field Survey—Ambient Noise Levels

To characterize and estimate existing ambient noise levels in the project area, a noise field survey was conducted at the project site. Long-term (approximately 48-hour) noise measurements were conducted in locations throughout the neighborhood north of the project site. Measured ambient noise levels in the community ranged from 63 to 71 dBA L_{dn}. Measured long-term (24-hour) noise measurements from Tuesday, March 2, through Thursday, March 4, 2021, are summarized in Table 3.11-10, below. The measurement locations were selected to estimate the noise environment at noise-sensitive land uses near the project site and along the perimeter of the project site. Urban noise sources (e.g., traffic), excluding emergency helicopter noise, dominate the noise environment in this area. Refer to Figure 3.11-1 for a map of the noise measurement locations. Refer to Appendix H for the complete noise measurement data.

Table 3.11-10. Long-Term Ambient Noise Measurement Results

Measurement Number	Measurement Location	Date and Time	Measured L_{dn} Noise Level Tuesday to Wednesday (3/2/2021 to 3/3/2021)	Measured L_{dn} Noise Level Wednesday to Thursday (3/3/2021 to 3/4/2021)
LT-1	At the intersection of 42nd Street and U Street	Start: Tuesday 3/2/2021 at 10:10 a.m. End: Thursday 3/4/2021 at 12:40 p.m.	67.8	63.2
LT-2	Along 45th Street south of U Street and north of V Street	Start: Tuesday 3/2/2021 at 10:15 a.m. End: Thursday 3/4/2021 at 12:45 p.m.	66.2	62.9
LT-3	Along V Street between 42nd Street and 45th Street	Start: Tuesday 3/2/2021 at 10:40 a.m. End: Thursday 3/4/2021 at 1:00 p.m.	71.0	68.0
LT-4	Along 48th Street south of U Street and north of V Street	Start: Tuesday 3/2/2021 at 10:25 a.m. End: Thursday 3/4/2021 at 12:55 a.m.	67.2	63.2
LT-5	At the intersection of 45th Street and V Street on the south side of V Street	Start: Tuesday 3/2/2021 at 10:20 a.m. End: Thursday 3/4/2021 at 12:50 p.m.	69.1	65.8

L_{dn}; day-night sound level LT = long-term (24-hour/multi-day) ambient noise measurement.

Project Field Survey—Estimated Helicopter Noise Levels

To estimate existing noise levels from helicopter activity at the hospital, short-term noise measurements were conducted on February 12, 2021, at the Sacramento Campus for comparison with, and validation of, the computer helicopter noise modeling. Attended Type I sound level meters were positioned at Locations 1 and 2, as shown in Figure 3.11-2. Figure 3.11-3 shows the helicopter approach and departure flight paths under existing conditions, which were used for the test noise measurements (note that future flight paths are shown in Figure 3.11-4). The helicopter tests were conducted with an Airbus H135 helicopter.

The helicopter noise tests consisted of eight separate operations to simulate existing conditions at the hospital based on the primarily used approach and departure paths under existing conditions (Buettner pers. comm. [a]). Each run was duplicated to account for variability in helicopter maneuvering.

- Test 1—Approach, landing, idling for 8 minutes (Buettner pers. comm. [b]), and departure 3 (east).
- Test 2—Same as Test 1.
- Test 3—Approach, touch and go, and departure 2 (south).

- Test 4—Same as Test 3.
- Test 5—Approach, touch and go, and departure 1 (west).
- Test 6—Same as Test 5.
- Test 7—Approach directly from the north, touch and go, and departure (directly to the north).
- Test 8—Same as Test 7.

SEL data were determined from the eight tests at Locations 1 and 2.

Tests 1–8 were acoustically modeled using the Computer-Aided Noise Abatement (CadnaA) model, an internationally accepted environmental noise software application. Flight paths, helicopter altitudes, helicopter noise data, and relevant site parameters were modeled to compare measured results against modeled results. Table 3.11-11 shows the model validation results.

As shown in Table 3.11-11, the mean difference in predicted (modeled) SEL vs. measured SEL was 0.1 dBA. Noise modeling is considered valid when the mean difference is within the range of ±3 dBA. Statistical analyses performed on the difference data shows that the 90 percent confidence limits are within ±1 dBA of the mean 0.1 dBA. As expected, the helicopter noise measurements themselves have a similar variance.

The conclusion of this validation effort is that the CadnaA helicopter noise modeling is in agreement with actual helicopter operations at the site; therefore, various scenarios, including operations associated with the new helipads, can be modeled with reasonable accuracy.

Table 3.11-11. Helicopter Noise Measurements versus Acoustically Modeled Measurements (sound exposure level in dBA)

Location	Test Number[a]	Approach Direction	Idle?	Departure Direction	CadnaA SEL	Measured SEL	Difference between Measurement and Model	Measurement Variance
1	1	Standard/Stockton	Yes	3/East	95.8	95.4	0.4	-0.4
1	2	Standard/Stockton	Yes	3/East	95.8	95.9	-0.1	
1	3	Standard/Stockton	No	2/South	95.7	95.5	0.2	2.0
1	4	Standard/Stockton	No	2/South	95.7	93.5	2.2	
1	5	Standard/Stockton	No	1/West	95.7	92.3	3.4	1.2
1	6	Standard/Stockton	No	1/West	95.8	91.2	4.6	
1	7	From North	No	North	96.9	99.6	-2.7	-0.6
1	8	From North	No	North	96.9	100.2	-3.3	
2	1	Standard/Stockton	Yes	3/East	97.0	98.5	-1.5	-0.5
2	2	Standard/Stockton	Yes	3/East	97.0	98.9	-1.9	
2	3	Standard/Stockton	No	2/South	96.6	96.3	0.3	0.9
2	4	Standard/Stockton	No	2/South	96.6	95.4	1.2	
2	5	Standard/Stockton	No	1/West	96.5	95.3	1.2	1.0
2	6	Standard/Stockton	No	1/West	96.5	94.3	2.2	
2	7	From North	No	North	90.7	93.1	-2.4	1.1
2	8	From North	No	North	90.7	92.0	-1.3	
						Mean	0.1	0.6
						Alpha	0.1	0.1
						S.D.	2.43	0.98
						Samples	16	8
						90% Confidence	1.00	0.57

Alpha = significance level; S.D. = standard deviation.

[a] Test 1—Approach, landing, idling for 8 minutes (Buettner pers. comm. [b]), and departure 3 (east); Test 2—Same as Test 1; Test 3—Approach, touch and go, and departure 2 (south); Test 4—Same as Test 3; Test 5—Approach, touch and go, and departure 1 (west); Test 6—Same as Test 5; Test 7—Approach directly from the north, touch and go, and departure (directly to the north); Test 8—Same as Test 7.

2010 LRDP Field Survey

In addition to the noise measurements taken in 2021 for the proposed project, the 2010 LRDP EIR included ambient noise levels. Because these measurements included different locations than the Project measurements (including locations near the existing CUP), the measurement data from the 2010 field survey is included below.

Noise monitoring was conducted by Illingworth & Rodkin, Inc., on January 27 and 28, 2010. Refer to Figure 3.11-5 for the noise measurement locations. Short-term measurements (15 minutes in duration) were taken at 10 locations and unattended long-term (24 hours in duration) measurements were taken at 3 locations (University of California, Davis 2010). The off-campus long-term noise measurement locations were selected to be representative of noise-sensitive residential receptors at the campus periphery. LT-1 is located near the proposed project site. On-campus long-term noise measurements were conducted near the Central Utility Plant (CUP) in 2010 to document noise emissions from this facility. Measured data reported in the 2010 environmental noise assessment are shown in Table 3.11-12 and Table 3.11-13.

As shown in Table 3.11-13 noise near the CUP (ST-5a to ST-5f) was measured to be approximately 68 dBA at 100 feet from the western face of the cooling tower structure and between 54 and 59 dBA at the sidewalk setback surrounding the CUP building (ST-b to ST-e).

Table 3.11-12. 2010 LRDP Long-Term Noise Measurement Data Summary

2010 LRDP Site ID	Measurement Location	Measurement Date	24-hour L_{eq} (dBA)	24-hour L_{dn} (dBA)
LT-1	Utility pole at the edge of the single-family residential area north of V Street opposite the hospital emergency/loading entrance	1/27/10–1/28/10	66	67
LT-2	Utility pole at residential property line at end of Y Street (eastern edge of the campus)	1/27/10–1/28/10	59	61
LT-3	Light standard in residential area at the western edge of the campus (approximately 20 feet from the centerline of Y Street and 200 feet from the centerline of Stockton Boulevard)	1/27/10–1/28/10	62	63

Source: University of California, Davis 2010.
dBA = A-weighted decibels; L_{dn} = day night average level; L_{eq} = equivalent sound level.

Table 3.11-13. 2010 LRDP Short-Term Noise Measurement Data Summary

2010 LRDP Site ID	Measurement Location	Measurement Date	Noise Sources	L_{eq}	L_{dn}
ST-1	V Street near Emergency Room	1/28/10	Traffic	52	53
ST-2	Residence at 2nd Avenue Opposite MIND Institute Lab and Clinic	1/28/10	Traffic	53	60
ST-3	Broadway Senior Center	1/28/10	Traffic	61	68
ST-4	Residential area near 2nd Avenue and Stockton Boulevard	1/28/10	Traffic	62	67
ST-5a	Perimeter of CUP; Near Facility Support Services Building	1/28/10	CUP/mechanical equipment	68	68
ST-5b	Perimeter of CUP	1/28/10	CUP/mechanical equipment	54	59
ST-5c	Perimeter of CUP	1/28/10	CUP/mechanical equipment	55	59
ST-5d	Perimeter of CUP	1/28/10	CUP/mechanical equipment	56	60
ST-5e	Perimeter of CUP	1/28/10	CUP/mechanical equipment	59	61
ST-5f	Perimeter of CUP	1/28/10	CUP/mechanical equipment	59	61

Source: University of California, Davis 2010.
CUP = Central Utility Plant; L_{dn} = day night average level; L_{eq} = equivalent sound level.

Estimated Existing Noise Levels from Traffic Noise Modeling

Traffic noise modeling can also help estimate existing ambient noise levels in the vicinity of a project, because traffic noise is often the dominating noise source affecting ambient levels in urban environments. In the Sacramento Campus vicinity, other noise sources (such as vehicles entering or leaving the hospital emergency entrances/exits) also influence overall ambient noise levels. However, to help estimate existing ambient noise levels on and around the campus, existing traffic noise levels in the area were modeled for Baseline (2019) conditions using a spreadsheet model based on the Federal Highway Administration (FHWA) Traffic Noise Model (TNM) and provided traffic data. Average daily traffic (ADT) volumes, posted speeds, and heavy truck percentages were provided by the project traffic engineer (Behrens pers. comm. [a]). Refer to Table 3.11-14 for modeled existing noise levels along roadway segments in the Sacramento Campus area.

Table 3.11-14. Modeled Existing Traffic Noise Levels in Project Vicinity

Roadway	Segment	Existing Noise Level (dBA L_{dn})[a]
Stockton Boulevard	T Street to 39th Street/Miller Way	69.3
Stockton Boulevard	39th Street/Miller Way to X Street	69.6
Stockton Boulevard	X Street to 2nd Avenue	68.4
Stockton Boulevard	2nd Avenue to 3rd Avenue	68.9
Stockton Boulevard	3rd Avenue to Broadway	68.9
Stockton Boulevard	South of Broadway	69.7
Broadway	West of Stockton Boulevard	68.6
Broadway	Stockton Boulevard to 49th Street	67.1
Broadway	49th Street to 50th Street	65.9
Broadway	50th Street to 59th Street	66.8
Broadway	East of 59th Street	66.4
V Street	West of 49th Street	58.3
V Street	East of 49th Street	59.7
50th Street	North of Broadway	62.3
2nd Avenue	West of Stockton Boulevard	61.3
2nd Avenue	East of Stockton Boulevard	63.0

L_{dn} = day night average level.
[a] Noise levels estimated at approximately 35 feet from roadway centerline.

As shown in Table 3.11-14, modeled traffic noise levels along roadway segments near the project vary, with noise levels of between 68.4 and 69.7 dBA L_{dn} along Stockton Boulevard, noise levels of between 65.9 and 68.6 dBA L_{dn} along Broadway, and noise levels of 61.3 and 63.0 along 2nd Avenue, east and west of Stockton Boulevard. Existing noise levels along 50th Street north of Broadway were modeled to be approximately 62.3 dBA L_{dn}, and noise levels along V Street, a primarily residential street north of the campus, were modeled to be between 58.3 and 59.7 dBA L_{dn}.

3.11.3 Environmental Impacts

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

Methods for Analysis

Potential noise and vibration effects resulting from construction and operation of the California Hospital Tower Project were estimated using standard and accepted modeling techniques and information provided by UC Davis.

Construction Noise

Construction and demolition noise levels resulting from the California Hospital Tower Project were estimated based on information provided by UC Davis and the project engineer and based on reference emission levels and usage factors from the FHWA *Road Construction Noise Model User's Guide* (Federal Highway Administration 2006).

Note that noise sources due to the construction (including excavation), demolition, alteration, or repair of any building or structure between the hours of 7:00 a.m. and 6:00 p.m., on Monday through Saturday, and between 9:00 a.m. and 6:00 p.m. on Sunday are exempt from the numerical standards for noise in the city of Sacramento, provided that the operation of an internal combustion engine is equipped with suitable exhaust and that intake silencers are in good working order. Most construction activities for the California Hospital Tower Project would occur during these hours. However, note that the duration of project construction would be over 10 years. Therefore, primarily as a result of the duration of proposed construction, noise from project construction is analyzed to determine if a 10 dB increase in noise, typically perceived as a doubling of loudness, would occur as a result of construction activities.

Estimated reasonable worst-case noise levels from phases with the highest potential to generate excessive construction noise were modeled based on the methodology for the analysis of construction noise contained in the FTA's *Transit Noise and Vibration Impact Assessment Manual* (Federal Transit Administration 2018) with a slight modification to make the modeling results more conservative. Per the FTA recommendation, estimated noise levels at the nearest sensitive receptors resulting from simultaneous operation of the two loudest pieces of construction equipment are modeled. Modeling for the proposed project includes the three loudest pieces of construction equipment proposed for use during each phase. Note that this provides a reasonably conservative analysis because noise levels at a given location are dominated by the loudest and closest sources. Furthermore, the overall combined noise level from multiple noise sources with noise levels that are more than 10 dB different is equal to the loudest individual noise source (e.g., 60 dB + 75 dB = 75 dB). Therefore, assuming the three loudest pieces of equipment proposed for a phase are all located immediately adjacent to each other on the northern perimeter of the site, closest to receptors, provides a conservative analysis.

In addition, some construction would be required to take place outside of daytime hours when nearby residences and sensitive uses would be considered more sensitive to noise. Therefore, potential for construction noise impacts to occur during non-exempt hours is also considered in the analysis. Outside of the daytime hours when construction noise is typically exempt, construction noise in Sacramento is limited by the Exterior Noise Standards contained in the Sacramento City Code (55 dBA from 7:00 a.m. to 10:00 p.m. and 50 dBA from 10:00 p.m. to 7:00 a.m.). Therefore, construction noise levels expected to occur outside of the daytime (typically exempt) hours were estimated at the nearest residence, and compared to the 55 dBA limit between the hours of 6:00 p.m. and 10:00 p.m. and the 50 dBA limit between the hours of 10:00 p.m. and 7:00 a.m.

Construction Haul Truck Noise

Construction haul truck noise was also analyzed for the project. The Sacramento City Code does not include a specific threshold that pertains to construction haul truck noise. Therefore, haul truck noise was assessed by modeling, comparing Baseline (2019) traffic noise levels and Baseline (2019) plus haul truck traffic noise levels to estimate noise increases resulting from hauling. Impacts are identified if project-associated haul truck trips on any roadway segments with residential uses in the project area would result in a 3 dB increase (considered barely audible) in noise. UC Davis provided the anticipated number of worst-case daily construction vendor and haul truck trips as well as haul route information for these trips.

Based on provided project construction information, project construction would involve up to 300 one-way haul or vendor truck trips per worst-case day. Note that during many construction days, there would be fewer truck trips than 300. With regard to the haul route, trucks would travel south on Stockton Boulevard, turn east on X Street, turn north on 45th Street, turn west onto Doctors Way, and then exit the project site along Colonial Way to Stockton Boulevard. The temporary addition of up to 300 one-way haul trucks per day on Stockton Boulevard north of Colonial Way and on Colonial Way, and up to 150 one-way haul truck trips on Stockton Boulevard between Colonial Way and X Street (only trucks traveling to the site would use this segment) was analyzed to determine if hauling activity would result in substantial increases to the ambient noise levels.

Operational Noise

The project would result in increases in operational noise because the project would generate vehicular traffic and require the installation and operation of noise-generating equipment (including chillers and emergency generators at the CUP). In addition, the project includes an outdoor roof garden, where events using amplified music or speech may occasionally occur, and a new parking structure. Each of these sources, as well as the methodology for how they are analyzed, is described below.

Traffic Noise

To determine whether the project would result in a substantial permanent increase in traffic noise levels, vehicular traffic noise in the project vicinity was modeled by ADT volumes along roadway segments and vehicle mix assumptions (i.e., the proportion of heavy vehicles on a given segment) provided by the project traffic engineer (Behrens pers. comm. [a]). Refer to Appendix H for the traffic noise modeling input information. For vehicular traffic noise impacts, the following thresholds were applied to determine whether development under the project would result in significant traffic noise impacts: (1) in places where the Baseline (2019) and resulting Baseline (2019) Plus Project noise levels do not exceed the “Normally Acceptable” land use compatibility standard for the types of land uses located along the roadway segment, an increase of more than 5 dB would be a significant vehicular traffic noise increase, and (2) in places where the Baseline (2019) or resulting Baseline (2019) Plus Project conditions noise levels *do exceed* the “Normally Acceptable” level, any noise increase greater than 3 dB would be a significant vehicular traffic noise increase.

Traffic noise modeling for Baseline (2019) and Baseline (2019) Plus Project conditions was conducted using a spreadsheet based on the FHWA Traffic Noise Model, version 2.5. This spreadsheet calculates the vehicular traffic noise level at a fixed distance, and considers the vehicular traffic volume, roadway speed, and vehicle mix that is predicted to occur under each condition. For the assessment of project-level traffic noise impacts, ADT volumes were used to determine if significant traffic noise increases would result from the project.

Emergency Generator Noise

Under existing conditions, the CUP includes five diesel emergency generators that are tested for approximately 30 minutes at a time once per month. One new 3,000 kW generator and two new 2,500 kW emergency diesel generators would be installed at the CUP as a part of the California Hospital Tower Project by 2030 to support the project and other campus growth. Specifically, these generators would be enclosed and located within the existing CUP site (Davis pers. comm.).

Although the exact make and models of generators for the project have not yet been selected, the potential for noise from emergency generator testing to exceed the City's daytime and nighttime limits of 55 dBA and 50 dBA at the nearest noise sensitive receptor was analyzed. Source data from an example generator of similar size and capacity to those proposed was used to estimate noise levels. Since attenuation features such as enclosures and/or silencers are not known at this time, this analysis assumes no reduction in noise based on the incorporation of silencers/mufflers. Since the generators are located inside a building, an assumption of 10 dB of reduction is applied for attenuation from building shielding.

Mechanical Equipment Noise

The CUP provides normal and emergency electrical power, chilled and hot water for heating and cooling, and process steam to most campus buildings, and it would provide emergency power, water for heating and cooling, and process steam to the California Hospital Tower Project. With project implementation, three existing chillers at the CUP would be replaced. In addition, two new chillers would be added to provide the heating and cooling capacity needed by the project and one new 10,000 MBH electric heat pump would be installed. The project would not result in the addition of any cooling towers or boilers to the CUP.

Noise from the addition of two new chillers and the new heat pump at the CUP to support the California Tower was analyzed. Note that the new replacement chillers would be similar in noise levels, or quieter, than the existing chillers; the replacement chillers are not analyzed as a part of this assessment. An analysis of noise from two new chillers and heat pump was conducted based on information provided by the project engineers and standard acoustical modeling data and techniques. Although the exact make and models of mechanical heating and cooling equipment for the project have not yet been selected, generally available sound data for similar types of equipment was used in this analysis. The potential for noise from mechanical equipment to exceed the City's daytime and nighttime limits of 55 dBA and 50 dBA at the nearest noise sensitive receptor was analyzed.

Parking Garage Activity Noise

The new parking structure associated with the project, PS5, would result in the redistribution of existing trips to the campus, as well as the generation of some net new trips. Information about estimated AM and PM peak hour traffic volumes accessing (i.e., entering or exiting) PS5 were provided by the project traffic engineer for Cumulative with Project conditions. Source noise data from FTA's *Transit Noise and Vibration Impact Assessment Manual* (Federal Transit Administration 2018) are used to analyzed parking garage noise as a stationary source of noise; modeled noise levels are compared to City of Sacramento stationary noise source thresholds.

Rooftop Gathering Noise

The potential for amplified music or speech at events held at the project rooftop garden to exceed applicable noise limits was also analyzed based on information about expected future events provided by UC Davis (Aubert pers. comm. [a]), source noise levels of amplified human speech and music, and accepted noise attenuation calculations.

Ambulance Noise

The potential for the project to result in substantial increase in ambulance siren noise in the project vicinity is analyzed based on the assumption that ambulance activity would increase in line an approximate growth factor of 9.2 percent, and based on information about existing ambulance activity provided by UC Davis (Buettner pers. comm. [c]).

Loading Activity Noise

In general, the loading and unloading of goods is a common occurrence in cities and urban environments. The project would not result in the development of any new loading docks or in an increase in loading activity at the loading dock that serves the hospital. However, operational truck trips would be re-routed as a result of the project (Aubert pers. comm. [b]). The potential for the rerouting of operational truck trips serving the hospital to result in increases in ambient noise was analyzed based on information provided by UC Davis.

Helicopter Noise

A helicopter noise study (Appendix C) for the project was conducted, and estimated helicopter noise levels from existing and estimated future helicopter operations at the hospital were compared. Note that, to accommodate simultaneous use of existing and proposed helipads, flight paths would be different under future conditions than under current conditions, as described in the analysis section and shown in Figure 3.11-4. Therefore, noise increases resulting from increases in helicopter activity and from changes to helicopter flight paths were analyzed. Based on helicopter log data, Existing (2019) conditions included 2,347 annual helicopter operations (Aubert pers. comm. [c]). It is estimated that the population served by UC Davis Health would be approximately 9.2 percent greater under future conditions; therefore, the analysis of helicopter noise assumed that future helicopter operations were 9.2 percent greater than existing helicopter operations (Aubert pers. comm. [d]). Future (2030) with-project conditions are therefore estimated to include 2,563 annual helicopter operations, assuming this 9.2 percent increase.

Annual CNEL contours were generated for existing and future conditions, and single event SEL contours were generated for existing conditions along the existing flight paths, and for future conditions along proposed flight paths. CNEL noise impacts were assessed based on the potential for residences not currently within the existing 65 CNEL contour to be within future CNEL contours. Single event SEL noise impacts were assessed based on the potential for residences not currently within the existing 95 SEL contours for existing flight paths to be within future 95 SEL contours for proposed flight paths. Assuming an outdoor-to-indoor noise level reduction of 12 dB with open windows (noting windows may not always be open, and noise reduction may be greater), a 95 SEL contour could result in an awakening occurrence of 8 percent (Appendix C).

Vibration Impacts

The discussion below summarizes the methodology applied in this assessment of potential annoyance- and damage-related vibration impacts from construction of the project. Operations associated with the project are not anticipated to generate perceptible levels of vibration at either onsite or offsite receptors. No major sources of vibration are anticipated within any of the proposed new structures. Regarding construction-related vibration effects, potential effects related to annoyance and damage are assessed to determine if significant impacts would occur.

Vibration-Related Annoyance

The FTA's general assessment criteria for evaluating potential construction-generated vibration impacts related to annoyance are included as Table 3.11-3. This table parses out potential annoyance effects related to interference with interior operations, sleep, and institutional daytime use as a function of the frequency of the vibration event according to three land use categories.

- Category 1: Buildings where vibration would interfere with interior operations.
- Category 2: Residences and buildings where people normally sleep.
- Category 3: Institutional land uses with primarily daytime uses.

Refer to Table 3.11-4 for the FTA general assessment criteria for groundborne vibration.

Except for long-term occupational exposure, vibration levels rarely affect human health. Instead, most people consider vibration to be an annoyance that can affect concentration or disturb sleep. People may tolerate infrequent, short-duration vibration levels, but human annoyance related to vibration becomes more pronounced if the vibration is continuous or occurs frequently. Vibration-related annoyance effects were analyzed to determine if vibration levels in excess of the FTA Category 2 criteria would be experienced during nighttime hours at nearby Category 2 uses (e.g., places where people sleep). Potential vibration effects on onsite Category 1 uses, or places where vibration would interfere with interior operations, were also assessed.

Vibration-Related Structural Damage

To determine if construction activities have the potential to damage nearby buildings, vibration levels at nearby receptors are calculated using FTA source vibration levels and the attenuation equation (Federal Transit Administration 2018).

$$PPV = PPV_{ref} \times (25/\text{Distance})^{1.5}$$

These calculated values are then compared to structural damage criteria. For this analysis, Caltrans guidelines regarding vibration-related damage effects are used. Table 3.11-5 provides the Caltrans vibration guidelines for potential damage to different types of structures, such as “historic and some old buildings,” “older residential structures,” “new residential structures,” and “modern industrial/commercial buildings.” Although “extremely fragile historic buildings” and “fragile buildings” categories are also included in the Caltrans guidelines, it is uncommon for buildings in urban environments, such as the project site, to be more sensitive than those in the “historic and some old buildings” category. Nearby offsite land uses include older residential homes, and nearby onsite land uses include the adjacent hospital building which would be most similar to a “modern industrial/commercial building.”

A structure’s susceptibility to vibration-induced damage depends on its age, condition, distance from the vibration source, and the vibration level. Vibration impacts on structures are usually significant if construction vibration could result in structural or cosmetic damage or, in the case of a historic resource, materially alter the resource pursuant to Section 15064.5 of the State CEQA Guidelines. This assessment analyzes the potential for construction-related vibration effects to exceed applicable damage criteria based on source vibration levels and estimated distances between sensitive uses and project construction activities.

Thresholds of Significance

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

- Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.
- Generation of excessive groundborne vibration or groundborne noise levels.
- Exposure of people residing or working in the project area to excessive noise levels from aircraft activity for a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport.

Impacts and Mitigation Measures

Impact NOI-1: Generation of increased ambient noise levels in the project vicinity in excess of applicable standards during project construction (significant and unavoidable)

Summary of Impact NOI-1 by Component

Component	Level of Significance before Mitigation	Mitigation Measures Required	Level of Significance after Mitigation
Make-ready projects	S	NOI-1a NOI-1b	SU
California Tower construction, Surgery and Emergency Services Pavilion interior renovation, Central Utility Plant upgrades	S	NOI-1a NOI-1b NOI-1c	SU
Parking Structure 5 construction	S	NOI-1a	SU
East Main Hospital Wing demolition	S	NOI-1a	SU
Whole project	S	NOI-1a NOI-1b NOI-1c	SU

NI = no impact; LTS = less than significant; S = significant; SU = significant and unavoidable.

Construction Noise

Construction for the proposed project would involve the use of heavy equipment and would generate construction noise in the project vicinity. Construction noise levels at or near construction sites on the Sacramento Campus would fluctuate depending on the particular type of construction equipment, the number of pieces of equipment being used, and duration of use. Noise levels associated with construction activities occurring during the more noise-sensitive evening and nighttime hours are of increased concern.

The California Hospital Tower Project includes three discrete but interrelated construction components—construction of Parking Structure 5 (PS5), construction of the California Tower and make-ready projects, and demolition of the existing East Wing of the main hospital. Construction of PS5 would occur between March 2022 and May 2023. Construction of the make-ready projects would be built in phases between November 2021 and September 2023. The California Tower would be constructed in phases between February 2022 and November 2030. The existing East

Wing would be demolished in 2031. UC Davis provided the anticipated construction schedule and construction equipment inventory (Sebright pers. comm. [a]).

Construction equipment would vary day to day depending on the particular phase or subphase of the project being constructed and the specific activities occurring. Construction equipment proposed for use during project construction are shown in Table 3.11-15. This table shows estimated dBA Lmax and L_{eq} noise levels at a distance of 50 feet and L_{eq} noise levels at a distance of 100 feet.

Table 3.11-15. Construction Equipment Noise Levels

Construction Equipment	L_{max} Noise Level at 50 Feet (dBA, L_{max})	Acoustical Usage/ Utilization Factor	L_{eq} at 50 Feet (dBA, L_{eq})[a]	L_{eq} at 100 Feet (dBA, L_{eq})[a]
Air compressor	78	40%	74	68
Auger drill rig	84	20%	77	71
Crane	81	16%	73	77
Compactor	83	20%	76	67
Concrete mixer truck	79	40%	75	70
Concrete pump truck	81	20%	74	69
Concrete saw	90	20%	83	68
Dozer	82	40%	78	77
Excavator	81	40%	77	74
Forklift[b]	84	40%	80	74
Front end loader	79	40%	75	72
Generator	81	50%	78	71
Gradall	83	40%	79	69
Grader	85	40%	81	72
Jackhammer	89	20%	82	73
Man lift	75	20%	68	75
Mounted impact hammer (hoe ram)	90	20%	83	62
Paver	77	50%	74	76
Roller	80	20%	73	68
Scraper	84	40%	80	74
Tractor	84	40%	80	67
Trencher	80	50%	77	71
Water truck[c]	76	40%	72	66
Welder	74	40%	70	64
Dump truck/haul truck[c]	76	40%	72	66

Source: Federal Highway Administration 2006.
dBA = A-weighted decibels; L_{max} = maximum sound level.
[a] These values represent the loudest noise levels generated by each equipment type at 50 feet.
[b] Represented by Tractor from Federal Highway Administration 2006.
[c] Represented by Dump Truck from Federal Highway Administration 2006.

As shown in Table 3.11-15, noise levels from individual pieces of construction equipment at 50 feet planned for use would typically be in the range of 74 dBA to 90 dBA L_{max} and (assuming standard FHWA utilization rates) 68 to 83 dBA L_{eq}. Although some construction activities would occur as close as 55 feet from residences (e.g., offsite utility tie-ins), most construction activities would occur further from the residences north of V Street. However, noise from the operation of construction equipment would still be expected to result in increases in ambient noise in the project vicinity, as baseline daytime (e.g., 7:00 a.m. to 6:00 p.m.) 1-hour L_{eq} noise levels in the residential neighborhood north of the project site were measured to at 59–67 dBA L_{eq} at LT-5 and 60–69 dBA L_{eq} at LT-3 during daytime hours (refer to Appendix H for the full results of the noise measurements survey).

During each phase of construction, it is likely the multiple pieces of equipment would be operational at the same time. Based on the provided construction information, a screening analysis was conducted to determine which of phases of construction would have the highest potential to result in high noise levels at nearby noise-sensitive land uses, and which equipment per phase would be the loudest.

Estimated noise levels from each phase were then modeled based on modeling methods recommended by the FTA, with a slight modification to make the modeling results more conservative. Per the FTA recommendation, estimated noise levels at the nearest sensitive receptors resulting from simultaneous operation of the two loudest pieces of construction equipment are modeled. Modeling for the proposed project includes the three loudest pieces of construction equipment proposed for use during each phase. Note that noise levels at a given location are dominated by the loudest and closest sources. Furthermore, the overall combined noise level from multiple noise sources with noise levels that are more than 10 dB different is equal to the loudest individual noise source (e.g., 60 dB + 75 dB = 75 dB). Therefore, conservatively assuming the three loudest pieces of equipment proposed for a phase are all located immediately adjacent to each other on the northern perimeter of the site, closest to receptors, provides a conservative analysis.

Table 3.11-16 shows results from the reasonable worst-case noise modeling, assuming the three loudest pieces of equipment proposed for any phase of construction would be operating simultaneously, close to one another, and near the northern boundary of the construction work area for the phase.

Table 3.11-16. Construction Noise at Residences North of V Street

Activity	Three Loudest Pieces of Equipment	Location	Worst-Case Closest Distance to Residences	Estimated Noise at Residence (dBA L_{eq})
PS5 site preparation	Hoe ram, tractor, grader	South of V Street and east of 45th Street at the proposed location of PS5	55 feet	85.5
PS5 grading	Dozer, tractor, grader	South of V Street and east of 45th Street at the proposed location of PS5	55 feet	83.8
PS5 foundation and utility	Grader, tractors (2)	South of V Street and east of 45th Street at the proposed location of PS5	55 feet	83.4
PS5 facility erection and deck pour	Crane, concrete mixer truck, concrete pump truck	South of V Street and east of 45th Street at the proposed location of PS5	55 feet	78.0

Activity	Three Loudest Pieces of Equipment	Location	Worst-Case Closest Distance to Residences	Estimated Noise at Residence (dBA L_{eq})
PS5 asphalt and landscaping	Loader, tractor, compactor	South of V Street and east of 45th Street at the proposed location of PS5	55 feet	81.5
PS5 coatings and finishing	Air compressor, man lifts (2)	South of V Street and east of 45th Street at the proposed location of PS5	55 feet	75.0
Building 35 demolition	Demo/concrete saw, grader, tractor	South of V Street and west of 45th Street (at the existing Building 35 site)	55 feet	87.1
Underground tank install	Auger drill, concrete pump truck, hoe ram	South of V Street and west of 45th Street (at the existing Building 35 site)	55 feet	87.1
Temporary ambulance area	Tractor, concrete pump truck, hoe ram	South of V Street and west of 45th Street (at the existing Building 35 site)	55 feet	86.6
Pavilion remodel	Grader, tractors (2)	Within the building footprint of the Pavilion, 210 feet or more south of V Street and west of 45th Street	210 feet	72.7
Offsite utilities	Loader, tractors (2)	South of the sidewalk on the south side of V Street and west of 45th Street	55 feet	82.8
Site demolition and preparation	Demo/concrete saw, grader, hoe ram	Within the building footprint of the California Tower, 210 feet or more south of V Street	210 feet	77.2
Foundations	Grader, tractors (2)	Within the building footprint of the California Tower, 210 feet or more south of V Street	210 feet	72.7
Structural steel	Cutting tools/ concrete saw, tractors (2)	Within the building footprint of the California Tower, 210 feet or more south of V Street	210 feet	75.3
Concrete and superstructure	Generator set, tractors (2)	Within the building footprint of the California Tower, 210 feet or more south of V Street	210 feet	71.7
Exterior skin	Air compressor, tractor, welder	Within the building footprint of the California Tower, 210 feet or more south of V Street	210 feet	68.9
Interior buildout	Concrete mixer truck, tractors (2)	Within the building footprint of the California Tower, 210 feet or more south of V Street	210 feet	71.2
Building commissioning	Forklifts (2)	Within the building footprint of the California Tower, 210 feet or more south of V Street	210 feet	64.6
Fit up/ licensing/staff and stock	No equipment	Within the building footprint of the California Tower, 210 feet or more south of V Street	210 feet	NA
East Tower demolition	Concrete saw, tractors (2)	Within the building footprint of the East Tower, 325 feet or more south of V Street	325 feet	69.8

Activity	Three Loudest Pieces of Equipment	Location	Worst-Case Closest Distance to Residences	Estimated Noise at Residence (dBA L_{eq})
Simultaneous operation of generators (worst-case phases)	18–24 generators for structural steel and concrete and superstructure phases	Spread out throughout the construction site within the California Tower footprint for these phases	450 feet[a]	71.5–72.7

[a] As the project generators would be spread out throughout the site, this analysis assumes up to 24 generators would be located near one another at the approximate center of the California Tower footprint.

As shown in Table 3.11-16 and based on the modeling assumptions described in the *Methods for Analysis* section, combined noise levels from construction activities at nearby residential land uses could be in the range of approximately 69–87 dBA L_{eq} during daytime hours, depending on the construction phase and the equipment used.

Although the Sacramento City Code does not include quantitative construction noise criteria for activity occurring during the standard daytime hours (7:00 a.m. and 6:00 p.m. Monday through Saturday and between 9:00 a.m. and 6:00 p.m. on Sunday), note that a 10 dB increase in noise is typically perceived as a doubling of loudness. Measured 1-hour L_{eq} ambient noise levels in the residential neighborhood north of the project site were between 59 and 67 dBA L_{eq} at LT-5 and 60 to 69 dBA L_{eq} at LT-3 during daytime hours (refer to Appendix H for the full results of the noise measurements survey). Therefore, combined construction noise could generate noise levels 10 dB or more above the existing ambient noise level during certain phases of construction. In addition, note that the duration of project construction would be over 10 years. Further, construction activities would at times be occurring on higher stories of the proposed building (as the building increases in height vertically). When construction activity is located higher, intervening shielding (such as buildings located between the source and receiver) that may reduce construction noise at the ground level would not reduce this noise. Therefore, because of the potential for construction to result in noise levels more than 10 dB above the existing ambient and due to the long duration of project construction (over 10 years), temporary noise impacts associated with daytime construction would be considered significant, and mitigation would be required.

Implementation of Mitigation Measure NOI-1a, which includes measures to reduce noise from construction activity, would be implemented to reduce this significant impact related to daytime construction noise. Although this mitigation measure may reduce construction noise effects, it may not be possible to reduce construction noise to less-than-significant levels because it is not feasible, in all cases and during all construction activities, to ensure that noise levels would not result in excessive noise increases (e.g., a 10 dB increase, or perceived doubling of loudness). For example, temporary construction noise barriers such as constructed wood barriers or noise control blankets supported on frames or fences are proposed to be installed, which would help reduce noise from construction activity. However, unless the complete line of sight between the receptor and source is blocked (which would not be feasible when construction occurs at higher elevations on the tower structure), these barriers may not be effective in reducing noise. In addition, even if the line of sight is fully blocked, these barriers may only reduce noise by approximately 5–10 dB. Although the installation of such barriers will take place, these walls and barriers would not be expected to reduce noise from activities to below significance thresholds. Because proposed noise control measures may not reduce construction noise to less-than-significant levels, construction noise impacts during daytime hours would be **significant and unavoidable** with implementation of the Mitigation Measure NOI-1a.

Mitigation Measure NOI-1a: Implementation of measures to reduce construction noise (daytime)

UC Davis will implement or incorporate the following noise reduction measures into the project construction specifications for contractor(s) implementation during project construction:

1. Construction activities will be limited to the daytime hours of 7:00 a.m. and 6:00 p.m. Monday through Saturday and between 9:00 a.m. and 6:00 p.m. on Sunday, when feasible.
2. All construction equipment will be equipped with suitable exhaust and intake silencers in good working order. All construction equipment will be properly maintained and equipped with intake silencers and exhaust mufflers and/or engine shrouds, in accordance with manufacturer recommendations. Equipment engine shrouds, if used, will be closed during equipment operation.
3. All construction equipment and equipment staging areas will be located as far as possible from nearby noise-sensitive land uses, and/or located such that existing or constructed noise attenuating features (e.g., temporary noise wall or blankets) block the line of sight between affected noise-sensitive land uses and construction staging areas, to the extent feasible.
4. Individual operations and techniques will be replaced with quieter procedures (e.g., using welding instead of riveting, mixing concrete offsite instead of onsite) where feasible and consistent with building codes and other applicable laws and regulations.
5. Stationary noise sources such as generators or pumps will be located as far as feasible from noise-sensitive land uses.
6. Maintain all construction equipment to minimize noise emissions.
7. No less than 1 week prior to the start of construction activities, notification will be provided to academic, administrative, and residential or noise-sensitive uses (such as schools) located within 500 feet of the construction site.
8. Install temporary noise barriers as close as possible to the noise source or the receptor and located within the direct line-of-sight path between the noise source and nearby sensitive receptor(s). The barrier should be constructed of material that has a surface weight of at least 1 pound per square foot and has an acoustical rating of at least 25 STC (Sound Transmission Class). This can include a temporary barrier constructed with plywood supported on a wood frame, sound curtains supported on a frame, or other comparable material.
9. Use “quiet” gasoline-powered compressors or electrically powered compressors as well as electric rather than gasoline- or diesel-powered forklifts for small lifting, where feasible.
10. Prohibit idling of inactive construction equipment for prolonged periods (i.e., more than 5 minutes).

Construction Noise – Nighttime

Project construction would primarily take place during the daytime hours outlined in the Sacramento City Code. However, some construction activities would be required outside of these daytime hours. As described in the Section 3.11.2, *Existing Conditions,* construction noise outside of daytime hours in the city is limited by the Exterior Noise Standards contained in the Sacramento City Code (55 dBA from 7:00 a.m. to 10:00 p.m. and 50 dBA from 10:00 p.m. to 7:00 a.m.). Although the UC is exempt under the state constitution from compliance with local land use regulations, including general plans, zoning, and ordinances, UC Davis may elect to comply with local regulations where feasible. Therefore, for purposes of the analysis of these nighttime construction activities in this EIR, these Exterior Noise Standards will be utilized to evaluate project construction noise. Specifically, noise impacts would be identified outside of the daytime exempt hours, if project construction noise would exceed 55 dBA between the hours of 6:00 p.m. and 10:00 p.m. and 50 dBA between the hours of 10:00 p.m. and 7:00 a.m.

Estimated noise levels from the phases that may require nighttime construction work were modeled based on modeling methods recommended by the FTA, but with a modification (described previously) to model the three (instead of two) loudest pieces of construction equipment proposed for use during each phase. Construction phases that may require nighttime work include the pavilion remodel, the utility tie-ins and relocation (considered a make-ready component of the project), critical activities for site demolition and preparation, foundations, concrete and superstructure, and interior buildout. A list of construction equipment proposed for use during nighttime hours by phase was provided by UC Davis and is included in Appendix H. Nighttime construction for most phases would take place over 165 feet south of V street, or at least 210 feet from the nearest residences north of V street. However, at times, the nighttime work for utility tie-ins could occur 8 feet south of V Street, or approximately 55 feet from the nearest residences north of V Street (Sebright pers. comm. [a]). Refer to Table 3.11-17 for the results of the nighttime construction noise modeling.

Table 3.11-17. Nighttime Construction Noise Levels at Nearest Residential Uses

Activity	Three Loudest Pieces of Equipment	Closest Distance to Residence	Estimated Noise at Residence (dBA L_{eq})
Pavilion remodel	Loader, tractors (2)	210 feet	71.2
Utility tie-ins for offsite utilities	Loader, tractor, backhoe	55 feet	81.1
Critical activities for site demolition and preparation	Tractors (3)	210 feet	72.3
Foundations	Grader, dozer, auger drill	210 feet	71.3
Concrete and superstructure	Generator, tractor, backhoe	210 feet	70.3
Interior buildout	Heavy trucks (3)	210 feet	64.3

As shown in Table 3.11-17, noise levels during nighttime hours would vary at the nearest residential land uses based on the activities being conducted and the distances between construction work and nearby receptors. Although nighttime construction would not occur on a daily basis for most of project construction, critical activities may take place during nighttime hours when people are more sensitive to noise. Nighttime construction noise levels generated by activities occurring at the main project site, over 210 feet from the nearest residences, would be in the range of 64–72 dBA L_{eq}.

During the utility tie-in work located just south of V Street, nighttime construction noise could be up to 81 dBA L_{eq}. Therefore, construction noise during nighttime hours would be expected to exceed the 55-dBA noise limit between the hours of 6:00 p.m. and 10:00 p.m. and the 50-dBA noise limit between the hours of 10:00 p.m. and 7:00 a.m. Construction noise impacts during nighttime hours would be significant, and mitigation would be required.

Implementation of Mitigation Measure NOI-1a, which includes measures to reduce noise from construction activity during non-daytime hours, would be implemented to reduce this significant impact related to nighttime construction noise. Although this mitigation measure may reduce construction noise effects, it may not be possible to reduce construction noise to less-than-significant levels because it is not feasible, in all cases and during all non-daytime construction activities, to ensure that noise levels would comply with applicable local noise limits. For example, locating equipment as far as feasible from sensitive uses and equipping equipment with mufflers and sound control devices (e.g., intake silencers and noise shrouds) that are in good condition would reduce noise somewhat, but may not reduce noise to below significance criteria. Similarly, temporary construction noise barriers such as constructed wood barriers or noise control blankets supported on frames or fences are proposed to be installed as part of Mitigation Measure NOI-1a, which would help reduce noise from nighttime construction activity. However, these barriers may only reduce noise by approximately 5 to 10 dB. Although the installation of such barriers shall take place, these walls and barriers would not be expected to reduce noise from activities to below significance thresholds. Because proposed noise control measures may not reduce nighttime construction noise to below significance thresholds, construction noise impacts during nighttime hours would be **significant and unavoidable** with implementation of Mitigation Measures NOI-1a (described previously) and NOI-1b (described below).

Mitigation Measure NOI-1b: Construction noise control plan to reduce noise during non-daytime hours

The project contractor(s) shall develop a construction noise control plan to reduce noise levels and comply with City of Sacramento nighttime noise standards. Specifically, the plan shall demonstrate that noise from construction activities would not exceed the 55-dBA noise limit between the hours of 6:00 p.m. and 10:00 p.m. and the 50 dBA between the hours of 10:00 p.m. and 7:00 a.m. at the nearest existing sensitive land use. Measures to help reduce noise from construction activity during non-standard construction hours to these levels shall be incorporated into this plan and shall include at a minimum (but not be limited to) the following (noting that some of these will be implemented under NOI-1a):

1. Install temporary noise barriers as close as possible to the noise source or the receptor and located within the direct line-of-sight path between the noise source and nearby sensitive receptor(s). The barrier should be constructed of material that has a surface weight of at least 1 pound per square foot and has an acoustical rating of at least 25 STC (Sound Transmission Class). This can include a temporary barrier constructed with plywood support on a wood frame, sound curtains supported on a frame, or other comparable material. (Note: this is required under NOI-1a).
2. Use “quiet” gasoline-powered compressors or electrically powered compressors as well as electric rather than gasoline- or diesel-powered forklifts for small lifting, where feasible. (Note: this is required under NOI-1a).

3. Plan for the noisiest construction activities to occur during daytime hours when people are less sensitive to noise.
4. Require all construction equipment be equipped with mufflers and sound control devices (e.g., intake silencers and noise shrouds) that are in good condition (at least as effective as those originally provided by the manufacturer) and appropriate for the equipment. (Note: this is required under NOI-1a).
5. Maintain all construction equipment to minimize noise emissions. (Note: this is required under NOI-1a).
6. Locate construction equipment as far as feasible from adjacent or nearby noise-sensitive receptors.
7. Require all stationary equipment be located to maintain the greatest possible distance to the nearby existing buildings, where feasible.
8. Require stationary noise sources associated with construction (e.g., generators and compressors) in proximity to noise-sensitive land uses to be muffled and/or enclosed within temporary enclosures and shielded by barriers, which can reduce construction noise by 5 to 10 dB.
9. Prohibit the use of impact tools (e.g., jack hammers) during nighttime/non-standard daytime hours.
10. Prohibit idling of inactive construction equipment for prolonged periods during both daytime and nighttime/non-standard hours (i.e., more than 2 minutes).
11. Provide advance notification in the form of the mailings/deliveries of notices to surrounding land uses regarding the construction schedule, including the various types of activities that would be occurring throughout the duration of the construction period.
12. Provide the name and telephone number of an onsite construction liaison. If construction noise is found to be intrusive to the community (i.e., if complaints are received), the construction liaison shall take reasonable efforts to investigate the source of the noise and require that reasonable measures be implemented to correct the problem.
13. Use electric motors rather than gasoline- or diesel-powered engines to avoid noise associated with compressed air exhaust from pneumatically powered tools during nighttime hours. Where the use of pneumatic tools is unavoidable, an exhaust muffler on the compressed air exhaust could be used; this muffler can lower noise levels from the exhaust by about 10 dB. External jackets on the tools themselves could be used, which could achieve a reduction of 5 dB.

Construction Haul Truck Noise

Project construction would involve up to 300 one-way haul or vendor truck trips per worst-case day. Note that during many construction days, there would be fewer truck trips than 300. However, haul truck noise from a reasonable worst-case day is analyzed to provide a conservative assessment. Haul trucks would travel south on Stockton, turn east on X Street, turn north on 45th Street, turn west onto Doctors Way, and then exit the project site along Colonial Way to Stockton Street. The temporary addition of up to 300 one-way haul trucks per day on Stockton Boulevard north of Colonial Way and on Colonial Way, up to 150 one-way haul truck trips on Stockton Boulevard between Colonial Way and X Street (only trucks traveling to the site would use this segment) was analyzed to determine if hauling activity would result in substantial increases to the ambient noise levels.

Modeling was conducted to estimate average daily traffic noise levels with and without the addition of haul truck trips (e.g., an "existing plus project haul truck" condition). Table 3.11-18, below, shows estimated traffic noise levels along the aforementioned roadway segments under existing conditions and under "existing plus project haul truck" conditions based on the conservative assumptions described above.

Table 3.11-18. Existing and Existing plus Haul Truck Noise Levels

Roadway	Segment	Truck Trips on Segment (per day)	Distance to Nearest Receptor	Modeled Existing Traffic Noise Level (dBA L_{dn})	Haul Truck Noise Only (dBA L_{dn})	Existing plus Haul Truck Trip Noise Level (dBA L_{dn})	Haul Truck–Related Increase
Stockton	Between Colonial and X	150	140	68	50	68	0
Stockton	North of Colonial	300	50	68	57	68	0
Stockton	Between T Street and 39th	300	50	64	57	65	1
Colonial Way	NA	300	100	NA	55	55	NA

Note: Only segments with sensitive or residential uses are included in this table.

As shown in Table 3.11-18, increases in haul truck activity along most routes with sensitive uses would not be expected to result in overall increases in traffic noise (including haul truck traffic); along one segment, Stockton Boulevard between T Street and 39th Street, an approximately 1 dB increase in noise was modeled to occur during the most hauling-intensive phase of project construction. Note that a change of 3 dB is considered barely noticeable, so noise from hauling activity would not be expected to result in perceptible increases in the average daily noise level in the project vicinity.

As described above, Colonial Way is not currently used by trucks accessing the hospital loading dock. Therefore, project haul truck noise levels along this segment cannot be compared to an existing modeled noise level along this segment. However, noise measurements were taken north of Colonial Way along V Street during the noise field survey. Measured noise levels in this area were in the range of range of 68 to 71 at the location of LT-3. According to the modeling results, haul truck noise at the residences north of V Street from haul truck activity along Colonial Way would be approximately 55 dBA L_{dn}. Therefore, modeled haul truck noise levels are more than 10 dB lower than existing noise levels in this area. As shown in Table 3.11-3, when combining noise levels from multiple noise sources with a difference of more than 10 dB, the overall noise level is equal to the loudest individual noise source (e.g., 55 dB + 68 dB = 68 dB). Therefore, because existing noise levels at these residences are between 68 and 71 dBA L_{dn} in this area, and because 55 dBA L_{dn} is more than 10 dB below the measured ambient level, the addition of 55 dB of noise from up to 300 haul truck trips on Colonial Way would not result in increases to the ambient noise level. Construction haul truck noise along this segment during project construction would not be expected to increase the ambient noise level along V Street.

Because noise increases from haul truck activity would be more than 10 dB below existing ambient noise levels in this area, haul truck noise along Colonial Way would not result in perceptible increases to the L_{dn} ambient noise level along V Street. In addition, as shown in Table 3.11-18, haul truck noise would not result in 3 dB (considered barely perceptible) or greater increases in noise along modeled roadway segments in the project vicinity. Impacts related to construction haul truck activity would be **less than significant**.

Rerouting of Flight Operations of Emergency Helicopters during Construction

During construction, the existing hospital would remain operational, and emergency helicopter operations to the Davis Tower would continue to take place. Although the amount of helicopter activity would not be expected to increase during project construction, construction may result in the redistribution of some helicopter operations along the existing approved flight paths. Overall, due to the use of tower cranes and the height of the hospital tower proposed for construction, helicopters may not be able to approach from the east (or potentially other directions, such as southeast) while cranes are located on the site. Similar rerouting may occur as the height of the proposed project building becomes tall enough to interfere with the eastern and southeastern helicopter flight paths. Specifically, during the California Tower construction period beginning in April 2024 to the end of December 2027, California Tower construction cranes would be in place, and no flights would be able to approach the Davis Tower from the east or southeast (to avoid the active construction site and interference from canes). As a result, all flights that would normally approach from X Street and 45th or depart to the east would arrive or depart on a different flight path.

After the removal of the construction cranes but during the remaining construction period of the California Tower from 2028 to 2030, flight paths would still be restricted to avoid overflight of the construction site for the California Tower due to safety and rotor wash concerns and because the height of the California Tower would be taller than the existing Davis Tower once construction of the building frame is complete. Therefore, from year 2024 until year 2030, arriving and departing helicopter flights would also be redistributed as compared to existing conditions, with flight paths to and from the east and southeast generally being blocked. After construction is complete, helicopters would use the future flight paths shown in Figure 3.11-4.

For these reasons, even though helicopter activity is not expected to increase during project construction, individual event noise may be greater at certain residences, and the occurrence of individual overflights may be more frequent in certain areas during construction. Therefore, this impact would be considered significant.

Implementation of Mitigation Measure NOI-1c requires the development of a Helicopter Operations Plan. As part of the plan, primary approaches and departure paths for nighttime hours will be identified, from among the approved flight paths and within safety parameters, as the least disruptive flight paths to nearby residences. Once identified, these paths will be used as much as feasible during nighttime hours.. In addition, UC Davis has an existing process to receive and review helicopter noise complaints. This process includes working with helicopter operators to understand the specifics of particular flights and learn from those experiences. UC Davis will continue to review complaints related to helicopter noise during the temporary construction period in accordance with the current procedures. Per Section 21662.4(a) of the State Aeronautics Act (*Emergency Flights for Medical Purposes*), emergency flights for medical purposes are exempt from local ordinances that restrict flight departures and arrivals to particular hours of the day or night that restrict the departure or arrival of aircraft based upon the aircrafts noise level or restrict the operation of certain types of aircraft. Although emergency flights for medical purposes are exempt from regulation by local agencies, UC Davis will commit to measures to reduce noise from emergency helicopter operations as much as feasible. Because proposed noise control measures included in Mitigation Measure NOI-1c, below, would not be expected to reduce SEL helicopter noise from all critical emergency flights at all nearby residences to below 95 dBA, this measure would not reduce temporary emergency helicopter noise impacts during construction to less-than-significant levels. This impact would be **significant and unavoidable,** even with implementation of Mitigation Measure NOI-1c.

Mitigation Measure NOI-1c: Helicopter operations plan during project construction

Although emergency flights for medical purposes are exempt from regulation by local agencies, UC Davis Medical Center will prepare a Helicopter Operations Plan for use during construction that will specify the following.

- Where feasible, and if the University has discretion on flight timing, flights will occur during daytime hours when people are less sensitive to noise.
- UC Davis will host regular meetings with helicopter operators to review recent complaints, emphasize preferred routing, and collaborate on potential noise reduction strategies, within safety parameters.
- UC Davis communications with air medical companies will request that all pilots be routinely trained to understand the desired noise attenuation for arrival and departure flight path procedures. Within approved flight paths and safety parameters, pilots will be instructed in the use of the approach and departure paths determined to be least disruptive to nearby residences, to the extent feasible, especially during nighttime hours.
- UC Davis will provide and maintain pilot notifications and other essential flight operation details at the helipad and inside of the hospital to ensure it is accessible to pilots. The information will include, within safety parameters, details related to preferred departure and approach paths (i.e., those resulting in least disruption to nearby residences).

Impact NOI-2: Generation of increased ambient noise levels in the project vicinity in excess of applicable standards during project operations (less than significant with mitigation)

Summary of Impact NOI-2 by Component

Component	Level of Significance before Mitigation	Mitigation Measures Required	Level of Significance after Mitigation
Make-ready projects	LTS	None	–
California Tower construction, Surgery and Emergency Services Pavilion interior renovation, Central Utility Plant upgrades	S	LRDP NOI-2a	LTS
Parking Structure 5 construction	LTS	None	–
East Main Hospital Wing demolition	LTS	None	–
Whole project	S	LRDP NOI-2a	LTS

NI = no impact; LTS = less than significant; S = significant; SU = significant and unavoidable.

Operational Traffic Noise

To determine if the proposed project would result in a substantial permanent increase in traffic noise levels, vehicular traffic noise was modeled using traffic data (ADT, vehicle mix percentages and speeds) provided by the project's traffic engineer (Behrens pers. comm. [a]). ADT volumes were provided for Baseline (2019), Baseline (2019) Plus Project, Cumulative (2040), and Cumulative (2040) Plus Project conditions. Traffic noise modeling results for no project and with project conditions along street segments in the project vicinity were compared to determine expected project-related increases to traffic noise. Table 3.11-18 presents the traffic noise modeling results.

As shown in Table 3.11-19, the implementation of the proposed project would result in either no change to or in minor traffic noise increases (no more than 0.2 dB) along all analyzed segments. Human sound perception, in general, is such that a change in sound level of 1 dB cannot typically be perceived by the human ear, a change in sound level of 3 dB is considered barely perceptible, and a change of 5 dB is clearly noticeable. Since all noise increases related to project implementation were modeled to be below 0.2 dB, which is well below the barely perceptible 3 dB level, the project would not result in any significant traffic noise impacts in the project vicinity. Traffic noise impacts from project implementation would be **less than significant**.

One comment from the public has expressed concern that construction of a new high-rise building could result in the reflection of traffic noise from U.S. Route 50 back into the Elmhurst neighborhood. The comment cites a Caltrans study from 15 to 20 years ago that identified building sound reflections as a significant issue. The senior noise specialist at Caltrans headquarters was contacted about this study and is not aware of it. Over the last two decades Caltrans and other transportation agencies have conducted research on sound energy reflections from sound walls and other structures. Under ideal reflections conditions where a wall runs continuously along a highway, the maximum potential increase in noise from reflections is 3 dB. In practice the measured increases are in the range of about 0.5 and 1.5 dB as the result of interference patterns caused by localized shielding and other factors. These are very small increases that are not considered to be significant. There are several reasons why reflection of sound energy from the new building is not expected to be an issue in the Elmhurst neighborhood. First, the surface of U.S. Route 50 in the area adjacent to Elmhurst is depressed about 20 feet below the surrounding area. The sides of the cut section block the line of sight between the roadway and the adjacent neighborhood as well as the new building site. This means that no direct sound energy from the highway would impinge on the new building. Even if there were a direct line of sight between the highway and building, the amount of reflected energy would be very small relative to the total sound energy emitted by the highway and would certainly result in a smaller increase than a continuous sound wall. In addition, any sound energy from the highway would have an upward angle of incidence that would reflect sound upward above the neighborhood and not down into the neighborhood. For these reasons building reflection of sound from traffic on U.S. Route 50 is not considered to be an issue and is not discussed further in this report.

Table 3.11-19. California Hospital lTower Project-Related Traffic Noise Increases

Segment		Baseline (2019) No Project (dB L_{dn})	Baseline (2019) Plus Project (dB L_{dn})	Delta	Cumulative (2040) No Project (dB L_{dn})	Cumulative (2040) Plus Project (dB L_{dn})	Delta
Stockton Boulevard	T Street to 39th Street/Miller Way	69.3	69.4	0.1	70.7	70.8	0.1
Stockton Boulevard	39th Street/Miller Way to X Street	69.6	69.8	0.2	71.1	71.2	0.1
Stockton Boulevard	X Street to 2nd Avenue	68.4	68.5	0.1	69.4	69.5	0.1
Stockton Boulevard	2nd Avenue to 3rd Avenue	68.9	69.0	0.1	69.8	69.8	0.0
Stockton Boulevard	3rd Avenue to Broadway	68.9	69.0	0.1	70.0	70.0	0.0
Stockton Boulevard	South of Broadway	69.7	69.7	0.0	70.3	70.4	0.1
Broadway	West of Stockton Boulevard	68.6	68.6	0.0	69.9	69.9	0.0
Broadway	Stockton Boulevard to 49th Street	67.1	67.1	0.0	68.3	68.3	0.0
Broadway	49th Street to 50th Street	65.9	65.9	0.0	66.4	66.4	0.0
Broadway	50th Street to 59th Street	66.8	66.8	0.0	68.5	68.5	0.0
Broadway	East of 59th Street	66.4	66.4	0.0	68.1	68.1	0.0
V Street	West of 49th Street	58.3	58.3	0.0	59.6	59.6	0.0
V Street	East of 49th Street	59.7	59.7	0.0	61.5	61.5	0.0
50th Street	North of Broadway	62.3	62.4	0.1	65.6	65.7	0.1
2nd Avenue	West of Stockton Boulevard	61.3	61.3	0.0	62.7	62.7	0.0
2nd Avenue	East of Stockton Boulevard	63.0	63.0	0.0	66.3	66.3	0.0

dB L_{dn} = day night average level.

Mechanical Equipment Noise

The CUP would provide normal and emergency electrical power, chilled and hot water for heating and cooling, and process steam to the California Hospital Tower Project. With project implementation, three existing chillers at the CUP would be replaced. In addition, two new chillers would be added to provide the heating and cooling capacity needed by the project, and one new 10,000 MBH electric heat pump would be installed. The project would not result in the addition of any cooling towers or boilers to the CUP.

The CUP is an enclosed building, and equipment noise is largely attenuated by the building walls. Existing stationary sources of noise at the CUP include diesel emergency generators, chillers, steam boilers and hot water boilers, induced draft cooling towers and a gas turbine. The project would only result in the installation of two new pieces of stationary mechanical equipment for heating and cooling in the form of two chillers. Generators are discussed separately below.

An individual chiller can generate noise levels of approximately 77 dBA at a distance of 25 feet (Hoover and Keith 2000). Two chillers operating simultaneously and close to one another could result in combined noise levels of 80 dBA at 25 feet without accounting for any attenuation in the form of building shielding. An electric heat pump at full power can generate noise in the range of 72 dBA at 10 meters, or approximately 74 dBA at 25 feet (Tremblay pers. comm.). Adding this noise to the noise from two chillers above, the combined noise from this equipment would be in the range of approximately 81 dBA.

Note that, in addition to these chillers and this pump, there are numerous pieces of noise-generating mechanical equipment (e.g., boilers, cooling towers) under existing conditions. However, as demonstrated by the noise levels taken at the perimeter of the CUP in 2010 (University of California, Davis 2010), mechanical equipment noise is substantially reduced by the CUP walls and the design of the CUP building (because equipment is primarily located inside the building). As shown in Table 3.11-20, most measurements taken near the plant were between 54 dBA L_{eq} and 59 dBA L_{eq}, demonstrating that noise from equipment within the building is greatly reduced by the building.

Table 3.11-20. Central Utility Plant Measured Noise Levels—2010 LRDP

2010 LRDP Site ID	Measurement Location	Measurement Date	Noise Sources	L_{eq}	L_{dn}
ST-5a	Perimeter of CUP; near Facility Support Services Building	1/28/10	CUP/mechanical equipment	68	68
ST-5b	Perimeter of CUP	1/28/10	CUP/mechanical equipment	54	59
ST-5c	Perimeter of CUP	1/28/10	CUP/mechanical equipment	55	59
ST-5d	Perimeter of CUP	1/28/10	CUP/mechanical equipment	56	60
ST-5e	Perimeter of CUP	1/28/10	CUP/mechanical equipment	59	61
ST-5f	Perimeter of CUP	1/28/10	CUP/mechanical equipment	59	61

Source: University of California, Davis 2010.
CUP = Central Utility Plant; L_{dn} = day night average level; L_{eq} = equivalent sound level.

The two new chillers would be located inside the CUP and the heat pump would be located inside of the CUP or CUP annex building. Although some equipment exhausts or vents to the external of the building measurements of existing noise in the vicinity demonstrate that noise is substantially reduced by the structure of the building. The addition of this equipment to the CUP would not be expected to result in a perceptible increase in noise external to the building. Noise impacts from the addition of two chillers and one heat pump at the CUP and/or CUP annex building would be **less than significant**.

Emergency Generator Noise

Under existing conditions, the CUP includes five diesel emergency generators that are tested for approximately 30 minutes at a time once per month. One new 3,000 kW generator and two new 2,500 kW emergency diesel generators would be installed at the CUP by 2030 to support the California Hospital Tower Project and other campus growth. Specifically, these generators would be installed to the west of the existing CUP in a new CUP annex building.

Noise during generator testing in the city of Sacramento must comply with the noise limits outlined in Section 8.68.060, *Exterior Noise Standards,* of the Sacramento City Code. Although the UC is exempt under the state constitution from compliance with local land use regulations, including general plans, zoning, and ordinances, the UC may elect to comply with local regulations where feasible. The exterior noise limit in the city between the hours of 7:00 a.m. and 10:00 p.m. is 55 dBA at the nearest residential or agricultural land use. The exterior noise limit between the hours of 10:00 p.m. and 7:00 a.m. is 50 dBA at the nearest residential or agricultural land use. Although the code also includes modifiers to allow more noise if the duration of the noise is very short (e.g., between 1 and 15 minutes out of an hour), the standards cited above would apply to a 30-minute generator test.

During emergency situations, generator noise is typically exempt from local noise regulations. However, noise resulting from the regular testing of emergency generators generally must comply with applicable noise standards. The exact make and model of the new 3,000 kW emergency generator at the CUP has not been selected at this time, so sound data from a Cummins C3000 D6e 3,000 kW generator is used in this analysis (Cummins 2017). Specific attenuation features that may be included with the generator, such as a sound enclosure and/or exhaust mufflers or silencers, have also not been selected at this time. Based on the Cummins C3000 D6e sound data, a 3,000 kW emergency generator could generate a noise level (including both engine and exhaust noise) of 100.1 dBA Leq at 50 feet without the inclusion of any noise attenuating features. It is conservatively assumed that each of the 2,500 kW emergency generators could generate similar noise levels.

The nearest residential land use to the proposed generator location is the Ronald McDonald House, located more than 750 feet east of the proposed generator location. In addition, the Language Academy of Sacramento (which, although not a residential use, is considered to be a sensitive land use for the purposes of this analysis) is more than 400 feet south of the proposed generator location.

Based on the information cited above for a Cummins 3,000 kW emergency generator, a noise level of approximately 100 dBA L_{eq} from the generator at 50 feet (without the inclusion of any noise attenuating features) would be reduced to approximately 82 dBA at a distance of 400 feet (Cummins 2017). Note that this value does not account for attenuation from the building in which the generator would be located; generator noise would be reduced by an estimated 10 dB or more from the walls of the annex building, resulting in an estimated noise level of 72 dBA at 400 feet. At a distance of 750 feet, noise would be reduced to approximately 77 dBA without accounting for attenuation, or 67 dBA when considering noise reduction from the building walls.

Although noise would be reduced at a rate of 6 dB per doubling of distance, the likely noise from generator testing would exceed the City's exterior noise standards of 55 dBA during daytime hours at the nearest receptors and at receptors located even farther away than these distances. Additional attenuating features such as a weather enclosure and/or exhaust silencers or filters could also reduce noise from generator operations, but specific attenuating features have not been selected at this time; therefore, noise from the testing of project generators at the CUP could result in noise levels in excess of the Sacramento City Code standards at nearby noise-sensitive land uses.

As described previously, generator testing for emergency generators installed as a part of the project would be temporary and intermittent, occurring for a period of 30 minutes at a time approximately once per month. However, because noise from the testing would be expected to exceed the quantitative criteria from the Sacramento City Code, impacts are considered to be significant and mitigation is required.

Implementation of Mitigation Measure LRDP-NOI-2a would require that emergency generators are oriented, located, and designed in such a way to reduce noise exposure during testing to below the applicable City of Sacramento criteria. Therefore, with implementation of mitigation, emergency generator noise would comply with acceptable noise standards for sensitive receptors. This impact would be **less than significant with mitigation**.

Mitigation Measure LRDP-NOI-2a: Reduce noise exposure from emergency generators

Prior to approval of a building permit for individual LRDP development projects proposing the installation of emergency generators, documentation will be submitted to the University demonstrating with reasonable certainty that noise from testing of the proposed generator(s) would not exceed 55 dBA at the nearest residential land use. Acoustical treatments to reduce noise from generator testing may include, but are not limited to, the following.

- Enclosing generator(s)
- Incorporating the use of exhaust mufflers or silencers to reduce exhaust noise
- Selecting a relatively quiet generator model
- Orienting or shielding generator(s) to protect noise-sensitive receptors to the greatest extent feasible
- Increasing the distance between generator(s) and noise-sensitive receptors
- Placing barriers or enclosures around generator(s) to facilitate the attenuation of noise.

In addition, all project generator(s) will be tested only between the hours of 7:00 a.m. and 10:00 p.m.

The University will ensure that all recommendations from the acoustical analysis necessary to ensure that generator noise would meet the above requirements will be incorporated into the building design and operations.

Parking Lot Noise

The new parking structure associated with the project, PS5, would result in the redistribution of existing trips to the campus, as well as the generation of some net new trips. According to the project traffic engineer, a total of 604 vehicles would enter or exit (e.g., both inbound and outbound trips) PS5 during the AM peak hour, and 693 would enter or exit the parking structure during the PM peak hour under Cumulative with Project conditions (Behrens pers. comm. [b]). The vehicles would enter and exit the parking garage from X Street and would not directly utilize V Street near PS5. However, noise from within the parking structure may be audible at nearby noise-sensitive land uses. Parking lot activity is analyzed as a stationary source of noise and resulting noise levels are compared to City of Sacramento stationary noise source thresholds.

The nearest noise-sensitive land uses are located over 100 feet north of the northern perimeter of the parking structure. This distance was conservatively used in the parking structure analysis, even though the sound energy would generally be spread out throughout the entire parking structure where cars are driving.

According to the FTA's *Transit Noise and Vibration Impact Assessment Manual* (Federal Transit Administration 2018), 1,000 cars in a peak activity hour would generate a Sound Equivalent Level (SEL) of 92 dBA at 50 feet. This value was converted to an hourly L_{eq} (average) noise level and used to calculate the L_{eq} noise level of a maximum of 693 vehicles per daytime hour utilizing the garage. At a distance of 50 feet, 693 vehicles using the garage per hour would result in an hourly L_{eq} noise level of approximately 55 dBA L_{eq}. At a distance of 100 feet (noting the nearest residence is at least this far from the perimeter parking structure), this noise level would be reduced to 49 dBA L_{eq}. Since, as described above, the PM peak hour is expected to have the most vehicles per hour utilizing the parking structure during a given day, this hour is analyzed as the worst-case daytime noise level from the parking garage. This estimated maximum parking garage activity noise level is below the daytime threshold for stationary noise of 55 dBA L_{eq} in the city of Sacramento.

The maximum number of cars entering or existing the garage during nighttime hours of 10:00 p.m. to 7:00 a.m. (when the 50 dBA L_{eq} threshold would apply) is not known, but it would be less than the volumes accessing PS5 during the AM and PM peak hours. Because noise from the parking garage activity at the nearest residence would be 49 dBA L_{eq} or less during peak hours, and because off-peak hour noise levels would be even less, noise from parking garage activity during nighttime hours would be below the 50 dBA L_{eq} threshold for nighttime hours.

Noise from PS5 activity would not exceed the City of Sacramento stationary source noise thresholds during daytime or nighttime hours, and this impact would be **less than significant**.

Rooftop Gathering Noise

A rooftop garden could be located on the rooftop of the southwestern portion of the West Wing. At this time, there are no specific planned programs or events for this area, and the area would primarily be available for the daytime use of persons working at or visiting the campus (e.g., sitting outside, having lunch, etc.). However, the area may be used for events in the future, and to provide a conservative assessment, it is assumed that these events could include amplified music or speech.

The capacity of the rooftop garden would be approximately 200 people. Noise from persons gathering or talking in this area (e.g., from non-amplified speech) would not be expected to affect the nearest offsite receptors because of the distance between the rooftop garden and the nearest residences north of V Street (over 600 feet from the northern perimeter of the rooftop garden) and because the existing Davis Tower, located between the V Street residences and the proposed rooftop garden, is taller than the garden. Noise from persons gathering and talking in this area would be shielded by this intervening building and would not result in increases to the existing noise levels along V Street, which were measured to be in the range of 68.2 to 71.0 for LT-3 and 65.8 to 69.1 for LT-5.

As described above, it is possible that occasional events involving sound amplification may occur at the rooftop garden. In general, noise from amplified music and speech occurring at events in the City of Sacramento is limited per the Sacramento City Code to approximately 96 dBA (depending on the season) at a distance of 150 feet. In addition, the Sacramento City Code also contains time limits for amplified noise on weekdays and weekends. Note that events in this area would be planned to comply with the City of Sacramento hourly restrictions on amplified sound (Aubert pers. comm. [e]). On weekdays (Sunday through Thursday), events involving amplified music would not extend past 10:00 p.m., and on weekends (Friday and Saturday, and the day before certain holidays) events would not extend past 11:00 p.m.

Based on measurements for similar activities, estimated noise levels from human speech amplified by a single loud speaker may be in the range of approximately 58 to 59 dBA L_{eq} at 100 feet,[1] whereas noise levels from a small live band (which included a guitar and vocalists with a single amplifier) would be slightly louder, and have been measured to be in the range of 65 dBA L_{eq} at 100 feet.[2] Noise levels from a larger outdoor live music venue have been measured to be in the range of 79 dBA at 200 feet.[3]

At a distance of 600 feet, estimated noise from amplified speech from a single loudspeaker would be reduced to 42 to 43 dBA based on distance alone, and noise from a small live band would be estimated to be around 49 dBA. It is not expected that larger-sized concerts would occur in this area. Note that the existing Davis Tower, located between the proposed rooftop garden and the nearest residences north of V Street, would block the line of sight between any occasional events and the nearest residences, resulting in noise attenuation. Because noise from amplified music and speech occurring at events is limited per the Sacramento City Code to approximately 96 dBA (depending on the season) at a distance of 150 feet, noise levels at 150 feet are also estimated. At a distance of 150 feet, estimated noise from amplified speech from a single loudspeaker would be in the range of 54 to 55 dBA, and noise from a small live bland would be estimated to be around 61 dBA.

Without accounting for attenuation (which would further reduce noise), amplified music from potential occasional events at the rooftop garden would be well below the allowable level of 96 dBA at a distance of 150 feet. In addition, amplified music would result in estimated noise levels of below 50 dBA at the nearest residences (600 feet away) without accounting for attenuation from building shielding, which could reduce noise from occasional rooftop garden events by 10 dB or more. In addition, occasional events with amplified music would abide by the time limits outlined in the

[1] Wedding officiant noise: Noise measured from an individual officiating over a wedding (single speaker) was measured to be between approximately 55 and 56 dBA L_{eq} at approximately 140 feet, equating to a noise level of approximately 58 to 59 dBA L_{eq} at approximately 100 feet. Refer to Appendix H.

[2] Acoustic band noise: Noise measured at approximately 73 feet from a small live band with a single amplifier that included a guitar and vocals was measured to be 67.5 dBA L_{eq}, equating to 64.8 dBA L_{eq} at 100 feet. Refer to Appendix H.

[3] Measurements were obtained at the Irvine Regional Park Amphitheater, which has a permanent band shell for live music or entertainment. Refer to Appendix H.

Sacramento City code. Weekday (Sunday through Thursday) events involving amplified music would not extend past 10:00 p.m., and weekend (Friday and Saturday, and the day before certain holidays) events would not extend past 11:00 p.m. For these reasons, noise impacts from potential amplified music for occasional events at the rooftop garden would be **less than significant.**

Ambulance Noise

The project site is currently developed with a hospital that includes an Emergency Department. Under existing conditions, ambulances are at times used to transport patients to the Emergency Department. With project implementation, and based on conversations with UC Davis, the population served by the hospital is expected to increase by approximately 9.2 percent (Aubert pers. comm. [d]). Based on conversations with UC Davis, it is assumed that ambulance activity would reasonably increase by approximately 9.2 percent commensurate with the expected increase in the population served by the hospital (Sebright pers. comm. [b]).

Ambulance activity including the use of sirens can occur any time during the day or night. For safety, sirens used during emergency response events are designed to be readily audible above surrounding ambient noise. In principle, the use of sirens depends heavily on traffic conditions at the time of an emergency call; therefore, their use may not always be necessary. According to UC Davis, most ambulances do not travel along the roadway segments near the hospital with sirens on under existing conditions. Only Code 3 transports use lights and siren to the existing hospital. Specifically, approximately 15 ambulances per day use their sirens, and only 1–3 ambulances use their sirens while traveling down X Street and 45th Street to the existing Emergency Department. The remainder of transports to the Sacramento Campus are Code 2 and do not require the use of lights and sirens (Buettner pers. comm. [c]).

Siren noise can be very loud but typically is audible in a given location only for a short period of time. Siren noise measurements from EMT vehicles have shown noise levels ranging from 101 to 116 dBA Lmax, or 87 to 102 dBA L_{eq} at a distance of 50 feet for the event. The duration of the siren exposure at a given location is typically less than 30 seconds. The measurements cited in this analysis demonstrated event duration for siren noise in the range of 12–25 seconds per event.

Based on an approximate growth factor of 9.2 percent, a total of approximately 16 ambulances per day (an increase of 1) would be expected to use their sirens while traveling to the emergency department under with-project conditions, and between 1 and 3 per day (specifically, 1.1 to 3.3 ambulances per day on average, an increase of less than 1) would be expected to use their sirens while traveling on X Street and 45th Street. Based on the percent increase in siren events expected per day, a ratio analysis can be conducted to determine the estimated increase in noise on a daily basis. Specifically, noise increases can be estimated based on a ratio analysis comparing the existing number of ambulance siren events to the future number of ambulance siren events, based on the equation of 10 x Log (Future Events/Existing Existing). Because siren activity associated with ambulances under the project would increase by approximately 9.2 percent, it can be estimated that average daily noise levels would increase by 0.4 dB. In general, human sound perception is such that a change in sound level of 1 dB cannot typically be perceived by the human ear, and a change of 3 dB is barely noticeable. Therefore, it is expected that this increase in daily ambulance activity would not result in a substantial increase in ambulance noise in the project area. In addition to siren noise, noise from ambulance activity (e.g., doors opening and closing, vehicle idling, patient unloading) at the hospital would continue and is expected to be similar to existing conditions. Although non-siren noise resulting from ambulance activity is difficult to quantify, noise from the unloading of ambulances would be temporary and periodic. Building 35 would be demolished as part of the project, resulting in the reduction in potential shielding between the ambulance bay and nearest homes. However, an 8-foot-high solid wall would be constructed just north of the parking lot, along the edge of the 40-foot landscape buffer which would also provide shielding between the ambulance bay and nearest homes in the future. The wall would most likely be constructed of architectural concrete and would be concealed with a 4.5-foot-high sloped berm between the wall and the V Street sidewalk.

Because of the nature of non-siren ambulance activity, because of the distance between the ambulance bay and the nearby sensitive land uses (e.g., approximately 200 feet from the nearest residential property lines), and because the ambulance bay would be located in the same approximate location under existing and future conditions, temporary and periodic noise from the ambulance activity at the ambulance bay besides siren noise (analyzed above) would be considered a nuisance noise effect that would result in a less-than-significant impact. Impacts related to an increase in siren noise associated with the project would be ***less than significant.***

Loading Activity Noise

Implementation of the California Hospital Tower Project would not result in an increase in loading activity at the hospital loading dock located south of V Street and north of the existing Davis Tower. Because the project would not increase loading activity, loading dock noise would be the same under existing and with-project conditions. However, project implementation would result in the rerouting of some operational loading dock traffic. Under existing conditions, trucks access the loading dock by turning from Stockton Boulevard onto X Street, turning north onto 45th Street, and then turning left on Doctors Way. Trucks then exit by retracing the same route in reverse. Under with-project conditions, trucks shorter than 45 feet long would turn east on Colonial Way from Stockton Boulevard and travel down Colonial Way until the loading dock is reached. Trucks would then exit by retracing the same route in reverse, traveling west on Colonial Way, and exiting on Stockton Boulevard. All trucks that are more than 45 feet long would still use the existing route from Stockton Boulevard to X Street to 45th Street to Doctors Way. The redistribution of vehicles less than 45 feet long could bring heavy truck traffic that travels along X Street under existing conditions closer to the residences north of V Street. It is expected that 55 percent of trucks accessing the loading docks would be less than 45 feet long, and 45 percent of trucks accessing the loading docks would be more than 45 feet long. Therefore, up to 55 percent of trucks under with-project conditions may use the new route from Stockton Boulevard to Colonial Way.

Under existing conditions, an average of 71 trucks per day access this loading dock. As described above, the project would not result in an increase in this number. Most of these truck trips occur during daytime hours, but modeling assumed some (15 percent) would arrive or depart during evening or nighttime hours. Although it is estimated that only 55 percent of trucks would be rerouted, for the purposes of this analysis, modeling conservatively assumed that all trucks would be using this new route, which is closer to residences than the existing route.

Modeling was conducted to estimate noise levels from up to 71 trucks, or 142 round trip truck trips, occurring per day along the Colonial Way with the project. The nearest residence would be located approximately 120 feet from the centerline of the modified Colonial Way. At this distance, trucks could result in noise levels of approximately 53.0 dBA L_{dn}. This analysis assumes all operational trucks would use this route, although approximately half the trucks are expected to use this route, and half would be expected to use the existing route. Therefore, the analysis of noise impacts related to operational truck trips on this new route is considered conservative. Existing noise in this area near Colonial Way was measured to be in the range of 68.2 to 71.0 for LT-3 and 65.8 to 69.1 for LT-5. Therefore, existing noise levels in the area are already 13 to 18 dB louder than the estimated noise generated by the rerouting of operational trucks. As shown in Table 3.11-3, when combining noise levels from multiple noise sources with a difference of more than 10 dB, the overall noise level is equal to the loudest individual noise source (e.g., 53 dB + 668 dB = 66 dB). Therefore, the rerouting of operational truck trips to Colonial Way would not be expected to increase the ambient noise level along V Street. Impacts related to loading activity noise associated with the project would be ***less than significant***.

Increase in Emergency Helicopter Noise

The potential for increases in helicopter noise to occur with project implementation is analyzed under Impact NOI-4.

Impact NOI-3: Generation of excessive groundborne vibration or groundborne noise levels (less than significant with mitigation)

Summary of Impact NOI-3 by Component

Component	Level of Significance before Mitigation	Mitigation Measures Required	Level of Significance after Mitigation
Make-ready projects	S	LRDP NOI-3a NOI-3	LTS
California Tower construction, Surgery and Emergency Services Pavilion interior renovation, Central Utility Plant upgrades	S	LRDP NOI-3a NOI-3	LTS
Parking Structure 5 construction	LTS	None	–
East Main Hospital Wing demolition	S	LRDP NOI-3a NOI-3	LTS
Whole project	S	LRDP NOI-3a NOI-3	LTS

NI = no impact; LTS = less than significant; S = significant; SU = significant and unavoidable.

Policy EC 3.1.5 of the *Sacramento 2035 General Plan* states that the City requires construction projects anticipated to generate a significant amount of vibration to ensure acceptable interior vibration levels at nearby residential and commercial uses based on the current City or FTA criteria (City of Sacramento 2015). As a state entity, the UC is exempt under the state constitution from compliance with local land use regulations, including general plans, zoning, and ordinances whenever using property under its control in furtherance of its educational mission. However, the UC seeks to develop its property in a manner that minimizes potential conflicts with the land use policies and plans of local jurisdictions to the extent feasible. Therefore, potential project-related vibration effects on nearby sensitive land uses are analyzed.

Sensitive receptors in the project area include onsite hospital and research land uses, as well as offsite residential land uses. Construction activity is a main cause of vibration effects, and the two main concerns associated with construction-generated vibration are annoyance (and specifically, sleep disturbance) and potential structural damage.

Vibration-Related Annoyance

Impacts on Offsite Land Uses

As described in Section 3.11.2, *Existing Conditions*, FTA provides guidance on evaluating effects of vibration levels on humans from various vibration-inducing events, including construction activities and vibration from railroads. The impact criteria, which are based on the frequency of events occurring in a single day and on receptor categories (including buildings where vibration would interfere with interior operations, residences/buildings where people sleep, and institutional land uses with primarily daytime use), are summarized in Table 3.11-4. This table parses out potential annoyance effects related to interference with interior operations, sleep, and institutional daytime use as a function of the frequency of the vibration event according to three land use categories. The categories include the following.

- Category 1: Buildings where vibration would interfere with interior operations.
- Category 2: Residences and buildings where people normally sleep.
- Category 3: Institutional land uses with primarily daytime uses.

The potential for annoyance-related vibration impacts from construction to occur depends on the proximity of construction activities to sensitive receptors, the types of construction equipment being used, the duration of construction equipment use, and the time of use. Project construction would not require the use of pile drivers but would be expected to require the use of heavy-duty equipment such as drills, large bulldozers, and vibratory rollers. Typical vibration levels associated with heavy-duty construction equipment that are expected to be used for project construction are shown in Table 3.11-21 at a reference distance of 25 feet and other distances, based on the attenuation equation discussed above in Section 3.11.1, *Overview of Vibration and Groundborne Noise*.

Table 3.11-21. Vibration Levels in VdB of Proposed Project Construction Equipment

Equipment	VdB at 5 Feet	VdB at 25 Feet	VdB at 50 Feet	VdB at 55 Feet	VdB at 80 Feet	VdB at 100 Feet	VdB at 140 Feet	VdB at 210 Feet
Vibratory roller	115	94	85	84	79	76	72	66
Hoe ram	108	87	78	77	72	69	65	59
Caisson drilling	108	87	78	77	72	69	65	59
Large bulldozer	108	87	78	77	72	69	65	59
Loaded trucks	107	86	77	76	71	68	64	58
Small bulldozer	100	58	49	48	64	40	57	30

VdB = vibration decibels.

Regarding vibration effects on offsite uses, the northernmost perimeter of the project site is located over 55 feet from the nearest residential land uses, located north of V Street. Note that most construction activities would take place farther than this distance from the nearby residences. Residential land uses are considered most sensitive to vibration during nighttime hours when people typically sleep. Construction activities that may take place during nighttime hours include the pavilion remodel, utility tie-ins for offsite utilities, critical activities for site demolition and preparation, work for the foundations and superstructure phase, and fire and life safety tests during building commissioning.

Most nighttime construction activities would occur at least approximately 165 feet south of V Street, or at least 210 feet from the residences north of V Street. The most vibration-intensive equipment that may be used at this distance from residences during nighttime hours would be large bulldozers, required for the limited nighttime foundations work. At a distance of 210 feet, vibration levels from a large bulldozer would be approximately 59 VdB as shown in Table 3.11-21. This level is well below the 72 VdB FTA criteria for Category 2 uses (e.g., places where people sleep) described above.

Limited work related to tie-ins for offsite utilities may also be required during nighttime hours. This work would take place a minimum of 55 feet from the residences north of V Street but would only be expected to require relatively small equipment which do not generate high vibration levels. Specifically, this work is expected to require the use of a loader or backhoe. These equipment types generate vibration levels similar to a small bulldozer shown in Table 3.11-21 above. Therefore, estimated vibration levels at the nearest residence to this nighttime work would be approximately 48 VdB during nighttime hours, which is well below the 72 VdB FTA criteria for Category 2 uses.

Based on the estimated vibration levels for project construction equipment used during nighttime hours presented above, nighttime vibration impacts related to sleep disturbance at offsite residential (Category 2) land uses would be less than significant.

Impacts on Onsite Land Uses

With regard to onsite sensitive uses, the existing hospital building located west of the project site would remain operational during project construction. The hospital building is located adjacent to areas where vibration-generating construction activities may occur. This building would be considered both a Category 1 land use (buildings where vibration would interfere with interior operations) due to interior operations that take place in this building, and a Category 2 land use (residences and buildings where people normally sleep) because it is an in-patient facility where both patients and hospital staff (e.g., on-call staff) may sleep. The existing building includes rooms where surgery, imaging, and lab work may occur, although most of these rooms are not located along the eastern terminus of the existing hospital building. The imaging rooms are located on the first floor of the building over 350 feet from the eastern terminus of the building. The lab is located on the second story of the existing hospital building, over 175 feet from the eastern terminus of the building and at least 100 feet from project construction that may occur south of the existing hospital building. The main surgical rooms are located on the third floor of the existing building along the eastern terminus of the building adjacent to the project site (Sebright pers. comm. [c]).

As shown in Table 3.11-21 above, construction equipment that may be used adjacent to this building could result in vibration levels in the range of 100–115 VdB at a distance of 5 feet. These vibration levels are well above the vibration criterion for both Category 1 and Category 2 uses of 65 and 72 VdB, respectively. At times, construction may take place even closer to the hospital structure and could result in even higher levels of vibration inside of the hospital. When construction activity is occurring very close to the existing hospital tower, vibration levels within the hospital may exceed the applicable 72 VdB criterion in rooms where people sleep or 65 VdB criterion in rooms where vibration could interfere with interior operations.

In the event that equipment other than a vibratory roller is used within 140 feet of portions of the hospital building with sensitive equipment (e.g., the lab, surgery rooms or imagine rooms), vibration levels from project construction could exceed the 65 VdB criterion for Category 1 uses. If a vibratory roller is used within 225 feet of rooms containing sensitive equipment, vibration levels from project construction could exceed the 65 VdB criterion for Category 1 uses.

In the event that equipment other than a vibratory roller is used within 80 feet of portions of the hospital where people typically sleep (e.g., recovery rooms, on-call or sleep rooms for hospital staff, etc.), vibration levels from project construction could exceed the 72 VdB criterion for Category 2 uses (land uses where people normally sleep). If a vibratory roller is used within 140 feet of rooms in the hospital where people may sleep, vibration levels from project construction could exceed the 72 VdB criterion for Category 2 uses.

Note that a vibratory roller is not proposed for use during nighttime hours when people typically sleep, but a hospital land use may commonly have people sleeping during daytime hours as well. The most vibration-intensive equipment expected to be used in close proximity to the hospital building during nighttime hours would be a large bulldozer. At a distance of 5 feet, a large bulldozer can generate a vibration level of 108 VdB. This is in excess of the 72 VdB annoyance criteria for Category 2 land uses. Therefore, project construction could result in annoyance related effects to onsite Category 1 uses during daytime and nighttime hours.

Because daytime construction may result in vibration levels in excess of the Category 1 (sensitive equipment) criterion for onsite Category 1 uses, and because nighttime construction may result in vibration levels in excess of the Category 2 criterion at onsite Category 2 uses, vibration-related annoyance effects to onsite land uses would be considered ***significant*** during daytime and nighttime hours, and mitigation would be required.

Implementation of Mitigation Measure LRDP NOI-3a calls for the construction contractor to coordinate the timing of the vibration-intensive activities with hospital or research units that may be affected to reduce potential vibration-related annoyance effects to sensitive onsite hospital or research receptors. The construction contractor will appoint a project vibration coordinator who will serve as the point of contact for vibration-related complaints during project construction. Contact information for the project vibration coordinator will be posted at the project site and on a publicly available project website. When construction activities result in excessive onsite vibration that causes disruption to the hospital use, coordination will take place to reduce vibration at the onsite sensitive use. Implementation of Mitigation Measure LRDP NOI-3a would reduce vibration related annoyance impacts on on-campus land uses to less-than-significant levels. Vibration-related annoyance impact on onsite and offsite uses would be considered **less than significant with mitigation**.

Mitigation Measure LRDP NOI-3a: Implement measures to reduce vibration-related annoyance impacts to onsite land uses

In the event that vibration-generating construction activities that do not involve pile driving are proposed within 140 feet of on-campus Category 1 buildings (noting that no pile driving is proposed for this project) the construction contractor will work with the University to identify vibration-producing activities on the construction schedule in advance. The construction contractor will coordinate the timing of the activities with hospital or research units that may be affected to reduce potential vibration-related annoyance effects on sensitive onsite hospital or research receptors. In addition, the construction contractor will appoint a project vibration coordinator who will serve as the point of contact for vibration-related complaints during project construction. Contact information for the project vibration coordinator will be posted at the project site and on a publicly available project website. The project vibration coordinator will be contacted should vibration effects become too disruptive at on-campus uses, and the project vibration coordinator will then work with the construction team to adjust activities to reduce vibration or to reschedule activities for a less sensitive time.

Vibration-Related Structural Damage

Potential damage-related effects of project construction are considered in this analysis because construction of the proposed project would require equipment that could generate groundborne vibration at nearby structures. Typical vibration levels associated with heavy equipment proposed for project construction at a distance of 25 feet, and various other distances, are shown in Table 3.11-22.

Table 3.11-22. Peak Particle Velocity Vibration Levels for Construction Equipment

Equipment	PPV at 5 Feet	PPV at 10 Feet	PPV at 15 Feet	PPV at 25 Feet	PPV at 50 Feet	PPV at 100 Feet
Vibratory roller	2.348	0.830	0.452	0.210	0.074	0.026
Hoe ram	0.995	0.352	0.191	0.089	0.031	0.011
Drill	0.995	0.352	0.191	0.089	0.031	0.011
Large bulldozer	0.995	0.352	0.191	0.089	0.031	0.011
Loaded trucks	0.850	0.300	0.164	0.076	0.027	0.010
Small bulldozer	0.034	0.012	0.006	0.003	0.001	0.000

Source: Federal Transit Administration 2018.
PPV = peak particle velocity.

As shown in Table 3.11-5, some building types (e.g., fragile buildings or historical and some old buildings) are more susceptible to vibration-related damage effects than more modern structures. Vibration impacts on structures may be considered significant if construction vibration could result in structural or cosmetic damage or, in the case of a historic resource, materially alter the resource pursuant to CEQA Guidelines Section 15064.5. Depending on a structure's condition, potential vibration-induced damage may be cosmetic (e.g., plaster or wood ornamentation may be damaged) or structural, in which case the integrity of the building may be threatened.

For this analysis, the Caltrans vibration guidelines for potential damage are used to assess the potential for significant damage-related impacts to occur. Regarding nearby offsite structures, the nearest offsite structures (residences located north of V street) would likely be classified as "older residential structures." However, to ensure a conservative assessment, the criterion for "historic and some old buildings" is used in this analysis for the residential structures north of V Street. Regarding nearby on-campus buildings, such as the existing adjacent hospital building, these would generally fall into the Caltrans category of "modern industrial/commercial buildings."

Continuous/frequent intermittent sources of vibration (such as construction activity) that exceeds the 0.25 PPV criterion would have the potential to cause damage to buildings in the "historic and some old buildings" category, which is the category being applied for the off-site residences located north of V Street. These residences are located at last 50 feet from all proposed project construction activities. As shown in Table 3.11-22, at 50 feet, all vibration-intensive construction equipment proposed for the project would result in vibration levels well below the damage thresholds for "older residential structures" (0.25 PPV in/sec). Therefore, vibration-related damage impacts from project construction to nearby offsite structures would be ***less than significant***.

Regarding vibration-related damage effects on on-campus structures, construction activities would occur adjacent to the existing hospital. Table 3.11-22 above shows vibration levels from the most vibration-intensive equipment proposed for the project at a distance of approximately 5 feet of the nearby onsite hospital building. Note that activities would often occur at farther distances from this building. However, since some work may be required this close, or closer, to the hospital building, this distance is selected in order to present reasonable worst-case vibration-related damage impacts to on-campus buildings.

As shown in Table 3.11-22, at a distance of 5 feet, almost all of the vibration-intensive construction equipment proposed for the project could result in vibration levels in excess of the Caltrans damage criterion for "modern industrial/commercial buildings" (0.5 PPV in/sec). For example, a vibratory roller at could result in a PPV vibration level of 2.348 PPV in/sec at a distance of 5 feet. A hoe ram, drill and large bulldozer could all result in vibration levels of approximately 1.0 PPV in/sec at a distance of 5 feet.

Note that, although the modeling indicated exceedances of the applicable damage-related criterion, this does not necessarily mean damage would occur; rather, the modeling results indicate that the potential for vibration-related damage to occur exists. In addition, note that when a vibratory roller is used more than 15 feet from the nearby hospital building and when all other pieces of equipment included in Table 3.11-22 above are used more than 10 feet from this structure, vibration levels would be below the Caltrans damage criterion for this type of building. However, because equipment may be used at very close distances to this building, vibration-related damage impacts from project construction on nearby on-campus buildings would be significant, and mitigation would be required.

Implementation of Mitigation Measure NOI-3 would ensure that vibration from project-related construction equipment would not result in vibration-related damage to adjacent on-campus structures, noting that impacts to off-site structures would be less than significant. Vibration-related damage impacts to on-campus structures would be ***less than significant with mitigation***.

Mitigation Measure NOI-3: Protect adjacent structures from construction-generated vibration

The University shall incorporate into construction specifications for the proposed project a requirement that the construction contractor(s) use all feasible means to avoid damage to adjacent and nearby buildings. Such methods to help reduce vibration-related damage effects may include maintaining a safe distance between the construction site and the potentially affected building (e.g., at least 10 feet for most equipment, 15 feet for vibratory rollers).

In the event that vibration-generating construction activity is required within 15 feet of nearby modern buildings similar to "modern industrial/commercial buildings" (e.g., the least sensitive building category shown in Table 3.11-5) the University will work with the construction contractor to implement a monitoring program to minimize damage to adjacent buildings and ensure that any such damage is documented and repaired. If required, the monitoring program will include the following components.

- Prior to the start of any ground-disturbing activity, UC Davis will engage a structural engineer or other professional with similar qualifications to document and photograph the existing conditions of potentially affected buildings within 15 feet of proposed vibratory-generating construction activities.
- Based on the construction and condition of the resource(s), the consultant will also establish a standard maximum vibration level that will not be exceeded at nearby buildings, based on existing conditions, character-defining features, soil conditions, and anticipated construction practices (a common standard is a peak particle velocity of 0.5 inch per second for "modern industrial/commercial buildings," as shown in Table 3.11-5).
- To ensure that vibration levels do not exceed the established standard, the project sponsor will monitor vibration levels at each structure and prohibit vibratory construction activities that generate vibration levels in excess of the standard.
- Should vibration levels be observed in excess of the selected standard, construction will be halted and alternative construction techniques put in practice, to the extent feasible.
- When vibration-intensive activity (e.g., auger drills, rollers) occurs within 15 to 20 feet of a building, the structural engineer will conduct an inspection of the building for damage within 7 days of that activity. If inspections determine that no damage is occurring from that activity, the 7-day period may be increased to 30 days for that activity. Should damage to adjacent buildings occur, the building(s) will be remediated to their preconstruction condition at the conclusion of ground-disturbing activity on the site.

Impact NOI-4: Placement of project-related activities in the vicinity of a private airstrip or an airport land use plan or within 2 miles of a public airport or public use airport, resulting in exposure of people residing or working in the project area to excessive noise levels (significant and unavoidable)

Summary of Impact NOI-4 by Component

Component	Level of Significance before Mitigation	Mitigation Measures Required	Level of Significance after Mitigation
Make-ready projects	LTS	None	–
California Tower construction, Surgery and Emergency Services Pavilion interior renovation, Central Utility Plant upgrades	S	NOI-4	SU
Parking Structure 5 construction	LTS	None	–
East Main Hospital Wing demolition	LTS	None	–
Whole project	S	NOI-4	SU

NI = no impact; LTS = less than significant; S = significant; SU = significant and unavoidable.

There are no public or public use airport facilities in the vicinity of the Sacramento Campus, and there would be no noise impacts related to aircraft activity at public airports. There are also no private airstrips within 2 miles of the campus. Under existing conditions, there are two on-campus emergency helipads on the Davis Tower. Implementation of the California Hospital Tower Project would result in the development of two new emergency helipads; the existing helipads on the Davis Tower would remain operational, although the existing easterly helipad would be relegated to backup use during maintenance periods at the helipads. The project would allow for an increase in the population served by the UC Davis Medical Center. Based on conversations with UC Davis, it is estimated that the population served by UC Davis Health would be approximately 9.2 percent greater under future conditions (Aubert pers. comm. [d]); therefore, the analysis of helicopter noise assumed that future helicopter operations were 9.2 percent greater than existing helicopter operations.

A helicopter noise study for the project (Appendix C) analyzed and compared the noise effects from existing and estimated future helicopter operations at the hospital. In order to accommodate simultaneous use of existing and proposed helipads, flight paths would be different under future conditions than they are today, as described in Appendix C. Noise increases resulting from increases in helicopter activity and from changes to helicopter flight paths were analyzed. Existing (2019) conditions include 2,347 annual helicopter operations; future (2030) with-project conditions are estimated to include 2,563 annual helicopter operations, assuming a 9.2 percent increase over existing conditions.

Helicopter noise modeling validation was performed by duplicating existing flight paths and operations with use of an Airbus H135 helicopter. The measured test noise data were in close agreement with helicopter noise modeling results (refer to Appendix H for the full details of these tests). According to the helicopter noise analysis, the existing helicopter operations result in overall noise levels below the CNEL 65 dBA standard in nearby residential areas and are therefore in compliance with California and Federal Aviation Administration noise standards. The analysis of existing conditions, however, also demonstrated that some residential land uses located north of the hospital are within the SEL 95 dBA noise contours for sleep disturbance when certain existing flight paths are used.

In addition to the increase in operations with the project, the distribution of flight paths would change with construction of the California Tower (which would block some existing flight paths) and with the development of new helipads. Under future conditions, approximately 15 percent of emergency helicopters would be expected to land at the existing Davis Tower; 85 percent of emergency helicopters would be expected to land at the California Tower. Refer to Figure 3.11-3 for a schematic diagram of the existing approach and departure flight paths, and Figure 3.11-4 for a schematic diagram of the future approach and departure flight paths.

According to the project CNEL helicopter noise modeling, a small (0.38 dBA) overall increase in existing CNEL and L_{dn} noise exposure would occur under future conditions due to the modest increase in helicopter operations. Note that in actuality, the CNEL noise contours under future conditions would be smaller (extend a shorter distance from the helipads) than under existing conditions because the number of helicopters at each of the two towers would be lower than the number that occurs at the Davis Tower under existing conditions, and because the distance between residences and the new California Tower helipads would be greater than the distance between residences and the existing Davis Tower helipads (the new helipads would be located farther south).

Refer to Figures 3.11-6 and 3.11-7 for the existing and future CNEL contours for helicopter activity at the Sacramento Campus.

The changes in flight paths would result in changes to the SEL 95 dBA sleep disturbance contours between existing and future conditions. Specifically, the new flight paths could result in residences that are not currently located within the 95 SEL sleep disturbance contours being located within these contours under future conditions. Refer to Figures 3.11-8 through 3.11-11 for the existing 95 SEL contours by flight path for the Davis Tower, and Figure 3.11-12 for the composite SEL noise contour for all flight paths under existing conditions. Refer to Figures 3.11-13 through 3.11-15 for the future 95 SEL contours by flight path for the Davis Tower, and Figures 3.11-16 and 3.11-17 for future 95 SEL contours by flight path for the California Tower. Refer to Figure 3.11-18 for the composite SEL noise contour for all flight paths under existing conditions.

The project does not propose the development of new residential land uses. All existing residential land uses near the California Tower would be located outside of the estimated 65 CNEL contour for year 2030 helicopter operations. Under California Division of Aeronautics and Federal Aviation Administration noise compatibility criterion, single- or multi-family residences are considered compatible with exterior aircraft noise exposures of 65 dB CNEL or less. Impacts related to CNEL 65 dBA noise contours from emergency helicopter activity would be less than significant under the project. However, the analysis identified the potential for residences that are not currently located within the existing 95 SEL sleep disturbance contours to be located within these contours under future conditions. Because there may be an increase in the number of residences experiencing SEL noise levels of 95 dBA during helicopter events, helicopter noise effects related to sleep disturbance would be considered significant and mitigation would be required.

Per Section 21662.4(a) of the State Aeronautics Act (*Emergency Flights for Medical Purposes*), emergency flights for medical purposes are exempt from local ordinances that restrict flight departures and arrivals to particular hours of the day or night, departure or arrival of aircraft based upon the aircrafts noise level, or the operation of certain types of aircraft. However, UC Davis will commit to the measures identified here to reduce noise from emergency helicopter operations, as much as feasible.

Because the proposed noise control measures outlined below would not be expected to reduce SEL helicopter noise at all nearby residences to below 95 dBA, it would not be expected to reduce helicopter noise to less than significant levels.

Implementation of Mitigation Measure NOI-4a requires the development of a Helicopter Operations Plan. As part of the plan, primary approach and departure paths for nighttime hours will be identified as the least disruptive flight path to nearby residences. Once identified, the paths will be used as much as feasible and within safety parameters during nighttime hours. The plan will also include a mechanism for responding to public complaints related to helicopter overflight noise associated with the campus heliports during nighttime hours. UC Davis currently has a process to receive and review helicopter noise complaints. This process includes working with helicopter operators to understand the specifics of particular flights and learn from those experiences. UC Davis will continue to review complaints related to emergency helicopter noise during and after the construction of the new helipads.

In addition to Mitigation Measure NOI-4a, Mitigation Measure NOI-4b would be implemented to reduce interior noise at affected residential uses. It is anticipated that emergency helicopter noise (from single events) in residential sleeping areas for most residences participating in the program described in NOI-4b could be reduced to below the SEL 80 dBA criterion with the incorporation of sound reduction strategies identified in the measure. Therefore, emergency helicopter noise impacts on most qualifying residential properties would be reduced to less than significant levels with mitigation. However, it may not be feasible to reduce SEL noise levels in sleeping areas at every residential unit to below the 80 dBA criterion. Further, the University cannot compel property owners in the vicinity of the helipad to keep windows closed (resulting in louder interior noise levels), or to participate in the Residential Sound Reduction Program described in Mitigation Measures NOI-4b. In addition, it is possible that the costs of materials required to achieve interior noise levels of (or below) SEL 80 dBA for some homes (e.g., potentially historic homes) may exceed the cap identified in item 11 in Mitigation Measure NOI-4b. In these instances, and while some sound attenuation may occur, it is possible the SEL 80 dBA criterion would not be met. For these reasons, mitigation measures NOI-4a and NOI-4b may not, in all instances and for all residential uses, reduce SEL-related helicopter noise impacts during nighttime hours to less than significant levels; this impact would remain **significant and unavoidable**.

Mitigation Measure NOI-4a: Helicopter operations plan to reduce sleep disturbance

Prior to the use of the proposed new helipads, UC Davis Medical Center will prepare a Helicopter Operations Plan that will specify the following:

- If UC Davis has discretion on flight timing, flights will occur during daytime hours when people are less sensitive to noise, where feasible.
- Of the approved approach and departure flight paths, primary approach and departure paths for nighttime hours will be identified as the least disruptive flight paths for nearby residences. Once identified, and within safety parameters, the paths will be used as much as feasible during nighttime hours. Note that alternate approved flight paths or any other flight routing may be used, based on wind conditions, safety considerations, or pilot judgment.
- UC Davis will host regular meetings with helicopter operators to review recent complaints, emphasize preferred routing, and collaborate on potential noise reduction strategies, within safety parameters.
- UC Davis communications with air medical companies will request that all pilots be routinely trained to understand the desired noise attenuation for arrival and departure flight path procedures. Within approved flight paths and safety parameters, pilots will be instructed in the use of the approach and departure paths determined to be least disruptive to nearby residences, to the extent feasible, especially during nighttime hours.
- UC Davis will provide and maintain pilot notifications and other essential fight operation details at the helipad and inside of the hospital to ensure it is accessible to pilots. The information will include, within safety parameters, details related to preferred departure and approach paths (i.e.., those resulting in least disruption to nearby residences).

Mitigation Measure NOI-4b: Residential sound reduction program to reduce noise

Following helipad construction, UC Davis shall implement a Residential Sound Reduction Program to reduce interior noise from helicopter overflights at residential land uses within redrawn SEL 95 dBA contours (as described below). A description of the program is provided below.

Start-up Period

1. During the first 8 weeks of operations at the California Tower helipads, UC Davis will address noise complaints, if any, by revising helicopter operations where feasible.
2. At the end of the start-up period, UC Davis will conduct updated acoustical flight tests. Tests will involve helicopters traveling along the new flight paths as well as to and from the new helipads. After the completion of flight tests, the SEL 95 dBA noise contours will be redrawn to reflect the noise environment in existence at that time. This redrawn contour will be used in the Qualifications stage of this program, as described below.

Qualifications

3. Property is located within the redrawn SEL 95 dBA (single-event) noise contours, and
4. Property is a legal residential or live/work unit as of the date of approval of the helipad by the University of California, and
5. Noise levels in interior sleeping areas are at or greater than the SEL 80 dBA with windows closed, as measured by the UC Davis sound consultant.

Implementation

6. UC Davis sends notification about the program to residential property owners within the redrawn SEL 95 dBA noise contour.
7. Property owners have 12 months after the date of notification about the program to apply for the program (UC Davis will send a reminder to those notified at least 3 months before the end of the application period).
8. UC Davis determines if property meets qualifications (per items 3 through 5 above).
9. Qualified UC Davis consultant may test façade for exterior-to-interior transmission loss, according to ASTM loudspeaker testing procedures. This testing would inform the determination of necessary treatments to reduce interior noise levels to below SEL 80 dBA (where technically and legally feasible), and by at least 5 dBA from existing conditions.
10. Qualified UC Davis consultant recommends sound reduction measures to reduce noise in sleeping areas, which may include:
    - Acoustical replacement windows,
    - Acoustical replacement doors,
    - Acoustically improved skylights, and
    - Ventilation improvements.
11. UC Davis consultant estimates cost of recommended sound reduction measure in sleeping areas, including labor and material costs, permit fees, and inspections. This measure includes a per-residence cap (in 2021 present value) of up to $35,000 for the aforementioned costs.
12. UC Davis consultant schedules construction of improvements with qualifying property owner.

- Replacements will be on "like-for-like" basis, with replacement materials similar in quality or appearance to existing materials. Improvements would comply with applicable codes.

13. UC Davis will seek to work with neighbors for ongoing discussions of noise and to address those concerns, where feasible.
14. Qualifying property owner, on their behalf and on behalf of tenants and future property owners, releases UC Davis from future claims for helicopter noise at the property. This release shall be in the form of a permanent easement in exchange for residential sound improvements per Item 12, above.

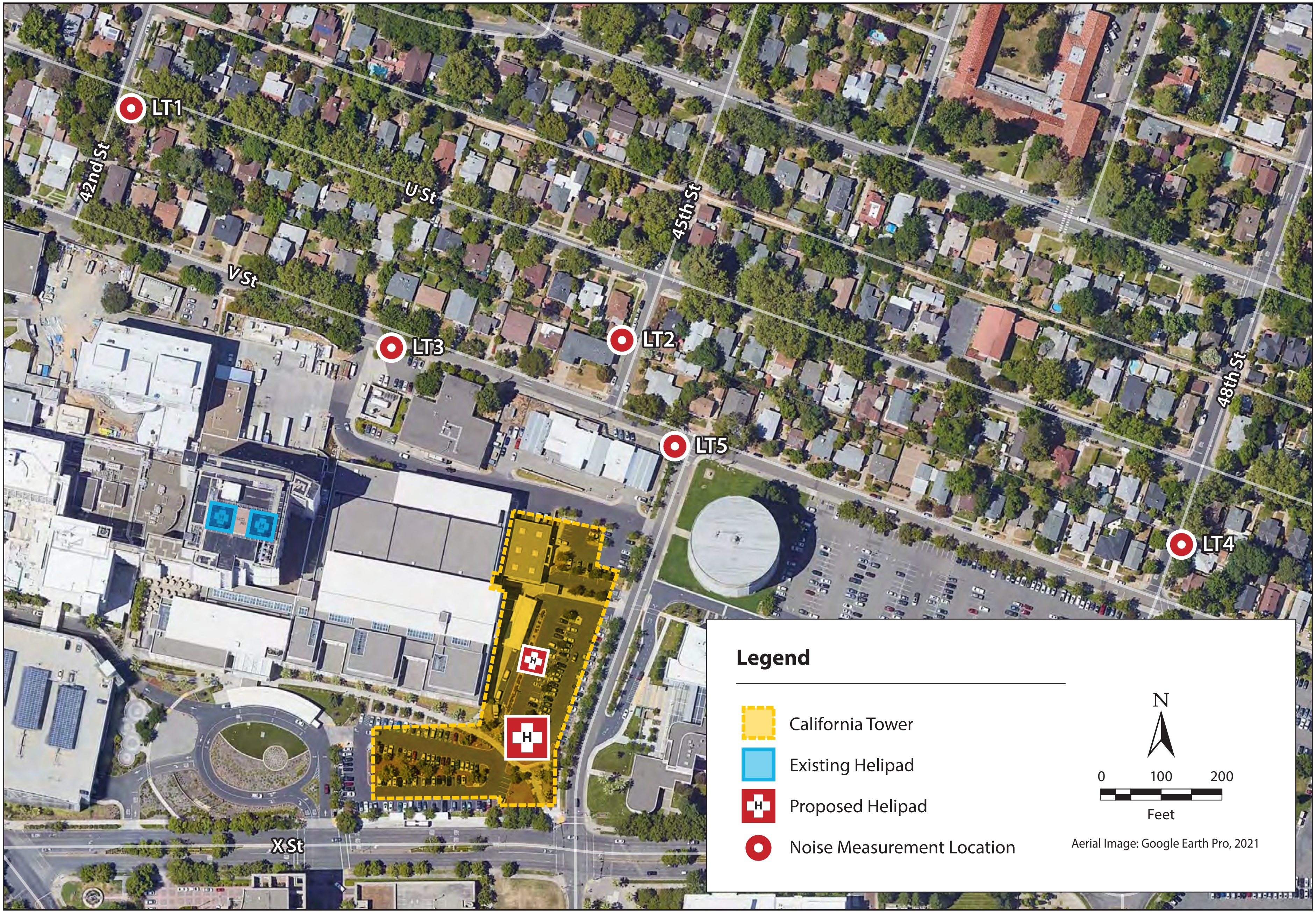

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Figure 3.11-1
Ambient Noise Measurement Locations

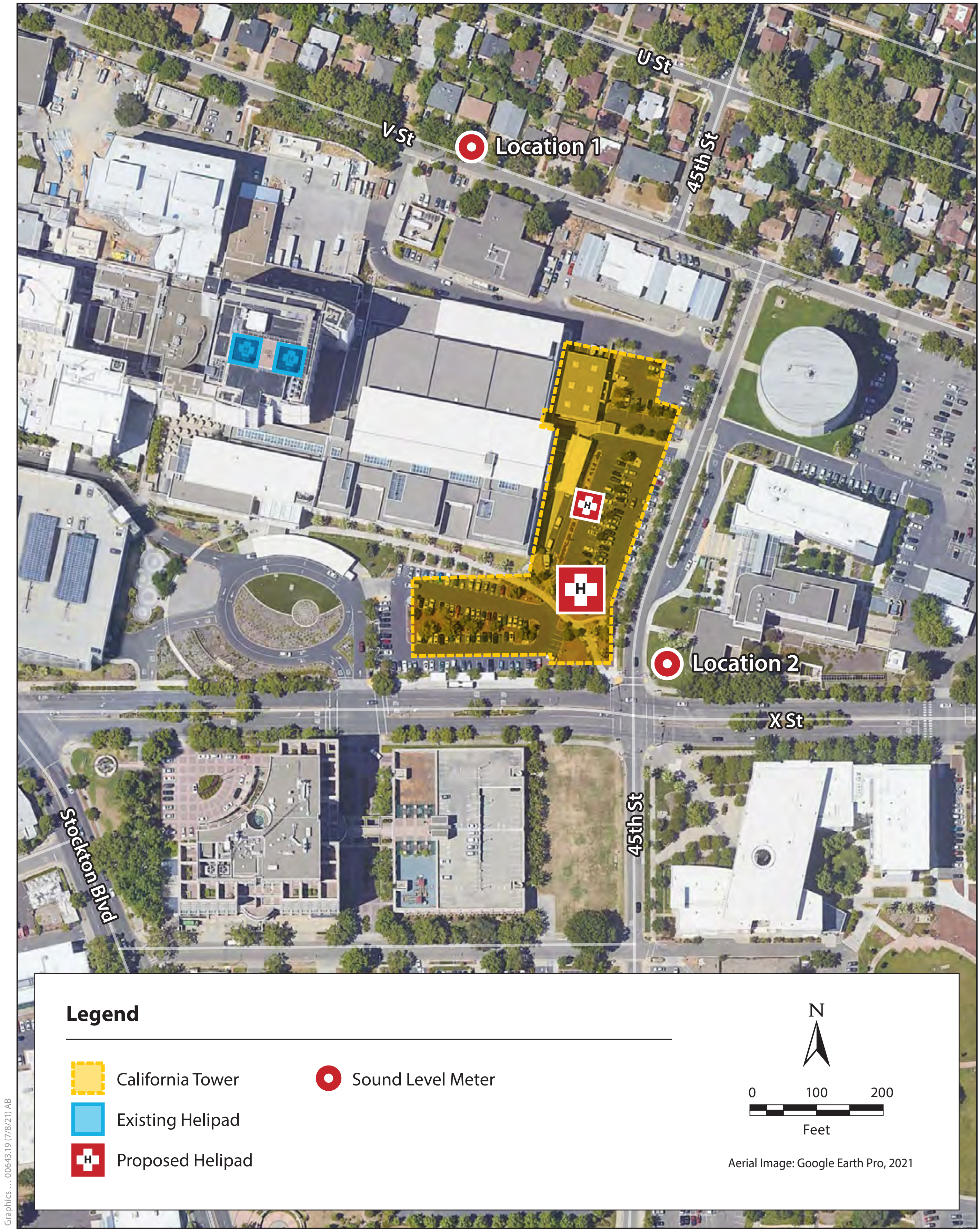

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Figure 3.11-2
Locations of Attended Sound Level Meters for Helicopter Tests

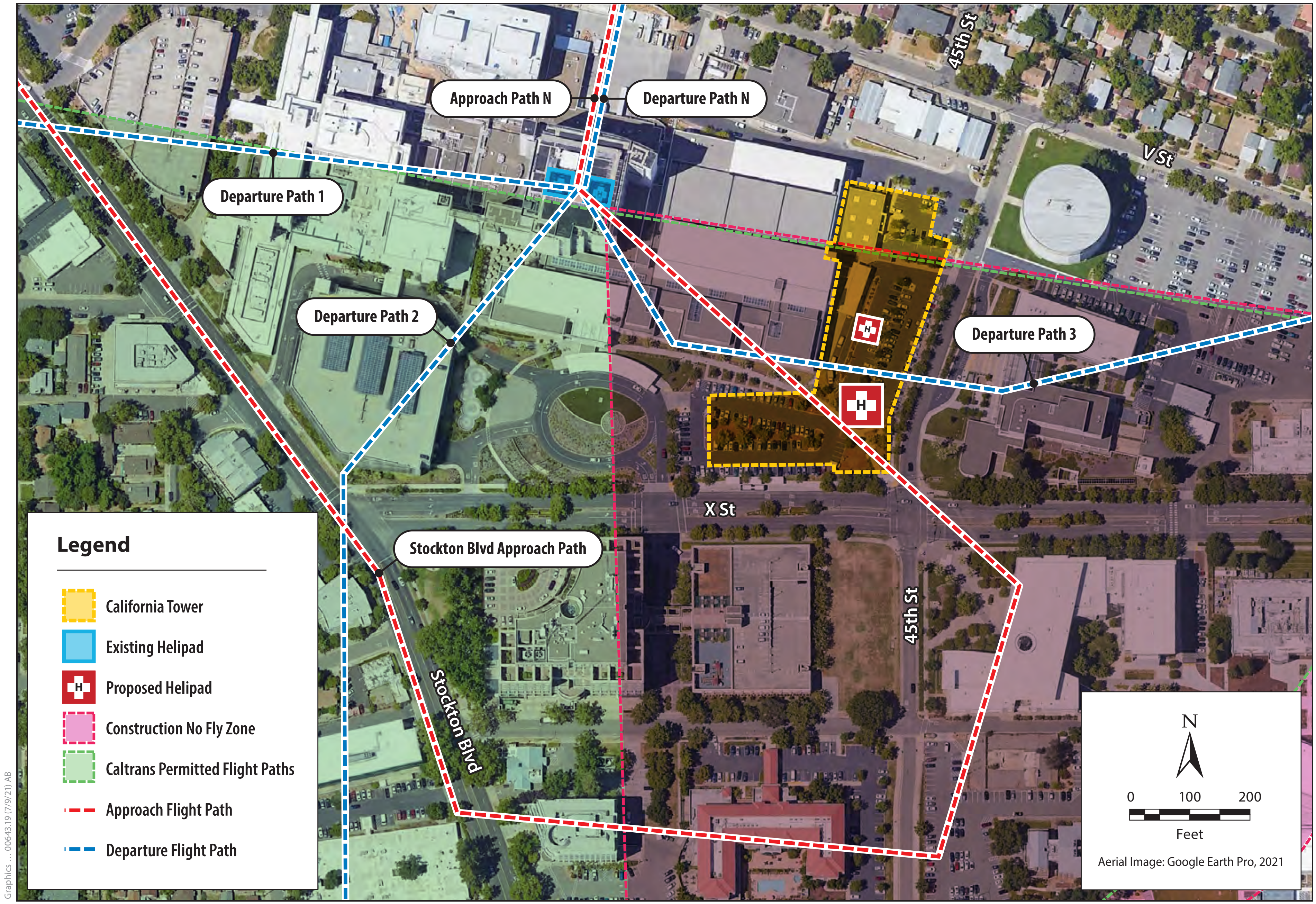

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Figure 3.11-3
Existing Conditions
Davis Tower Approach and Departure Flight Paths

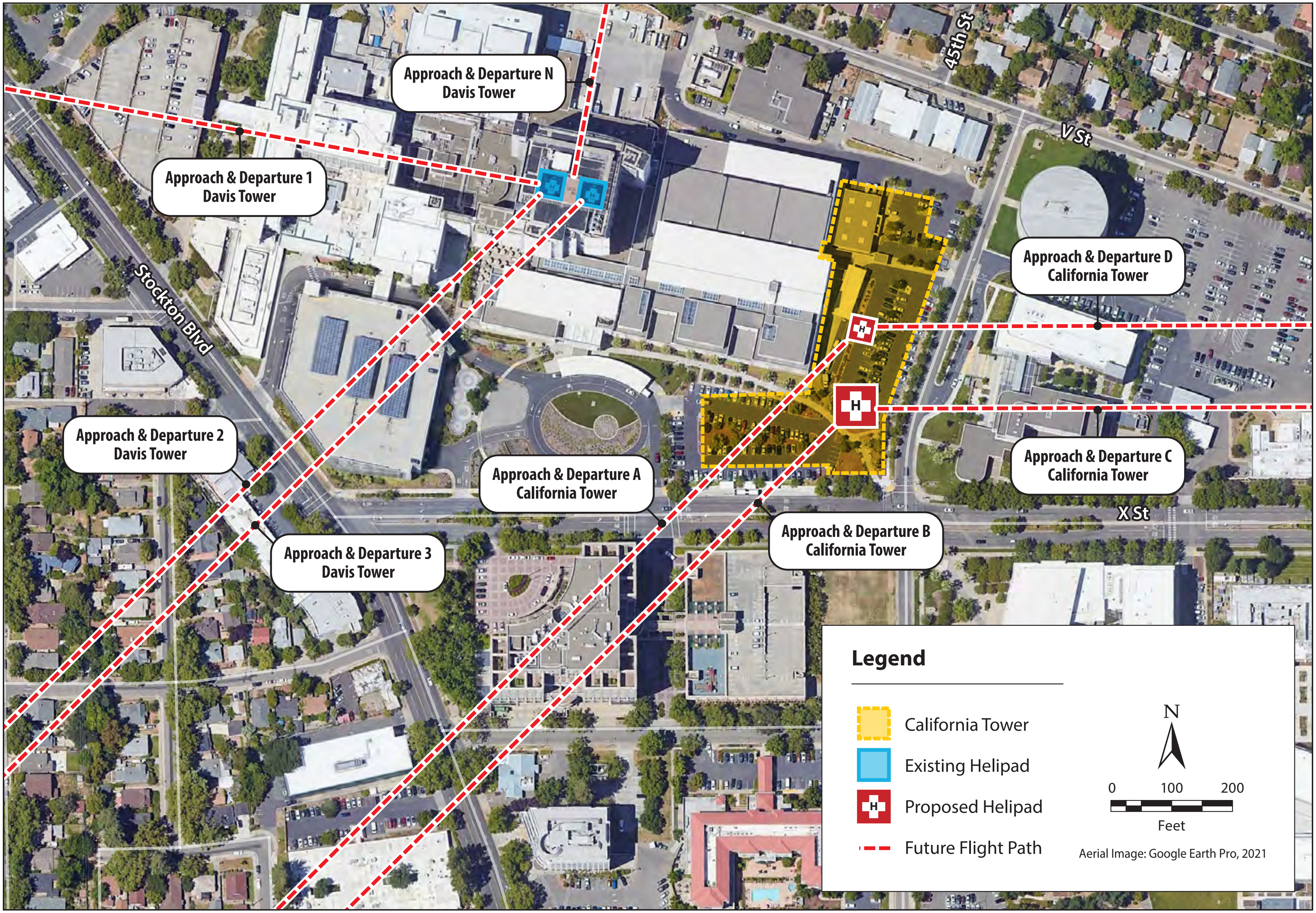

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Figure 3.11-4
Future Helicopter Flight Paths
Davis Tower and CA Tower

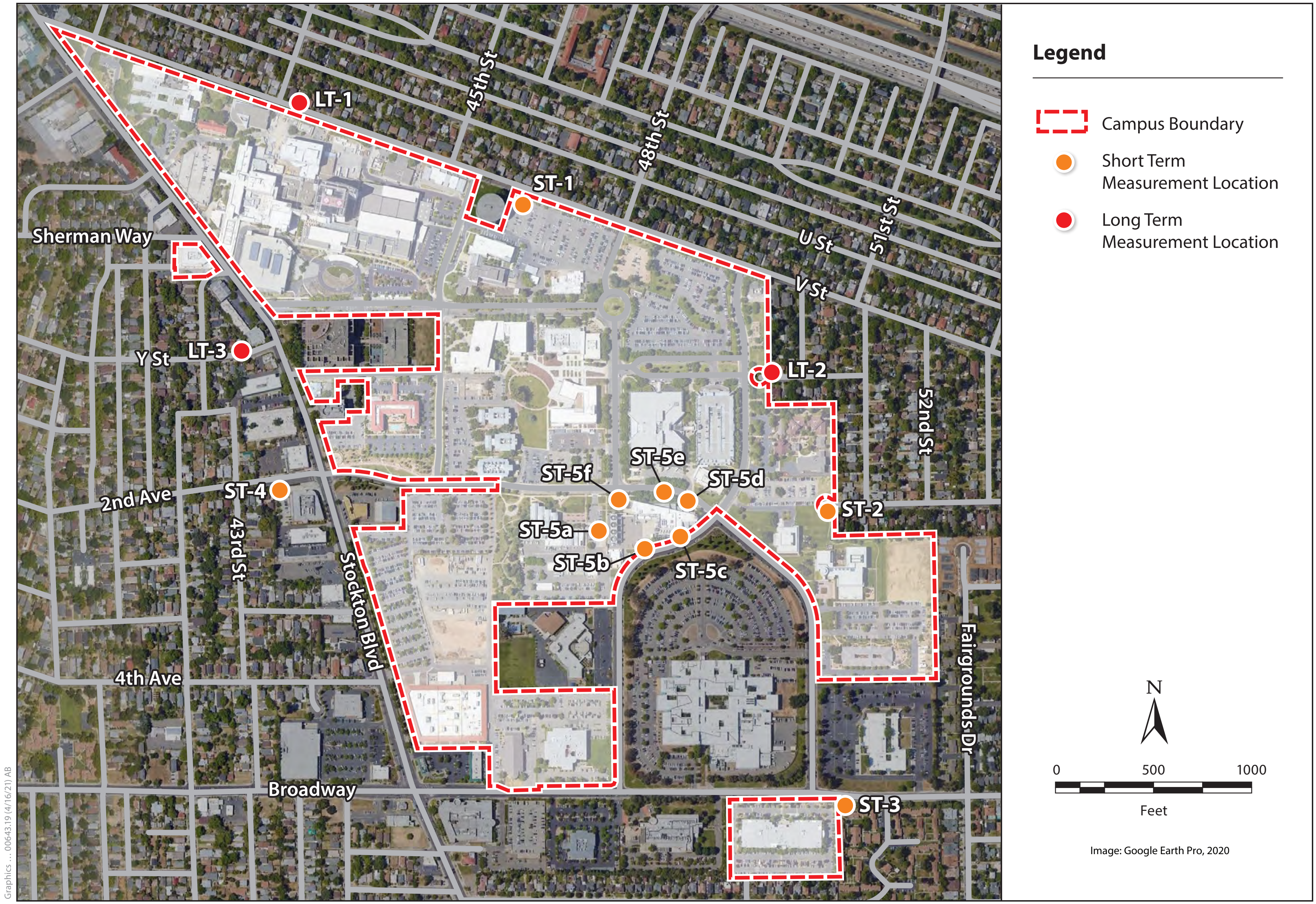

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Figure 3.11-5
2010 LRDP FEIR Noise Measurement Locations

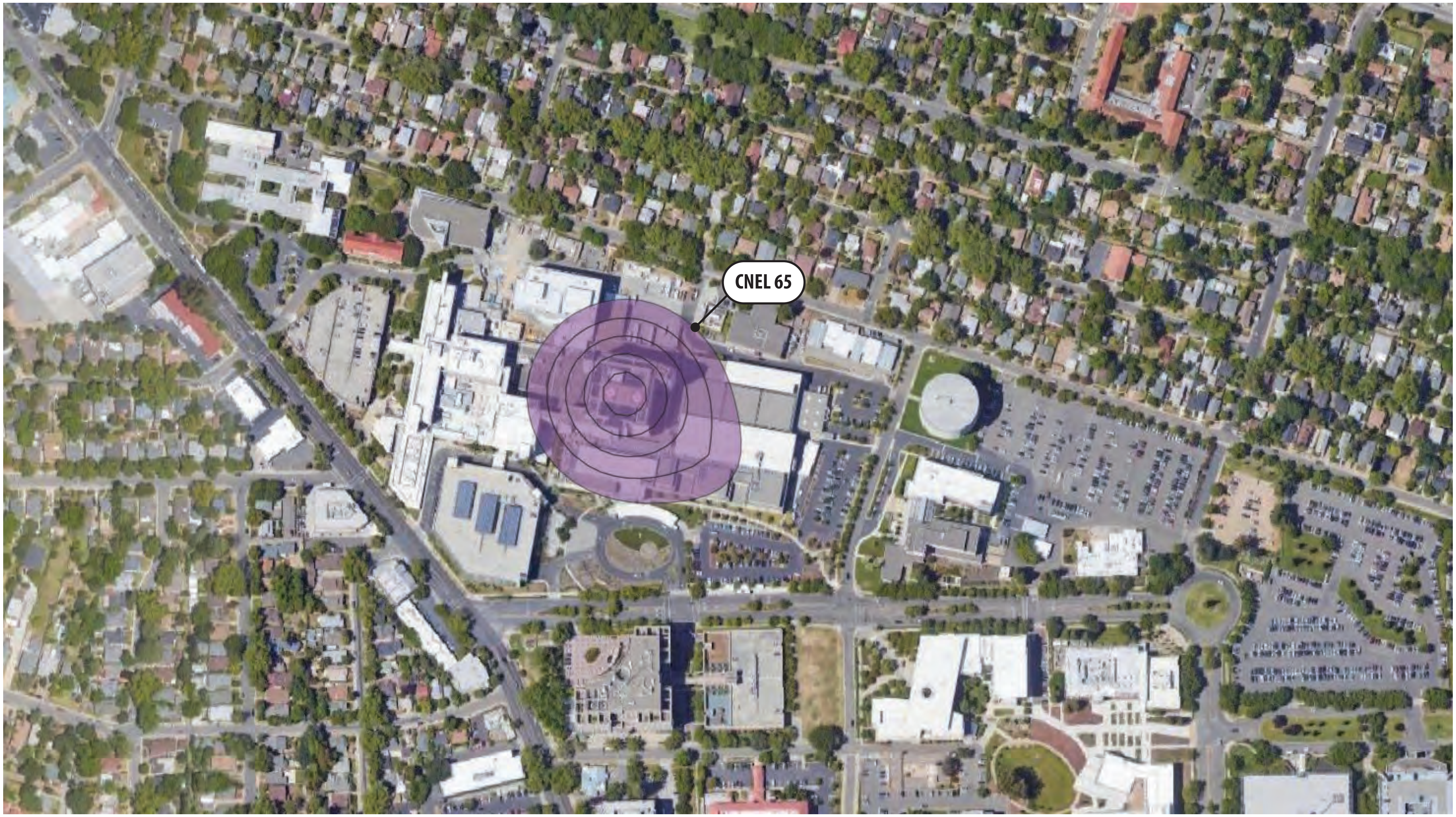

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Figure 3.11-6
Existing CNEL 65 dBA Helicopter Noise Contour

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Figure 3.11-7
Future CNEL 65 dBA Noise Contour Approach, Idle, and Departure for all Helipads

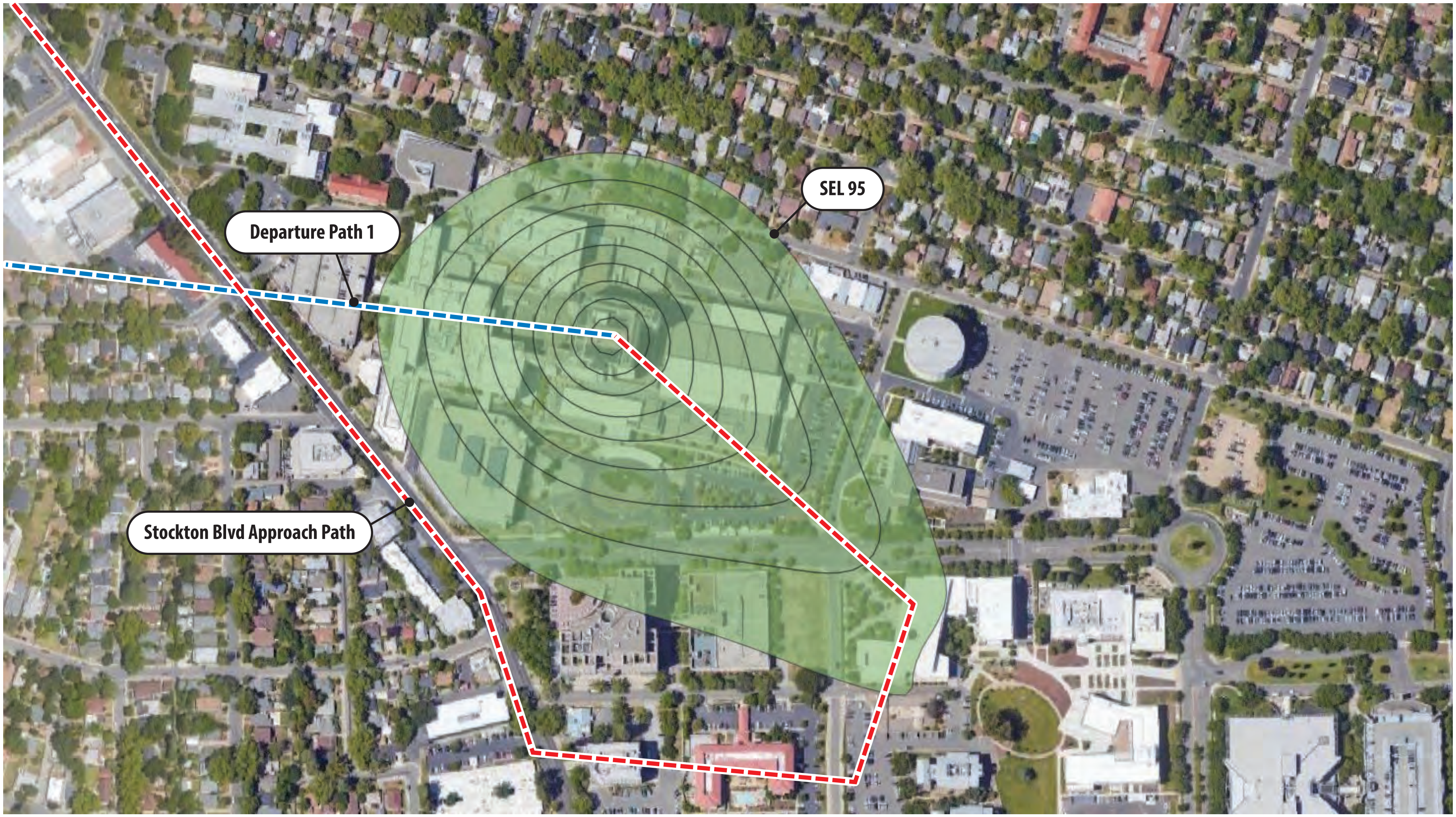

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Figure 3.11-8
Existing SEL 95 dBA Noise Contour
Stockton Boulevard Approach, Path 1 Departure

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Figure 3.11-9
Existing SEL 95 dBA Noise Contour
Stockton Boulevard Approach, Path 2 Departure

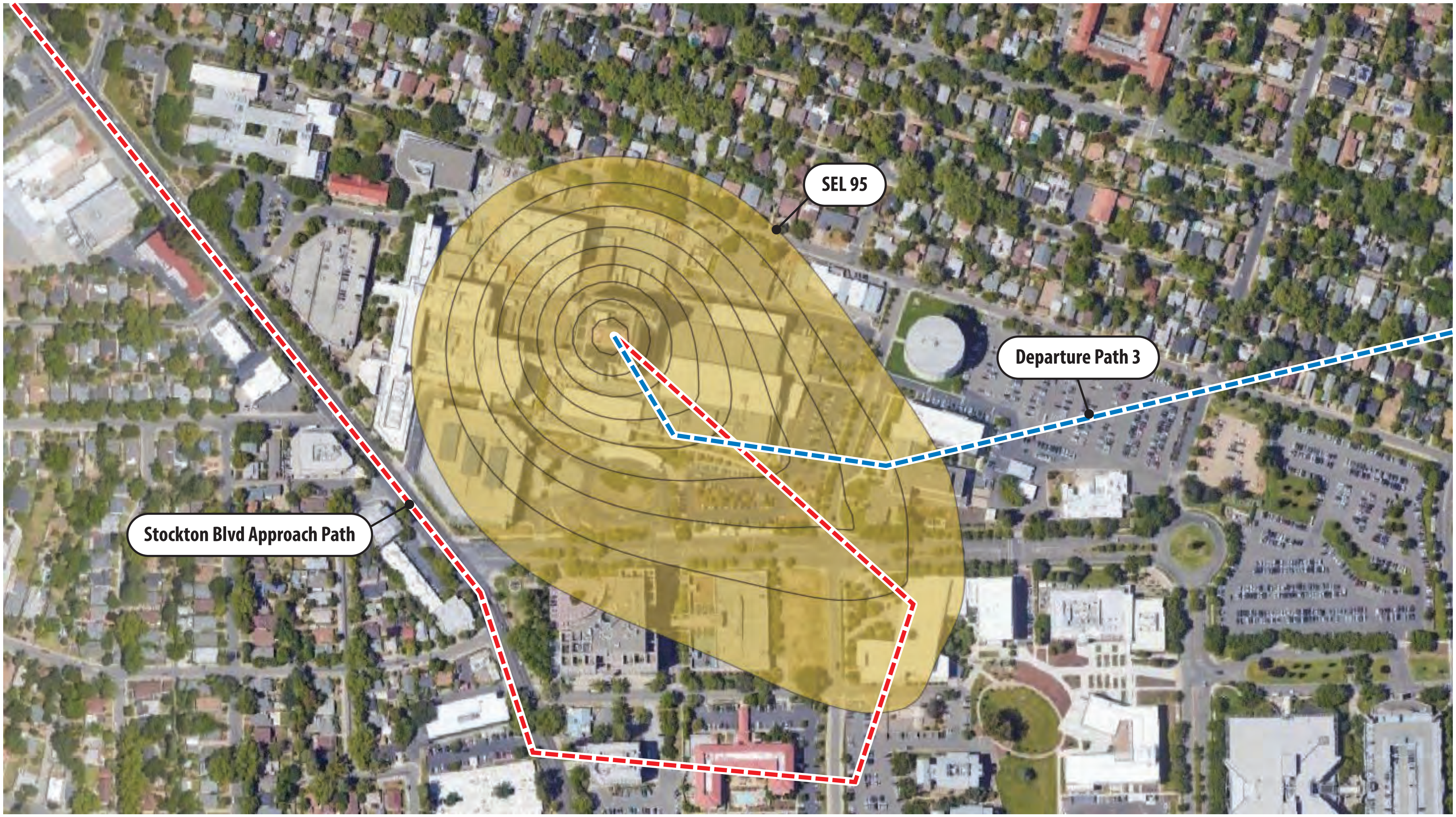

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Figure 3.11-10
Existing SEL 95 dBA Noise Contour
Stockton Boulevard Approach, Path 3 Departure

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Figure 3.11-11
Existing SEL 95 dBA Noise Contour
Approach and Departure Path N

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Figure 3.11-12
Existing Composite SEL 95 dBA Noise Contour
Approach, Idle, and Departure

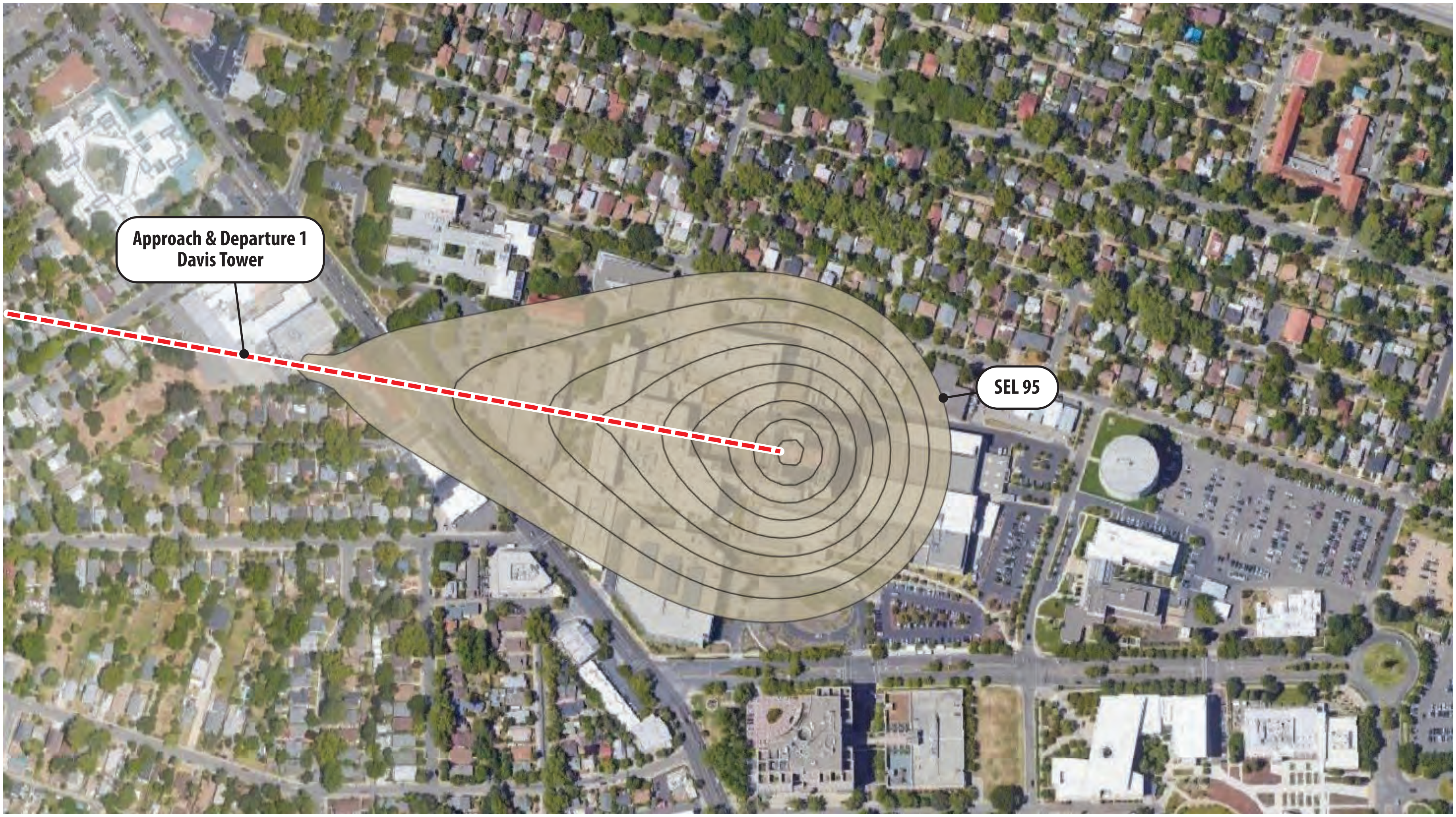

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Figure 3.11-13
Future Davis Tower SEL 95 dBA Noise Contour
Approach and Departure Path 1

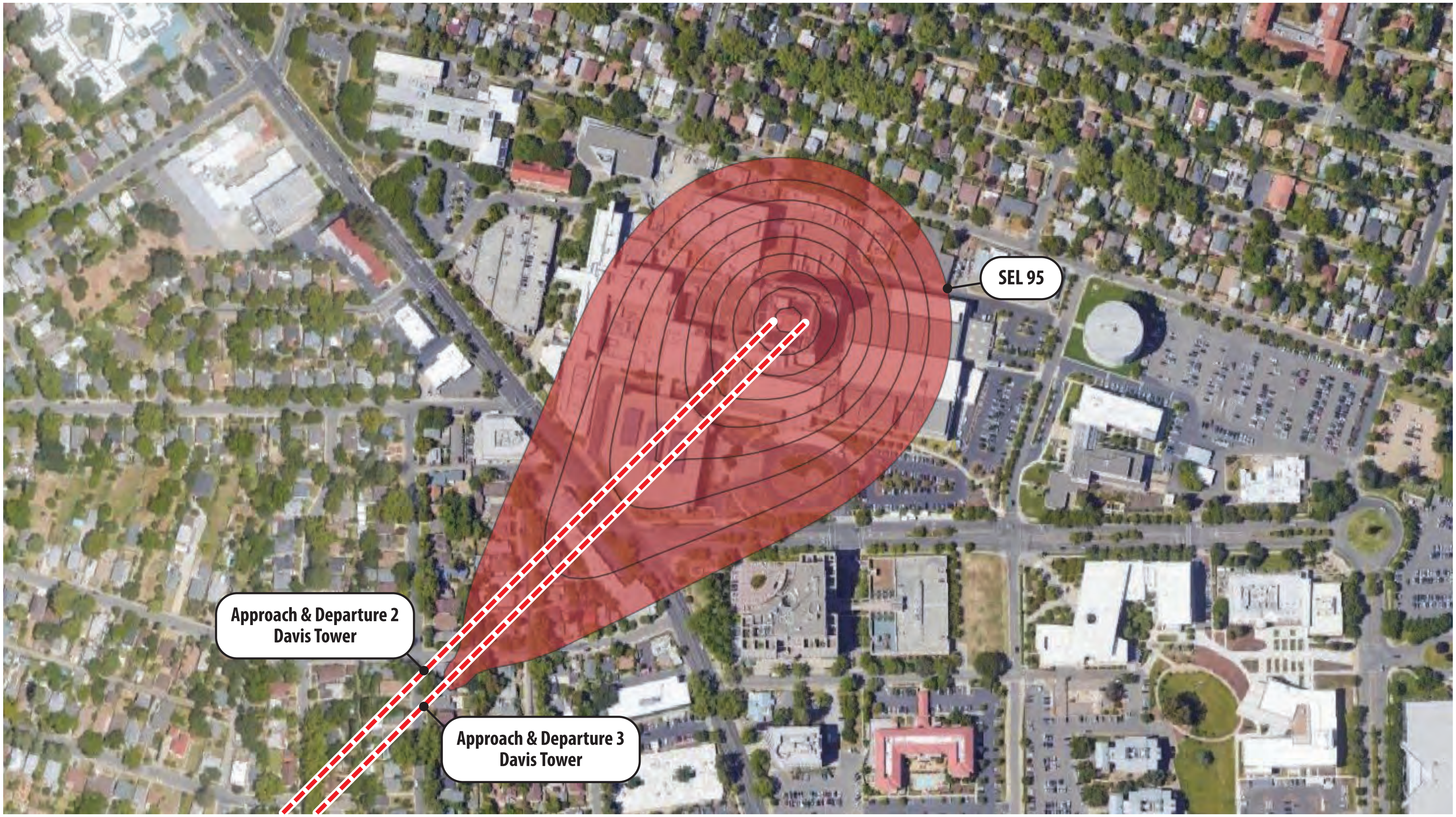

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Figure 3.11-14
Future Davis Tower SEL 95 dBA Noise Contour
Approach and Departure Paths 2 and 3

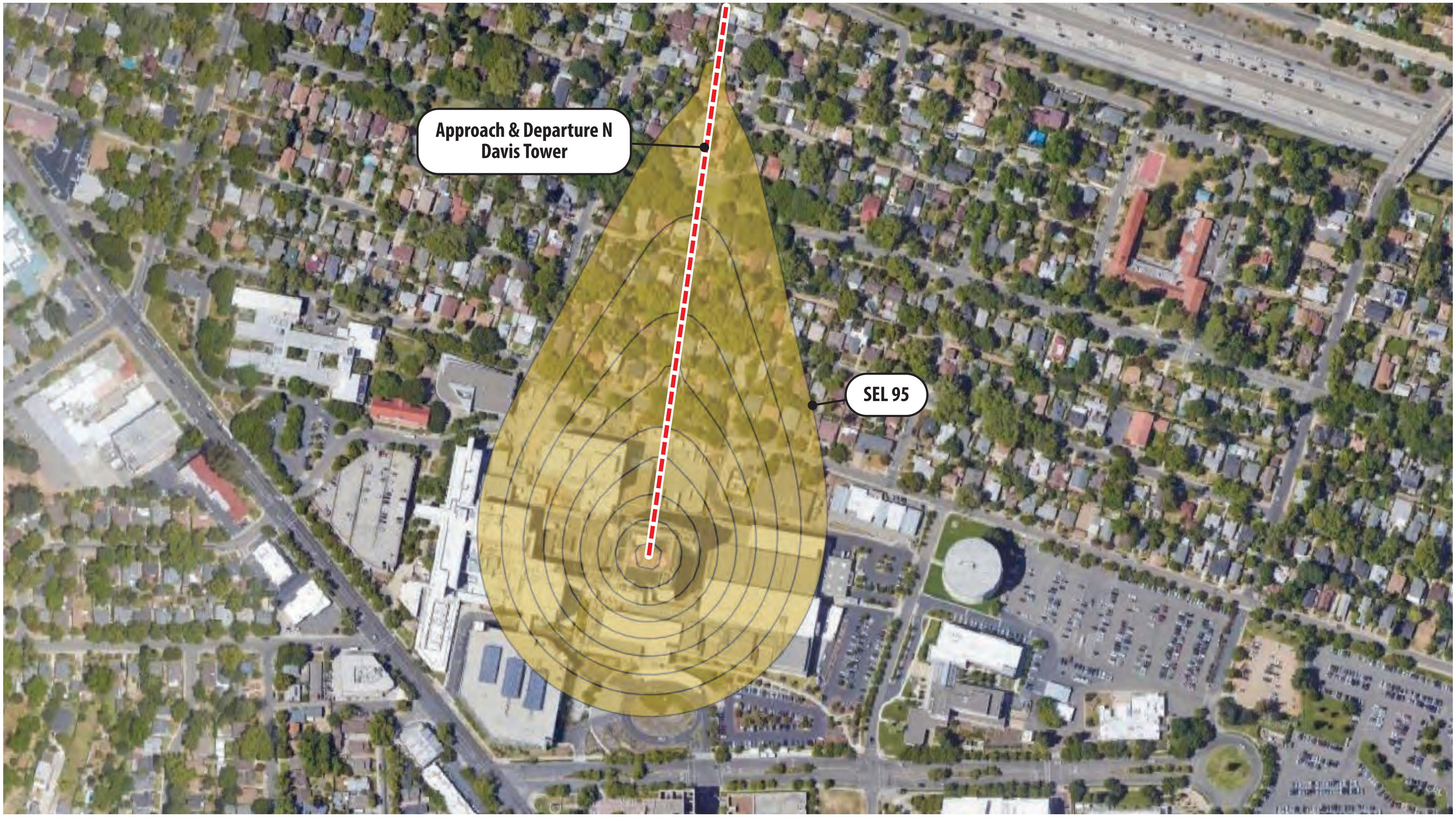

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Figure 3.11-15
Future Davis Tower SEL 95 dBA Noise Contour Approach and Departure Path N

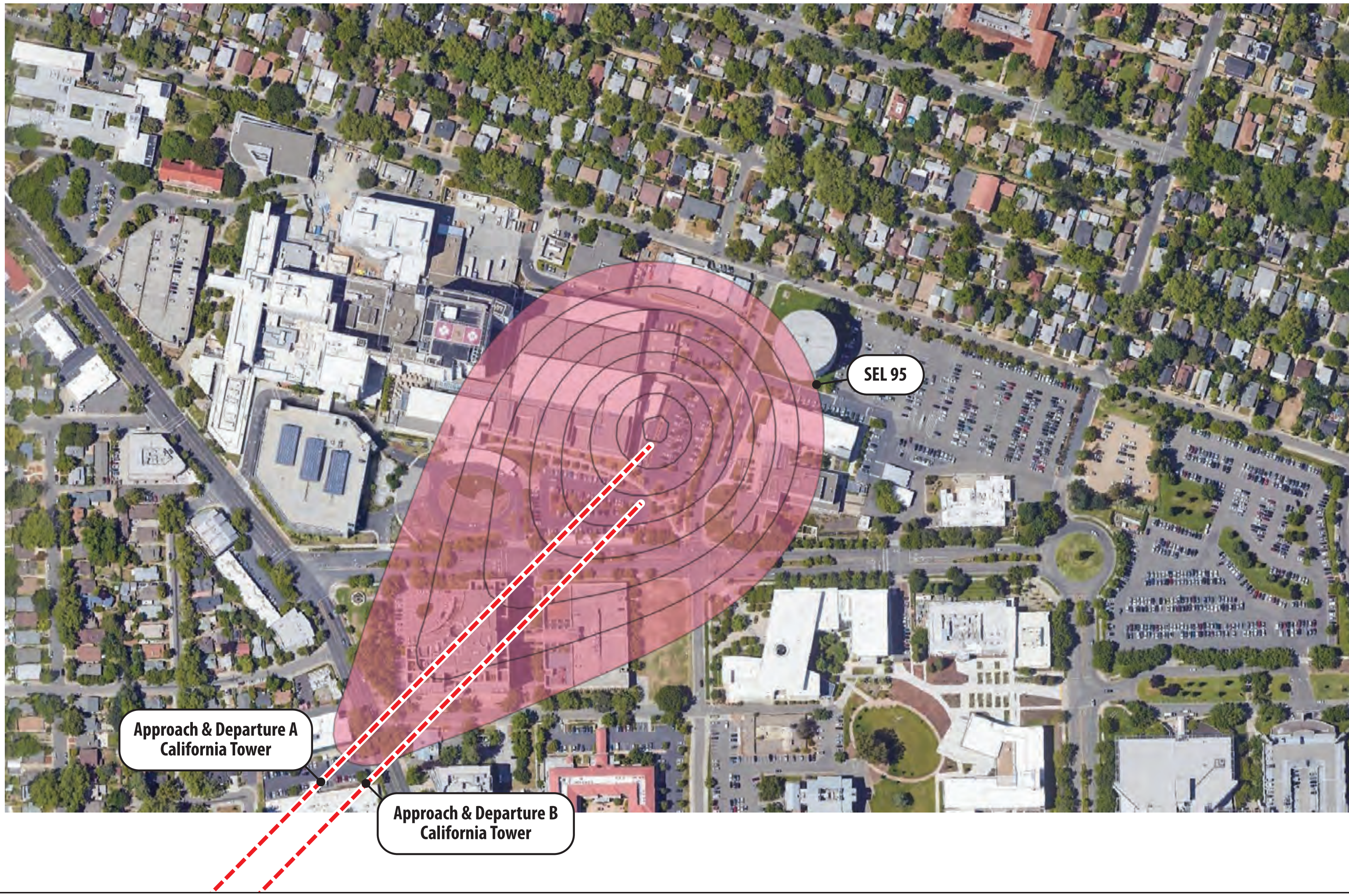

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Figure 3.11-16
Future CA Tower SEL 95 dBA Noise Contour
Approach and Departure Paths A and B

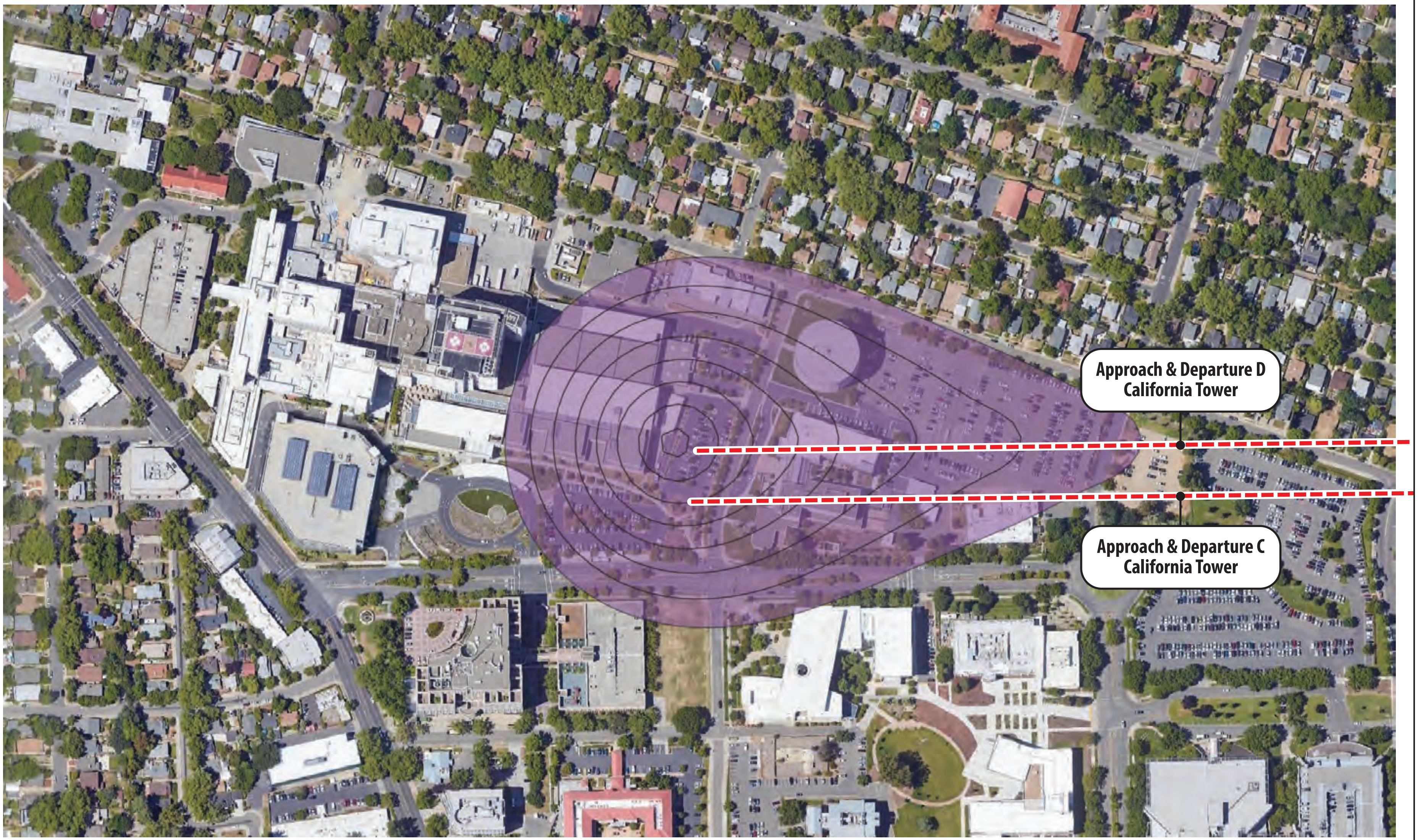

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Figure 3.11-17
Future CA Tower SEL 95 dBA Noise Contour
Approach and Departure Paths C and D

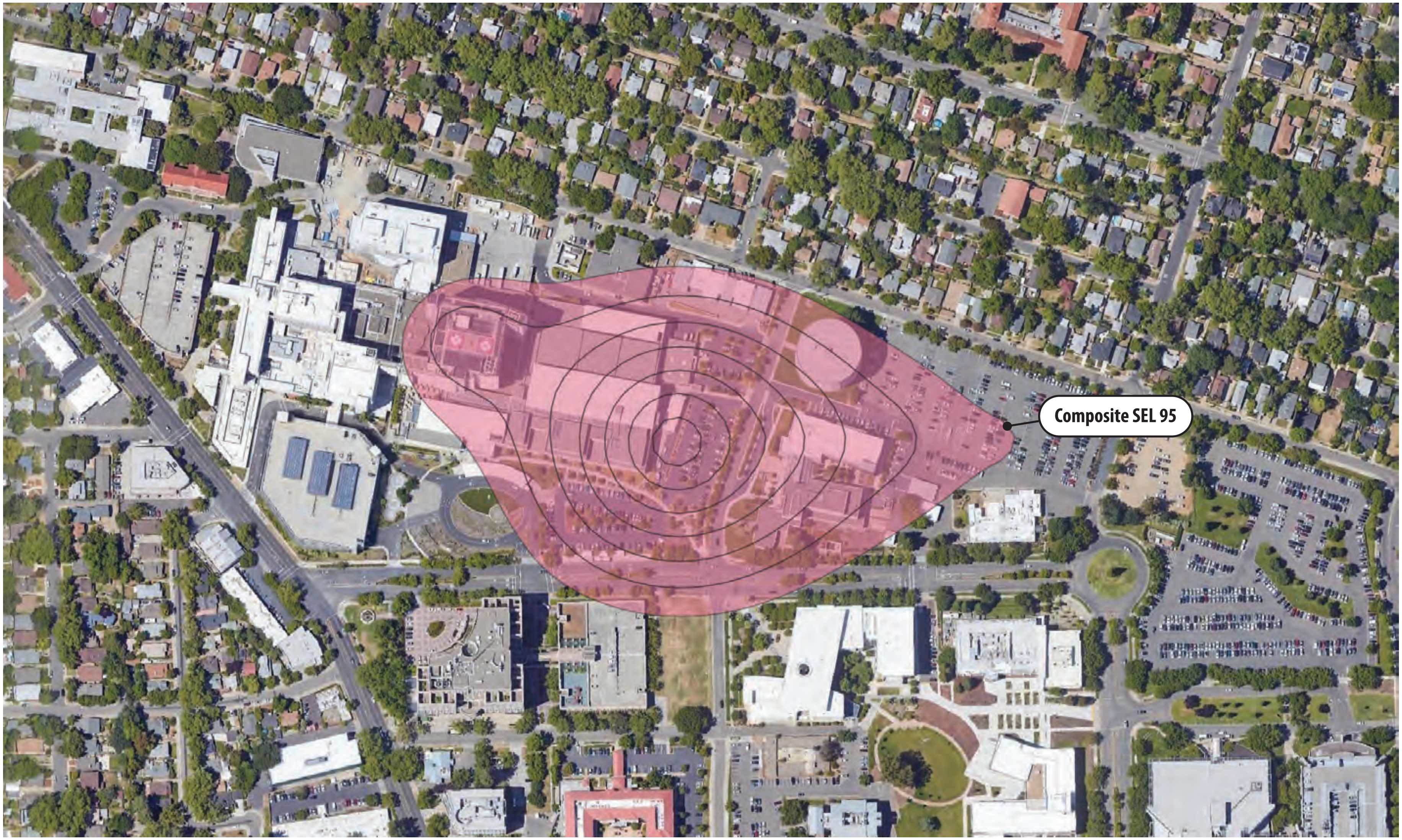

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Figure 3.11-18
Future Composite SEL 95 dBA Noise Contour Approach, Idle, and Departure for all Helipads

3.12 Population and Housing

This section describes the regulatory and environmental setting for population and housing on the project site and in the project vicinity, analyzes effects on population and housing that would result from implementation of the project, and provides mitigation measures, if applicable, to reduce the effects of any significant impacts.

Written comments received on the Notice of Preparation did not raise population and housing concerns.

3.12.1 Existing Conditions

Regulatory Setting

University of California

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

Federal

There are no federal regulations related to population and housing that pertain to the project.

State

There are no state plans or policies addressing population and housing that pertain to the project.

Regional and Local

Sacramento Area Council of Governments

The Sacramento Area Council of Governments (SACOG) is an association of local governments in the Sacramento region that provides transportation planning and funding for the region. SACOG is responsible for providing current population, employment, travel, and congestion projections for regional air quality planning efforts. SACOG prepares the *Metropolitan Transportation Plan/Sustainable Communities Strategy* (MTP/SCS) for the Sacramento region, which provides a planning framework that links land use, air quality, and transportation needs to the goals of improving transportation availability and reducing greenhouse gas emissions. The 2020 MTP/SCS, adopted by SACOG on November 18, 2019, includes information on population/housing growth projections in the region. The population and housing growth projections incorporate the campus population growth, and the 2020 Long-Range Development Plan (LRDP) Update is consistent with the 2020 MTP/SCS.

City of Sacramento General Plan

The *Sacramento 2035 General Plan* was adopted in March 2015 (City of Sacramento 2015). The Housing element contains themes and related priority programs including the following.

- **Sustainability, Balanced Communities, and Complete Neighborhoods.** The City encourages a variety of housing types in new and existing neighborhoods. The City will track and report changes in the demographic makeup of local communities and resulting impact on housing.
- **Extremely Low-Income and Special Needs Housing.** The City is committed to serving extremely low-income and homeless residents through its Ten Year Plan to End Chronic Homelessness and the "no net loss" of public housing policy.
- **Rehabilitation and Preservation of Existing Housing.** The City will pursue opportunities for rehabilitation investment including properties in blighted neighborhoods, low economic diversity, high vacancy rates, or in areas of low growth potential.
- **Accessible Housing and Neighborhoods.** The City is committed to providing housing for all through the adoption of a Universal Design Ordinance that encourages accessibility in new housing and the adoption of a Reasonable Accommodation Ordinance that established a process to allow special consideration in the planning and building process to address the housing needs of those persons with disabilities. The City will continue this commitment to improving accessibility by encouraging universal design in new housing and providing funding to residents to retrofit their homes for increased accessibility.
- **Modest Income Homeownership.** The City will promote alternative housing types and modify existing regulations to increase availability of attainable housing.

The Housing element also contains the following goals and policies related to population and housing (City of Sacramento 2015).

> **GOAL H-1.2:** Housing Diversity. Provide a variety of quality housing types to encourage neighborhood stability.
>
> > **Policy H-1.2.4:** Mix of Uses. The City shall actively support and encourage mixed-use retail, employment, and residential development around existing and future transit stations, centers and corridors.

Sacramento's Promise Zone

The Sacramento Promise Zone drives community revitalization in 22 square miles of Sacramento's lower income neighborhoods. Sustainable communities and a sustainable economy are among two goals of this program, which is a collaboration of partner organizations. Collaboration efforts include program/service provision, community engagement, resource sharing, funding and technical assistance, and project facilitation.

Anti-Displacement/Gentrification Study

As part of the City of Sacramento's Central City Specific Plan (CCSP), the City completed an anti-displacement/gentrification study along with the Sacramento Housing and Redevelopment Agency and SACOG. "Gentrification" pertains to changing the character of a neighborhood through the influx of more affluent residents and business. This complex issue occurs over time for a multitude of reasons centered around reinvestment in neighborhoods previously lacking investment. "Displacement" is defined as "the out-migration of certain groups of individuals or households (often low-income) from neighborhoods as a result of rising housing costs and neighborhood conditions associated with new investments in those neighborhoods" (City of Sacramento 2018). Overall, this study found that the average apartment rental rate in the CCSP area has increased 32 percent since 2008 (to $1,737 per month) and that vacancy rates have dropped to 3.2 percent. The study also shows that lower-income households compose approximately half of all CCSP households and that extremely low, very low, and low-income households are at risk of displacement in the CCSP area.

The Sacramento Campus and surrounding neighborhoods (Elmhurst, Oak Park, Fairgrounds) are not located within the CCSP. Nonetheless, the CCSP anti-displacement/gentrification study illustrates the kinds of pressures occurring in the area of the Sacramento Campus. For the purposes of this analysis, income data for the block groups within 0.5 mile of the Sacramento Campus are shown below to illustrate the demographic trends of the neighborhoods adjacent to the campus (Figure 3.12-1).

Table 3.12-1. Income and Poverty Data (2014–2018 American Community Survey)

Census Tract	Block Group	Number of Households	Median Income	Sum of Households below Poverty Level	Percent Households below Poverty Level	Sum of Individuals below Poverty Level	Percent Individuals below Poverty Level
City of Sacramento	NA	196,917	$62,477	33,448	17	97,650	18.5
001500	Block Group 2	442	$152,917	38	8.6	983	5.7
	Block Group 3	389	$113,393	0	*	800	4.4
001600	Block Group 4	459	$85,813	0	*	856	*
	Block Group 5	521	$110,104	70	13.4	1,259	15.3
001700	Block Group 1	687	$61,696	91	13.2	1,571	13.6
	Block Group 2	504	$72,813	67	13.3	1,048	13.0
	Block Group 3	566	$11,488	389	68.7	989	60.7
	Block Group 4	300	$102,606	0	*	600	*
	Block Group 5	494	$76,324	101	20.4	1,142	23.1
001800	Block Group 1	557	$96,910	13	2.3	949	1.4
	Block Group 2	329	$59,215	54	16.4	682	12.5
	Block Group 3	355	$48,393	60	16.9	633	11.7
	Block Group 4	472	$42,012	119	25.2	1,234	18.1
	Block Group 5	634	$52,917	26	4.1	1,169	4.1
002800	Block Group 1	467	$45,625	181	38.8	1,541	43.5
	Block Group 2	287	$50,485	33	11.5	888	13.2
	Block Group 3	365	$24,917	130	35.6	1,202	48.2
002900	Block Group 1	736	$38,026	196	26.6	1,535	18.4
	Block Group 2	607	$76,225	13	2.1	1,101	2.7
	Block Group 3	374	$53,235	46	12.3	804	20.3
003000	Block Group 4	559	$50,221	34	6.1	1,366	11.3
	Block Group 5	388	$78,889	17	4.4	923	17.3
004401	Block Group 1	333	$22,938	152	45.6	1,032	43.0
Total/Study Area Average	NA	10,398	$66,398	1,830	16.9	4,542	18.7

Source: U.S. Census 2020a.

* Data not available.

Environmental Setting

Study Area

The project site, which is located within the UC Davis Sacramento Campus, is approximately 2.5 miles southeast of downtown Sacramento, 17 miles east of the UC Davis main campus in Davis, and 90 miles northeast of San Francisco (Figure 2-1). The Sacramento Campus is bounded by V Street on the north, Stockton Boulevard on the west, Broadway on the south, and a residential neighborhood to the east. The project has several components (Figure 2-2). The California Tower and Interior Renovation components would be constructed at the northwest corner of 45th Street and X Street, and PS5 would be constructed just east of the existing water tower and south of V Street. Transportation improvements would occur throughout the Sacramento Campus, particularly on X Street, 45th Street, and Colonial Way. Central Utility Plant upgrades would take place in the existing plant, which is in the southeastern portion of campus south of 50th Street.

Population

Regional Population

SACOG states in the 2020 MTP/SCS that the six-county Sacramento metropolitan area—which consists of Sacramento, Yolo, Sutter, Yuba, El Dorado, and Placer Counties—had a population of 2,376,311 in 2016 and is expected to grow to 2,996,832 by 2040, an increase of approximately 26 percent (Sacramento Area Council of Governments 2019). In 2020, Sacramento County had an estimated population of approximately 1,567,975 as estimated by the California Department of Finance (DOF) (California Department of Finance 2020a). Table 3.12-2 shows the expected growth in population from 2020 to 2030. By 2040, Sacramento County is expected to grow by approximately 250,000 people, an increase of approximately 17 percent.

Table 3.12-2. Sacramento County Existing and Projected Population

	Population		
	2020	2030	Growth 2020–2030
Sacramento County	1,567,975	1,697,555	129,580

Source: California Department of Finance 2020a.

City of Sacramento Population

In 2020, the City of Sacramento had an estimated population of approximately 510,931 residents as determined by the DOF (California Department of Finance 2020b). Table 3.12-3 shows Sacramento's population growth over the past decade. Since 2010, Sacramento's population has grown at a rate of 9.5 percent. Growth is expected to continue for the region and the city.

Table 3.12-3. City of Sacramento Population

Year	City of Sacramento Population
2010	466,488
2011	469,441
2012	472,509
2013	476,794
2014	479,424
2015	483,830
2016	487,455
2017	492,858
2018	498,563
2019	505,230
2020	510,931

Source: California Department of Finance 2019a, 2020b.

Campus Population

The Sacramento Campus onsite daily population comprises employees, students, patients, visitors, and residents. According to the 2020 LRDP Update, as of 2019, the total average daily patient-related population (patients and visitors) was about 4,615 persons, and there were about 7,030 staff and 1,902 students on the campus, making the total daily population approximately 13,547 people. The 2020 LRDP Update anticipates that the onsite daily population will be approximately 21,200 by 2040. The onsite daily population for the East Wing consists of approximately 1,152 employees, 345 academic personnel, 256 visitors, and 111 patients for a total of 1,864.

Housing

Regional Housing

Housing options throughout the Sacramento region are typical of a large metropolitan area with a wide variety of prices and attributes. The DOF estimated that in 2020, Sacramento County had 579,115 total housing units with a 5.4 percent vacancy rate (California Department of Finance 2019b). Additionally, SACOG states in the 2020 MTP/SCS that the six-county Sacramento metropolitan area is estimated to have approximately 1,181,251 housing units by 2040 (Sacramento Area Council of Governments 2019). In 2020, the city of Sacramento had an estimated 198,971 total housing units, with a 6.5 percent vacancy rate (California Department of Finance 2020c).

According to the U.S. Census Bureau (2020b), there are approximately 1,200 housing units within 0.5 mile of the campus. Slightly more than 50 percent of these total housing units are owner-occupied, and the remainder are renter-occupied. The average of median value of owner-occupied housing units is $348,936. Table 3.12-4 shows the housing statistics in the block groups within 0.5 mile of the study area (Figure 3.12-1).

There is currently no on-site housing on the Sacramento Campus; however, approximately 500 on-site housing units will be located on-site in the future with the Aggie Square Phase I and future projects which are anticipated to be built by 2040. These housing units would be in the Education, Research, and Housing land use designation on the campus.

Table 3.12-4. Housing Characteristics (ACS 2007–2011 and ACS 2014–2018)

		ACS 2007–2011					ACS 2014–2018					Change				
Census Tract	Block Group	Sum of Total Housing Units	Percent Owner Occupied	Percent Renter Occupied	Percent Vacant	Median Value (Owner Occupied Units)	Sum of Total Housing Units	Percent Owner Occupied	Percent Renter Occupied	Percent Vacant	Median Value (Owner Occupied Units)	Change in Housing Units	Percent Change in Owner Occupied	Percent Change in Renter Occupied	Percent Change in Vacant	Change in Median Value (Owner Occupied Units)
City of Sacramento	NA	207,508	46%	45%	9%	$278,685	210,459	45%	49%	6%	$330,777	2,951	-1%	4%	-3%	$52,092
001500	Block Group 2	470	73%	24%	3%	$637,900	455	72%	25%	3%	$717,900	-15	-1%	1%	0%	$80,000
	Block Group 3	436	42%	42%	17%	$350,700	401	64%	33%	3%	$469,800	-35	22%	-9%	-14%	$119,100
001600	Block Group 4	496	49%	33%	17%	$375,300	543	53%	31%	15%	$473,000	47	4%	-2%	-2%	$97,700
	Block Group 5	490	64%	27%	9%	$667,400	521	74%	26%	0%	$608,200	31	10%	-1%	-9%	-$59,200
001700	Block Group 1	739	56%	37%	7%	$461,800	765	69%	21%	10%	$370,900	26	13%	-16%	3%	-$90,900
	Block Group 2	334	78%	22%	0%	$338,800	540	73%	20%	7%	$344,800	206	-5%	-2%	7%	$6,000
	Block Group 3	561	11%	89%	0%	$171,600	566	19%	81%	0%	$418,500	5	8%	-8%	0%	$246,900
	Block Group 4	416	41%	55%	3%	$343,800	334	65%	25%	10%	$366,500	-82	24%	-30%	7%	$22,700
	Block Group 5	708	36%	49%	16%	$258,900	537	63%	29%	8%	$313,000	-171	27%	-20%	-8%	$54,100
001800	Block Group 1	419	52%	30%	19%	$317,800	683	27%	55%	18%	$416,900	264	-25%	25%	-1%	$99,100
	Block Group 2	300	27%	50%	23%	$226,900	398	32%	51%	17%	$343,400	98	5%	1%	-6%	$116,500
	Block Group 3	343	5%	95%	0%	$318,200	418	11%	74%	15%	*	75	6%	-21%	15%	*
	Block Group 4	527	26%	64%	11%	$221,000	507	30%	63%	7%	$241,900	-20	4%	-1%	-4%	$20,900
	Block Group 5	662	47%	48%	5%	$220,200	667	35%	60%	5%	$366,700	5	-12%	12%	0%	$146,500

		ACS 2007–2011					ACS 2014–2018					Change				
Census Tract	Block Group	Sum of Total Housing Units	Percent Owner Occupied	Percent Renter Occupied	Percent Vacant	Median Value (Owner Occupied Units)	Sum of Total Housing Units	Percent Owner Occupied	Percent Renter Occupied	Percent Vacant	Median Value (Owner Occupied Units)	Change in Housing Units	Percent Change in Owner Occupied	Percent Change in Renter Occupied	Percent Change in Vacant	Change in Median Value (Owner Occupied Units)
002800	Block Group 1	407	35%	21%	45%	$165,800	527	26%	62%	11%	$222,100	120	-9%	41%	-34%	$56,300
	Block Group 2	249	36%	36%	28%	$216,700	287	38%	62%	0%	$213,200	38	2%	26%	-28%	-$3,500
	Block Group 3	511	29%	59%	12%	$204,000	464	25%	53%	21%	$201,900	-47	-4%	-6%	9%	-$2,100
002900	Block Group 1	780	36%	52%	12%	$273,300	747	65%	34%	1%	$263,600	-33	29%	-18%	-11%	-$9,700
	Block Group 2	627	63%	37%	0%	$273,800	621	68%	30%	2%	$308,100	-6	5%	-7%	2%	$34,300
	Block Group 3	306	100%	0%	0%	$243,800	374	83%	17%	0%	$321,900	68	-17%	17%	0%	$78,100
003000	Block Group 4	556	62%	30%	8%	$248,500	559	71%	29%	0%	$269,900	3	9%	-1%	-8%	$21,400
	Block Group 5	501	43%	40%	17%	$270,100	457	52%	33%	15%	$240,000	-44	9%	-7%	-2%	-$30,100
004401	Block Group 1	423	14%	65%	20%	$193,300	362	28%	64%	8%	$184,400	-61	14%	-1%	-12%	-$8,900

* Data not available.
Source: U.S. Census 2020b.

Overview of Gentrification and Displacement

According to CEQA Guidelines Section 15064(d),(e), a CEQA document must consider the reasonably foreseeable environmental consequences of physical changes resulting from a project's economic or social changes. Social and economic effects are only relevant under CEQA if they would result in, or are caused by, an adverse physical impact to the environment. UC Davis received comments related to these issues regarding the 2020 LRDP Update and the Aggie Square project, although not during the scoping process for this project.

For purposes of this EIR, the following terms and their definitions are used.

- "Gentrification" is a shift in an urban community toward higher-income residents or businesses and increasing property values, sometimes at the expense of the lower income residents of the community. Gentrification is often associated with increases in educational attainment and household incomes, as well as an appreciation in housing prices. It is also often associated with, but not directly linked to, an overall change in the racial or ethnic makeup of a community. Gentrification does not necessarily include any level of displacement that may be triggered in the process.
- "Indirect displacement" is the potential outcome of community investment that results in rising property values, benefiting homeowners and property owners but causing serious economic challenges for renters and prospective owners. These challenges may include existing residential renters and local small businesses facing higher and unaffordable rents and potential local homebuyers trying to compete with outside cash investors for single-family homes. As a result, housing or business costs may become increasingly unaffordable, and existing tenants may be forced by changing economic trends to find more affordable housing or business locations elsewhere, if available.
- "Direct displacement" is a more intentional outcome, at a small or broad scale, of planned changes in land use and the direct redevelopment of existing neighborhoods or business properties. Direct displacement occurs when existing homes or business properties are converted to new and different land uses or when affordable rental properties are converted into less affordable use (e.g., condominiums). New or changed land use regulations that facilitate or enable such changes in land use can be the root cause of direct displacement.

3.12.2 Environmental Impacts

This section describes the environmental impacts associated with population and housing that would result from implementation of the California Hospital Tower Project. It describes the methods used to determine the effects of the California Hospital Tower Project and lists the thresholds used to conclude whether an impact would be significant. Measures to mitigate (i.e., avoid, minimize, rectify, reduce, eliminate, or compensate for) any significant impacts are provided, if available.

Methods for Analysis

The effects of population growth are evaluated below by comparing the population growth that would be induced through implementation of the California Hospital Tower Project to the existing regional population.

Thresholds of Significance

In accordance with Appendix G of the CEQA Guidelines, the California Hospital Tower Project would be considered to have a significant effect on population and housing if it would result in any of the conditions listed below.

- Induce substantial unplanned population growth in an area, either directly (e.g., by proposing new homes and businesses) or indirectly (e.g., through extension of roads or other infrastructure).
- Displacement of a substantial number of existing people or housing, necessitating the construction of replacement housing elsewhere.

Impacts and Mitigation Measures

Impact POP-1: Creation of substantial unplanned population growth either directly or indirectly (less than significant)

Summary of Impact POP-1 by Component

Component	Level of Significance before Mitigation	Mitigation Measures Required	Level of Significance after Mitigation
Make-ready projects	LTS	None	–
California Tower construction, Surgery and Emergency Services Pavilion interior renovation, Central Utility Plant upgrades	LTS	None	–
Parking Structure 5 construction	LTS	None	–
East Main Hospital Wing demolition	LTS	None	–
Whole project	LTS	None	–

NI = no impact; LTS = less than significant; S = significant; SU = significant and unavoidable.

The proposed California Tower would house approximately 2,364 staff, faculty, patients, and visitors. The population would comprise approximately 1,402 employees and 345 academic personnel. Table 3.12-5 shows the breakdown of the visitor and patient population. The population growth induced by the California Hospital Tower Project would represent an increase of 250 additional employees and 250 additional patients over the number of employees and patients associated with the existing East Main Hospital Wing, resulting in an increase of the projected daily population by approximately 500 persons. This project increase is approximately 6.5 percent of the projected growth associated with the 2020 LRDP Update. By 2040, the average daily campus population is projected to be about 21,200 persons, and the California Hospital Tower Project would account for approximately 11 percent of this total.

Table 3.12-5. Existing and Projected Daily Population

	Existing East Wing	Proposed California Tower	Net Change
Employees (full time and part time)	1,152	1,402	250
Academic personnel	345	345	0
Visitors	256	256	0
Patients	111	361	250
Total	1,864	2,364	500

The project would not induce substantial unplanned population growth in the Sacramento region. The adopted 2020 LRDP Update, which estimates the total population to be 21,200 by 2040, includes the California Hospital Tower Project. Therefore, there would be no net increase above what is currently planned for the Sacramento Campus. As stated above, the 2020 LRDP Update includes projections that are accounted for in the 2020 MTP/SCS, the regional planning document. While the project could contribute to an increase in the overall population of the Sacramento region, it would not represent a substantial unplanned increase, and the project impact would be **less than significant**.

Mitigation Measures

No mitigation measures are necessary.

Impact POP-2: Directly displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere (less than significant)

Summary of Impact POP-2 by Component

Component	Level of Significance before Mitigation	Mitigation Measures Required	Level of Significance after Mitigation
Make-ready Projects	LTS	None	–
California Tower Construction, Surgery and Emergency Services Pavilion Interior Renovation, Central Utility Plant Upgrades	LTS	None	–
Parking Structure 5 Construction	LTS	None	–
East Main Hospital Wing Demolition	LTS	None	–
Whole Project	LTS	None	–

NI = no impact; LTS = less than significant; S = significant; SU = significant and unavoidable.

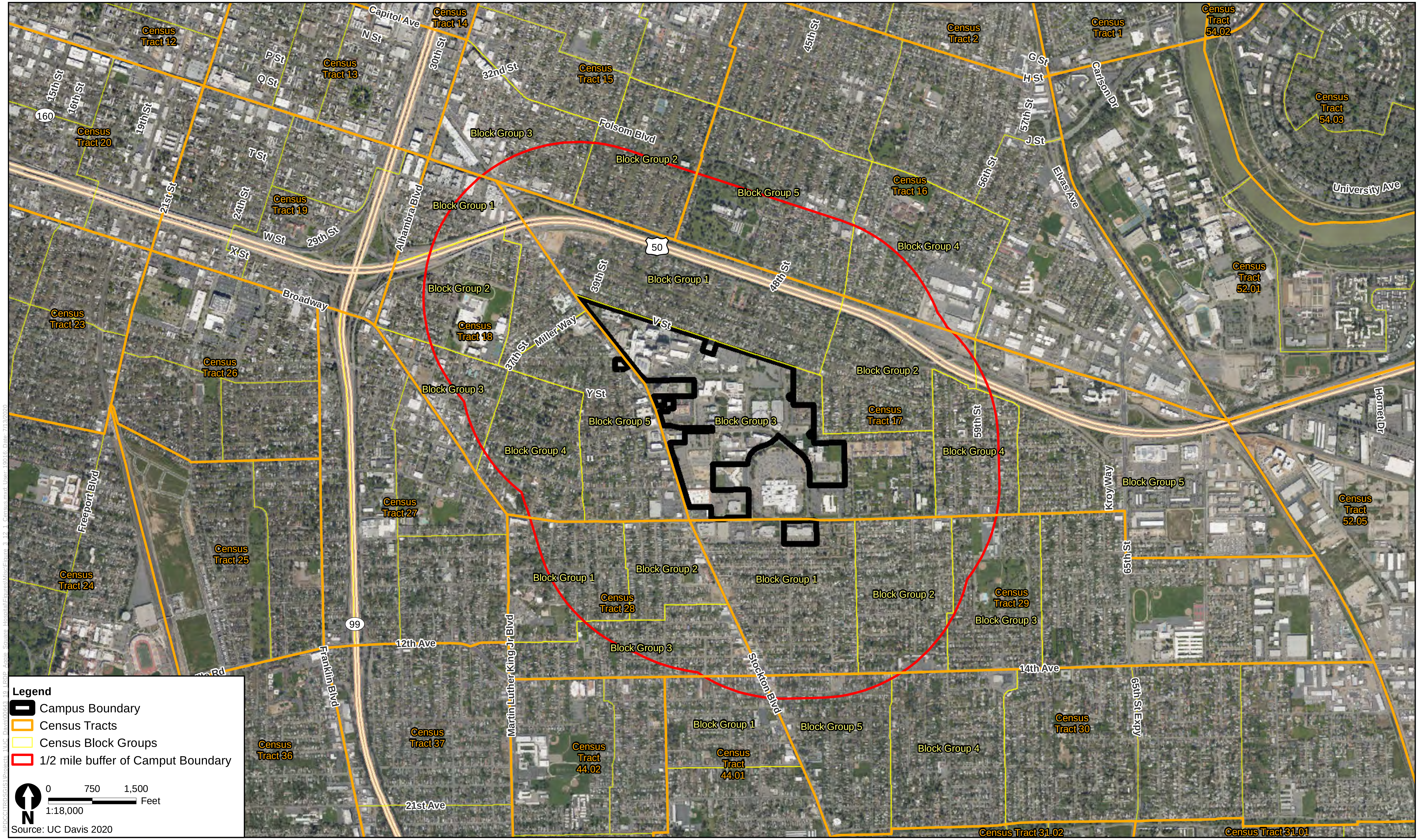
The project is located within the existing campus boundary and would not directly displace any existing housing or people. As stated previously, direct displacement occurs when existing homes or businesses are converted to new and different land uses or when affordable rental properties are converted into less affordable use. There are currently no housing units on campus, and no businesses will be converted or otherwise affected.

The California Hospital Tower Project would result in an increase in approximately 250 employees. As stated under Impact POP-1, new employees are largely expected to be existing Sacramento metropolitan area residents, which would not result in a substantial increase in the demand for housing and, accordingly, the displacement of people or housing. Although it is possible that the project would result in some new employees relocating from elsewhere who would require housing, this number is not known and cannot be known without speculation.

To the extent that the project may indirectly result in displacement, the potential environmental impacts of displacement is speculative because the location, type, and extent of impacts are unknown. Of the 250 projected new employees, only a portion is expected to relocate to the Sacramento metropolitan area from elsewhere. As described above, SACOG states in the 2020 MTP/SCS that the six-county Sacramento metropolitan area will have approximately 1,181,251 housing units by 2040 (Sacramento Area Council of Governments 2019). New employees could relocate anywhere in the six-county region. In 2020, the city of Sacramento alone had an estimated 198,971 total housing units, with a 6.5 percent vacancy rate (California Department of Finance 2020c). Because the project would result in a relatively small number of new employees, and because it is anticipated that the majority of these employees would already reside in the Sacramento metropolitan region, there is no evidence that any indirect displacement/gentrification would result in a significant adverse effect on the physical environment, and this impact would be **less than significant**.

Mitigation Measures

No mitigation measures are necessary.



UCDAVIS

Figure 3.12-1
Block Groups in the Study Area

3.13 Public Services

This section describes the regulatory and environmental setting for public services on the project site and in the project vicinity, analyzes effects on public services that would result from implementation of the project, and provides mitigation measures, if applicable, to reduce the effects of any significant impacts.

No comments related to public services were received during the scoping period.

3.13.1 Existing Conditions

Regulatory Setting

University of California

As noted in Section 3.0.2, *University of California Autonomy*, the University, as a constitutionally created state entity, is not subject to local land use regulations whenever using property under its control in furtherance of its educational mission. Although UC Davis may consider, for coordination purposes, aspects of local plans and policies for the communities surrounding the campus when it is appropriate and feasible, it is not bound by those plans and policies in its planning efforts. There are no UC regulations specifically related to public services that apply to the project.

Federal

Higher Education Opportunity Act

The Campus Fire Safety Right-to-Know Act in the Higher Education Opportunity Act was signed by President George W. Bush on August 1, 2008. Specifically, the legislation requires that a Fire Safety Report be published by the UC containing statistics for the following in each on-campus student housing facility during the most recent calendar year for which data are available.

- The number of fires and the cause of each fire.
- The number of injuries related to a fire that resulted in treatment at a medical facility.
- The number of deaths related to a fire.
- The value of property damage caused by a fire.
- A description of each on-campus student housing facility's fire safety system, including the fire sprinkler system.
- The number of regular mandatory supervised fire drills.
- Policies or rules on portable electrical appliances, smoking, and open flames (such as candles); procedures for evacuation; and policies regarding fire safety education and training programs provided to students, faculty, and staff.
- Plans for future improvements in fire safety, if determined necessary by the UC.

State

Uniform Fire Code

The Uniform Fire Code with the State of California Amendments contains regulations relating to construction, maintenance, and use of buildings. Topics addressed in the California Fire Code (CFC) include fire department access, fire hydrants, automatic sprinkler systems, fire alarm systems, fire and explosion hazards safety, hazardous materials storage and use, provisions intended to protect and assist fire responders, industrial processes, and many other general and specialized fire-safety requirements for new and existing buildings and the surrounding premises. The CFC, Part 9 of Title 24 of the California Code of Regulations, contains specialized technical regulations related to fire and life safety. The CFC is revised and published every 3 years by the California Building Standards Commission.

California Health and Safety Code

State fire regulations are set forth in Section 13000 *et seq*. of the California Health and Safety Code. The code includes regulations for building standards (as also set forth in the California Building Code [CBC]), fire protection and notification systems, fire protection devices such as extinguishers and smoke alarms, high-rise building and childcare facility standards, and fire suppression training.

California Occupational Safety and Health Administration

In accordance with California Code of Regulations, Title 8, Section 1270, Fire Prevention, and Section 6773, Fire Protection and Fire Equipment, the California Occupational Safety and Health Administration has established minimum standards for fire suppression and emergency medical services. The standards include guidelines for the handling of highly combustible materials, fire hose sizing requirements, restrictions on the use of compressed air, access roads, and the testing, maintenance and use of all firefighting and emergency medical equipment.

California Code of Regulations

California Code of Regulations, Title 5, Education, governs all aspects of education in the state.

Leroy F. Greene School Facilities Act of 1998

This bill, commonly known as Senate Bill 50, placed limitations on cities and counties with respect to mitigation requirements for school facilities. Senate Bill 50 permits school districts to levy fees, based on justification studies, for the purposes of funding construction of school facilities, subject to established limits. The limits were set in 2000, can be adjusted annually for inflation, and can be leveed based on the square footage of residential ($1.93 per square foot in 2000) and commercial-industrial square footage ($0.31 per square foot in 2000). These fees do not apply to development at UC campuses because they are not under the jurisdiction of a city or county.

California Building Code

The State of California provides minimum standards for building design through the CBC, which is located in Part 2 of Title 24 (California Building Standards Code) of the California Code of Regulations. The CBC is based on the International Building Code but has been amended for California conditions. It is generally adopted on a jurisdiction-by-jurisdiction basis, subject to further modification based on local conditions. Commercial and residential buildings are plan-checked by local building officials for compliance with the CBC. Typical fire safety requirements of the CBC include the installation of sprinklers in all high-rise buildings; the establishment of fire resistance standards for fire doors, building materials, and particular types of construction; and the clearance of debris and vegetation within a prescribed distance from occupied structures in wildfire hazard areas.

Strategic Fire Plan for California

The Strategic Fire Plan for California is the state's "road map" for reducing the risk of wildfire. The Strategic Fire Plan reflects the California Department of Forestry and Fire Protection's focus on (1) fire prevention and suppression activities to protect lives, property, and ecosystem services, and (2) natural resource management to maintain the state's forests as a resilient carbon sink to meet California's climate change goals and to serve as important habitat for adaptation and mitigation (California Department of Forestry and Fire Protection 2018).

Regional and Local

The following goals and policies from the *City of Sacramento 2035 General Plan* Education, Recreation and Culture and Public Health and Safety elements are most applicable to the project (City of Sacramento 2015a, 2015b).

> **GOAL ERC 1.1:** Efficient and Equitable Distribution of Facilities. Provide efficient and equitable distribution of quality educational facilities for life-long learning and development of a highly skilled workforce that will strengthen Sacramento's economic prosperity.
>
> > **Policy ERC 1.1.4:** Higher Education. The City shall encourage and support the development, expansion, and upgrade of higher education facilities such as community colleges, California State University, and private universities.
>
> **GOAL PHS 1.1**: Crime and Law Enforcement. Work cooperatively with the community, regional law enforcement agencies, local government and other entities to provide quality police service that protects the long-term health, safety, and well-being of our city, reduce current and future criminal activity, and incorporate design strategies into new development.
>
> > **Policy PHS 1.1.2:** Response Time Standards. The City shall strive to achieve and maintain optimal response times for all call priority levels to provide adequate police services for the safety of all city residents and visitors.
>
> **GOAL PHS 2.1**: Fire Protection and Emergency Medical Services. Provide coordinated fire protection and emergency medical services that address the needs of Sacramento residents and businesses and maintain a safe and healthy community.
>
> > **Policy PHS 2.1.2:** Response Time Standards. The City shall strive to maintain emergency response times that provide optimal fire protection and emergency medical services to the community.

Environmental Setting

Fire Protection and Emergency Services

The City of Sacramento Fire Department (SFD) provides primary fire response and prevention, natural disaster response, hazardous materials incident response, and emergency medical service to the project site. The nearest fire station, Station 6, is approximately 0.9 mile southwest of the project site at 3301 Martin Luther King Jr Boulevard. SFD staffs 24 fire engines, 9 ladder trucks and 1 heavy rescue at 24 fire stations, which are divided into 3 battalions. Each engine and truck is staffed with 4 persons, except for 1 engine, which is staffed with 3 persons. Battalion chiefs coordinate all the activities at an emergency scene. With 3 battalion chiefs, 34 suppression companies, 15 advanced life support ambulances and 1 Emergency Medical Services captain, the daily operational staffing is 169 personnel. Department personnel respond to approximately 90,000 calls each year and provide service to approximately 480,000 residents and over 20,000 businesses located in Sacramento (City of Sacramento Fire Department 2020). Table 3.13-1 shows the average response times for SFD.

Table 3.13-1. Average Response Time (City-Wide)

Vehicle	Time (Minutes:Seconds)
Engine	05:27
Medic	07:01
Truck	05:46

Source: City of Sacramento Fire Department 2018.

Police Protection

University of California Davis

The UC Davis Police Department provides police services for all buildings and facilities either owned or leased by the UC Davis Health System. UC Davis Police Department operates a substation on the Sacramento Campus that provides all needed police services for the campus, including for leased space. A number of UC Davis patrol officers are assigned to the Sacramento Campus. Patrol officers respond to all calls for service in the community. They handle a wide variety of duties including responding to emergencies, investigating crimes and filing reports, checking out suspicious persons and vehicles, conducting traffic accident investigations, and enforcing all traffic laws. The UC Davis Police Department has mutual aid agreements with other law enforcement agencies in Sacramento County, including the City of Sacramento.

City of Sacramento

The City of Sacramento Police Department (SPD) provides primary police protection services to Sacramento. SPD's most recent available data comes from the 2016 Annual Report. SPD employs 697 sworn officers and 269 civilian personnel (City of Sacramento Police Department 2017). These officers and civilians staff the Patrol, Communications Center, Specialty Units, Investigations, Forensics, Evidence and Property, Records, and Contract Services departments. SPD handled 351,472 calls for service in 2016. These calls for service involved criminal investigations, traffic collisions and suspicious circumstances, domestic violence cases, driving under the influence of alcohol, alarms at residential and commercial buildings, and medical aid calls.

The nearest SPD station is at 5303 Franklin Boulevard, approximately 2.1 miles southwest of the UC Davis Sacramento Campus. The project site is in SPD's East Command District, which encompasses California State University, Sacramento; Oak Park; Stockton Boulevard; Elder Creek; the eastern part of the city south of the American River; and east of State Route 99.

Police calls to service are categorized by the priority of the reported situation. Definitions of priority are as follows.

- Priority 1 is an officer-initiated emergency request for help.
- Priority 2 is an emergency requiring immediate police response to preserve life or apprehend subjects.
- Priority 3 is a crime against a person occurring within 15 minutes or less, a call with potential to become violent, or an at-risk missing person.
- Priority 4 is a time element misdemeanor, a report call requiring a sworn officer, or a nighttime ringing alarm.
- Priority 5 is a report call, or daytime ringing alarm where an immediate response is not required.
- Priority 6 is a lower priority call, parking violation, burglary report, or found property or evidence.

Response times are shown in Table 13.3-2.

Table 3.13-2. City of Sacramento Police Department Response Times

Priority	1	2	3	4	5	6
Average Response Time (Hours:Minutes:Seconds)	0:09:57	0:11:20	0:27:40	0:27:40	0:32:51	1:07:04

Source: City of Sacramento Police Department 2017.

Schools

The UC Davis Sacramento Campus provides higher education instruction as a part of the core mission of operating the hospital and professional schools. Because UC Davis Sacramento Campus employees live throughout the Sacramento Area Council of Governments area and they are not necessarily concentrated near the campus, their families use school services provided by various school districts throughout the region.

Sacramento City Unified School District

The project site is served by Sacramento City Unified School District (SCUSD). SCUSD is the 10th largest public kindergarten (K)–12 district in California and serves 46,933 students on 76 campuses including neighborhood schools and specialty programs (Sacramento City Unified School District 2020). The project site is in the assignment area of the following schools: David Lubin Elementary, Tahoe Elementary, Kit Carson International Academy, Hiram Johnson High School, and American Legion Continuation High School. The project site is also close to several independent and charter schools, including Capitol Heights Academy, Sacramento Charter High school, and St. HOPE Public School (grades 6–8), and Oak Park Prep. The closest school to the project site is the Language Academy of Sacramento Charter School (formerly Marian Anderson Elementary School) located at 2850 49th Street.

Due to the potential for employees and staff associated with the project to live throughout the Sacramento metropolitan region, facility and attendance information for other nearby school districts is provided below.

Washington Unified School District

Washington Unified School District consists of seven elementary schools (six K–8 schools and one transitional K–5 school), a comprehensive high school, five alternative programs, and a charter school (Washington Unified School District 2020).

Elk Grove Unified School District

Elk Grove Unified School District operates 42 elementary schools, 9 middle schools, 9 comprehensive high schools, 4 alternative education schools, 1 charter school, 1 virtual online K–8 program, 1 special education school, and 1 adult education school. The district also offers preschool programs at 15 school sites, an adult education program, and a career training center for adults (Elk Grove Unified School District 2020).

Twin Rivers Unified School District

Twin Rivers Unified operates 28 elementary schools, 5 middle schools, 5 comprehensive high schools, 8 charter schools, and 8 additional schools. These schools serve over 25,000 students and employ over 3,000 staff members (Twin Rivers Unified School District 2020).

San Juan Unified School District

San Juan Unified School District (SJUSD) is the 11th largest school district in California with approximately 46,000 students. SJUSD has 33 elementary schools, 8 K-8 schools, 8 middle schools, 12 high schools, and 5 other schools. SJUSD has an expenditure budget of over $387 million and employs more than 5,000 staff. The district serves a 75-square-mile area covering the communities of Arden-Arcade, Carmichael, Citrus Heights, Fair Oaks, Gold River, and Orangevale (San Juan Unified School District 2020).

Library Services

The Sacramento Public Library has 28 branches throughout Sacramento County. The Sacramento Public Library offers physical books, e-books, audiobooks, resources for parents and children to increase literacy, music labs and music events, and general community gathering spaces.

The closest library branch location to the UC Davis Sacramento Campus is the Colonial Heights branch at 4799 Stockton Boulevard, approximately 1.5 miles south of the project site. The Ella K. McClatchy branch, at 2112 22nd Street, is approximately 1.6 miles northwest of the project site.

3.13.2 Environmental Impacts

This section describes the environmental impacts associated with public services that would result from implementation of the California Hospital Tower Project. It describes the methods used to determine the effects of the project and lists the thresholds used to conclude whether an impact would be significant. Measures to mitigate (i.e., avoid, minimize, rectify, reduce, eliminate, or compensate for) any significant impacts are provided, if available.

Methods for Analysis

This analysis evaluates the potential for adverse physical impacts to occur as a result of the provision of new or altered public service facilities under the California Hospital Tower Project, including facilities or facility expansions needed to accommodate increases in demand for services and service personnel, or to enable service providers to maintain level of service standards. Increased demand for public services that would result from implementation of the California Hospital Tower Project is determined by considering projected employee growth resulting from the project with existing public services identified for each service to determine whether there would be a need to increase public services including expansion of facilities. Parks are analyzed in Section 3.14, *Recreation*, of this EIR.

Thresholds of Significance

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

- Substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities or creation of a need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the following public services.
  - Fire protection
  - Police protection
  - Schools
  - Parks
  - Other public facilities

Impacts and Mitigation Measures

Impact PS-1: Creation of a need for new or physically altered governmental facilities to maintain acceptable service ratios, response times, or other performance objectives for fire protection facilities (less than significant)

Summary of Impact PS-1 by Component

Component	Level of Significance before Mitigation	Mitigation Measures Required	Level of Significance after Mitigation
Make-ready projects	NI	None	–
California Tower construction, Surgery and Emergency Services Pavilion interior renovation, Central Utility Plant upgrades	LTS	None	–
Parking Structure 5 construction	NI	None	–
East Main Hospital Wing demolition	NI	None	–
Whole project	LTS	None	–

NI = no impact; LTS = less than significant; S = significant; SU = significant and unavoidable.

The California Hospital Tower Project would result in an increase in new structures. The project would not increase the service area of the SFD because the new structures would be located within the existing Sacramento Campus. Furthermore, all new buildings would be designed, plan-checked, and built to be consistent with all applicable codes, including the CBC, which include fire prevention and suppression measures to reduce the risk of fire.

The California Hospital Tower Project would result in an increase of 250 part-time and full-time employees and increased capacity for an additional 250 patients compared to the existing East Wing. An increase in population, by itself, would not increase demand for fire protection services or emergency medical services. According to the SFD, the trigger for additional resources, including services, equipment, personnel, or facilities, is 16,000 residents (Kunson pers. comm.). Patients and visitors who are part of the onsite daily population are not residents and would not be considered part of an increase in population on campus. The 250 additional employees could be people already residing in the Sacramento metropolitan region, or people who relocate to the Sacramento metropolitan region to fill these jobs. Increases in the demand for fire protection services as a result of the 250 new employees associated with the California Hospital Tower Project would be addressed indirectly as part of general plan implementation for the respective jurisdiction (e.g., the cities of Sacramento, West Sacramento, Rancho Cordova, Elk Grove, Roseville) through the imposition of development impact fees for new housing projects and tax revenue from new residents.

The California Hospital Tower Project is not anticipated to increase the demand for additional fire protection facilities nor increase emergency response times or other performance objectives. Therefore, the impact on fire protection services would be **less than significant**.

Mitigation Measures

No mitigation measures are necessary.

Impact PS-2: Creation of a need for new or physically altered governmental facilities to maintain acceptable service ratios, response times, or other performance objectives for police protection facilities (less than significant)

Summary of Impact PS-2 by Component

Component	Level of Significance before Mitigation	Mitigation Measures Required	Level of Significance after Mitigation
Make-ready projects	NI	None	–
California Tower construction, Surgery and Emergency Services Pavilion interior renovation, Central Utility Plant upgrades	LTS	None	–
Parking Structure 5 construction	NI	None	–
East Main Hospital Wing demolition	NI	None	–
Whole project	LTS	None	–

NI = no impact; LTS = less than significant; S = significant; SU = significant and unavoidable.

The California Hospital Tower Project would result in an increase of 250 new part-time and full-time employees. The other project components such as PS5 and make-ready projects would not result in an increase in population. The UC Davis Police Department, which provides law enforcement on campus, does not currently rely on any level of service standard but has indicated that it would like to meet a staffing ratio of 1 officer to 1,000 members of the campus population.

The 2020 Long-Range Development Plan (LRDP) Update includes population projections for the entire campus, including the California Hospital Tower Project.[1] According to the 2020 LRDP Update, the campus population is planned to increase to 21,200 by 2040 including an increase in employees from 7,030 to 12,189 (University of California, Davis 2020:51).

Similar to fire protection services, the 250 additional employees could come from people already residing in the Sacramento metropolitan region, or people could relocate to the Sacramento metropolitan region to fill these jobs. Increases in the demand for police protection services as a result of the 250 new employees associated with the California Hospital Tower Project would be addressed indirectly as part of general plan implementation for the respective jurisdiction (e.g., the cities of Sacramento, West Sacramento, Rancho Cordova, Elk Grove, Roseville) through the imposition of development impact fees for new housing projects and tax revenue from new residents. Continual collection of such fees and taxes would ensure that the current level of police protection services would be maintained in those jurisdictions.

The California Hospital Tower Project is not anticipated to result in an increase in demand for additional police protection facilities or to increase emergency response times or other performance objectives. Therefore, the impact on police protection services would be **less than significant**.

[1] The California Hospital Tower Project is referred to as the Replacement Hospital Tower Project in the 2020 LRDP Update.

Mitigation Measures

No mitigation measures are necessary.

Impact PS-3: Creation of a need for new or physically altered governmental facilities to maintain acceptable service ratios, response times, or other performance objectives for school facilities (less than significant)

Summary of Impact PS-3 by Component

Component	Level of Significance before Mitigation	Mitigation Measures Required	Level of Significance after Mitigation
Make-ready projects	NI	None	–
California Tower construction, Surgery and Emergency Services Pavilion interior renovation, Central Utility Plant upgrades	LTS	None	–
Parking Structure 5 construction	NI	None	–
East Main Hospital Wing demolition	NI	None	–
Whole project	LTS	None	–

NI = no impact; LTS = less than significant; S = significant; SU = significant and unavoidable.

As stated previously, the California Hospital Tower Project would result in an additional 250 part-time and full-time employees. The other project components would not result in an increase in population. These new employees could already reside throughout the Sacramento metropolitan region, and some of the new employees could relocate to the area, including in the neighborhoods near the project site. The population affiliated with the 250 new jobs at the California Tower would reside throughout the Sacramento metropolitan region in areas already served by schools. Consequently, the project would not result in a substantial increase in enrollment in any one school district.

Because the project would result in 250 new employees who would reside in various locations throughout the Sacramento metropolitan region, the California Hospital Tower Project would not result in a substantial increase in enrollment in any one school district and no new facilities would be needed. Therefore, this impact would be **less than significant**.

Mitigation Measure

No mitigation measures are necessary.

Impact PS-4: Creation of a need for new or physically altered governmental facilities to maintain acceptable service ratios, response times, or other performance objectives for other public facilities (less than significant)

Summary of Impact PS-4 by Component

Component	Level of Significance before Mitigation	Mitigation Measures Required	Level of Significance after Mitigation
Make-ready projects	NI	None	–
California Tower construction, Surgery and Emergency Services Pavilion interior renovation, Central Utility Plant upgrades	LTS	None	–
Parking Structure 5 construction	NI	None	–
East Main Hospital Wing demolition	NI	None	–
Whole project	NI	None	–

NI = no impact; LTS = less than significant; S = significant; SU = significant and unavoidable.

The Sacramento Public Library provides extensive library facilities in 28 libraries that serve the general public. While the Sacramento Public Library does not have a numeric standard ratio for library facilities to population, it does have the objective to provide adequate library services to meet public demand. The California Hospital Tower Project would result in 250 new employees who would likely reside in the Sacramento metropolitan region, which is served by existing public libraries. Because the project would not substantially affect population levels in Sacramento, substantial increased demand for library services in Sacramento is not anticipated to the extent that new library facilities would be necessary, and this impact would be **less than significant**.

Mitigation Measures

No mitigation measures are necessary.

3.14 Recreation

This section describes the regulatory and environmental setting for recreation on the project site and in the project vicinity, analyzes effects on recreation that would result from implementation of the project, and provides mitigation measures, if applicable, to reduce the effects of any significant impacts.

No comments related to recreation were received during the scoping period.

3.14.1 Existing Conditions

Regulatory Setting

University of California

As noted in Section 3.0.2, *University of California Autonomy*, the University, as a constitutionally created state entity, is not subject to municipal regulations of surrounding local governments for uses on property owned or controlled by the UC that are in furtherance of its educational purposes. However, UC Davis may consider, for coordination purposes, aspects of local plans and policies for the communities surrounding the campus when it is appropriate and feasible, but it is not bound by those plans and policies in its planning efforts. There are no UC regulations specifically related to recreation that apply to the project.

Federal

There are no federal plans or policies addressing recreation that pertain to the project.

State

Quimby Act

The Quimby Act (California Government Code Section 66477) preserves open space and parkland in urbanizing areas of the state by authorizing local governments to establish ordinances requiring developers of new subdivisions to dedicate land for parks, pay an in-lieu fee, or perform a combination of the two. The Quimby Act provides two standards for the dedication of land for use as parkland. If the existing amount of parkland in a community is 3 acres or more per 1,000 persons, then the community may require dedication based on a standard of 5 acres per 1,000 persons residing in the subdivision. If the existing amount of parkland in a community is less than 3 acres per 1,000 persons, then the community may require dedication based on a standard of only 3 acres per 1,000 persons residing in the subdivision. The Quimby Act requires a city or county to adopt standards for recreational facilities in its general plan's recreation element if it is to adopt a parkland dedication/fee ordinance.

The amount of land dedicated or fees paid is based upon the residential density, which is determined based on the approved or conditionally approved tentative map or parcel map and the average number of persons per household. UC Davis is not subject to Quimby Act requirements because it is not a local government entity. Accordingly, the Quimby standards are used as a guide and not a requirement under the analysis.

Regional and Local

City of Sacramento General Plan

The *Sacramento 2035 General Plan* was adopted in March 2015 and contains the following goals and policies in the Education, Recreation, and Culture element that are relevant to recreation:

> **GOAL ERC 2.1:** Integrated Parks and Recreation System. Provide an integrated system of parks, open space areas, and recreational facilities that are safe and connect the diverse communities of Sacramento.
>
> **GOAL ERC 2.2:** Parks, Community, and Recreation Facilities and Services. Plan and develop parks, community and recreation facilities, and services that enhance community livability; improve public health and safety; are equitably distributed throughout the city; and are responsive to the needs and interests of residents, employees, and visitors.
>
>> **Policy ERC 2.2.11:** On-site Facilities. The City shall promote and provide incentives such as density bonuses or increases in building height for large-scale development projects to provide on-site recreational amenities and gathering places that are available to the public. (City of Sacramento 2015)

City of Sacramento Parks and Recreation Master Plan 2005–2010

The City of Sacramento's *Parks and Recreation Master Plan* was updated in 2009. The plan provides guidance for the provision of parks, recreation, and related community services and identifies priorities and goals for city decision-makers. The *Parks and Recreation Master Plan 2005–2010: 2009 Technical Update* (City of Sacramento 2009) outlines plans for recreation and community services, children's and teen programs, community centers, park planning and development, and related services in support of the goals and policies of the *Sacramento 2035 General Plan* (City of Sacramento 2015).

Environmental Setting

This section includes the environmental setting relevant to recreation in the vicinity of the California Hospital Tower Project.

The UC Davis Sacramento Campus does not contain park facilities for organized, active recreation. The existing campus open space areas provide walking paths, seating areas, and other forms of passive recreation. These areas include Cancer Survivors Park, which was completed in 2002 and lies at the intersection of 2nd Avenue and Stockton Boulevard and features native plantings, grassy areas, seating, and sculptures. The Sacramento Campus also has courtyards, landscaped walkways, and outdoor art pieces dispersed throughout the campus. These areas are used by hospital employees, patients, and visitors as well as residents from surrounding neighborhoods. In addition, a student fitness center on the campus at 2501 Stockton Boulevard serves the campus's medical, nursing, physician's assistant, and part-time Master of Business Administration students, as well as UC Davis Health fitness center members affiliated with the medical campus.

Parks and recreational facilities are provided throughout the Sacramento region by local, state, and federal land management agencies. The City has established goals in the 2009 *Parks and Recreation Master Plan 2005–2010* (City of Sacramento 2009) for providing park facilities within the city based on residential population levels. A summary of the City's standards and projections of additional needs is shown in Table 3.14-1. The master plan has not been updated since 2009. Other regional municipalities conduct similar planning efforts for new facilities and are expected to construct new park facilities as the regional population increases.

Table 3.14-1. City of Sacramento Park Needs Projection for 2030

Type of Park	City Goals	Required New Park Acres/ Mileage for 2030
Citywide/regionally serving parks and open space	8.0 acres per 1,000 population	1,560 acres
Community serving parks	2.5 acres per 1,000 population	488 acres
Neighborhood serving parks	2.5 acres per 1,000 population	488 acres
Trails/bikeways	0.5 mile per 1,000 population	87.5 miles

Source: City of Sacramento 2009.

Sacramento contains 223 parks totaling approximately 4,255.5 acres (City of Sacramento 2021). The nearest neighborhood and regional parks to the Sacramento Campus are shown in Table 3.14-2.

Table 3.14-2. Parks near the Project Area

Facility	Location	Distance from Sacramento Campus	Amenities
Neighborhood Parks			
Fourth Avenue Park	4th Avenue and San Jose Way	0.3 mile	Field, basketball court, play structure
McClatchy Park (15.42 acres)	3500 4th Avenue at 33rd Street	0.75 mile	Jogging path, play areas, disk golf course, gardens, basketball courts, baseball fields, tennis courts, skate park, water spray area, picnic areas
Jack Davis Park	15th Avenue and 44th Street	0.7 mile	Play structures and basketball court
Tahoe Park (17.82 acres)	3501 59th Street	0.8 mile	Basketball court, lighted playing fields, play structures, public pool, horseshoes, volleyball area, picnic areas
Greenfair Park	2950 57th Street	0.3 mile	Walking paths, tennis courts, picnic areas
Sierra Vista Park	T Street and 41st Street	0.2 mile	Walking paths
Coloma Park	4623 T Street	0.3 mile	Basketball court, community center, picnic area
Regional Parks			
American River Parkway	32-mile parkway along the American River in Sacramento County	2 miles	Consists of many smaller parks. Boating, picnic areas, nature centers, bicycle and pedestrian trails
Sutter's Landing Regional Park (166.83 acre)	20 28th Street	1.8 miles	Dog park, skate park, boat launch, basketball courts, multi-use trails

3.14.2 Environmental Impacts

This section describes the environmental impacts associated with recreation that would result from implementation of the California Hospital Tower Project. It describes the methods used to determine the effects of the project and lists the thresholds used to conclude whether an impact would be significant. Measures to mitigate (i.e., avoid, minimize, rectify, reduce, eliminate, or compensate for) any significant impacts are provided, if available.

Methods for Analysis

The following analysis assesses the environmental effects of the California Hospital Tower Project with respect to the existing or currently proposed recreation uses and facilities in the project vicinity and in Sacramento. This analysis is based on review of existing documents, policies, ordinances, and other regulations pertinent to recreation.

Thresholds of Significance

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

- Increased use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated.
- Construction or expansion of recreational facilities that might have an adverse physical effect on the environment.

Impacts and Mitigation Measures

Impact REC-1: Substantially increase the use of existing recreational facilities or result in substantial physical deterioration (less than significant)

Summary of Impact REC-1 by Component

Component	Level of Significance before Mitigation	Mitigation Measures Required	Level of Significance after Mitigation
Make-ready projects	LTS	None	–
California Tower construction, Surgery and Emergency Services Pavilion interior renovation, Central Utility Plant upgrades	LTS	None	–
Parking Structure 5 construction	LTS	None	–
East Main Hospital Wing demolition	LTS	None	–
Whole project	LTS	None	–

NI = no impact; LTS = less than significant; S = significant; SU = significant and unavoidable.

The California Hospital Tower Project would result in a population increase of 500 people, including 250 employees and 250 patients. The California Tower would accommodate approximately 2,364 employees, academic personnel, visitors, and patients. As shown in Table 2-2, the project would increase capacity for licensed beds and patients, and an additional 250 full-time and part-time employees. The number of academic personnel and visitors would remain the same as existing conditions at the East Wing. The make-ready projects, parking structure, and demolition of the East Wing would not involve an increase in population. While construction workers would temporarily be on campus during the construction and demolition phases, these employees would come from the existing labor force, and no new population is anticipated as a result of project construction. Although it is likely that the increased population related to new jobs would already reside in the Sacramento metropolitan area, employees could move to the area as a result of employment opportunities on campus and could take up residence in areas already served by parks. The additional 250 employees would have access to existing on-campus recreational facilities, and recreation use by this population would be accommodated by existing facilities on campus, such as the Cancer Survivor Park, walking paths, and other open spaces that currently exist on the Sacramento Campus, as well as the numerous off-campus recreational opportunities (Table 3.14-2). The increased population associated with the California Hospital Tower Project would not substantially increase use of park or recreational facilities in any one community because the population would reside in various communities across the Sacramento region and would therefore not affect any one park facility. The 250 patients would already reside in areas throughout northern California and would not impact recreational resources; hospital patients also would not likely be using any recreational resources during their stays.

The California Hospital Tower Project would not substantially increase population on the Sacramento Campus and therefore is not expected to result in increased physical deterioration of existing parks and recreational facilities or require new facilities to be built. Therefore, the impact related to park demand, open space, and recreational facilities would be **less than significant**.

Mitigation Measures

No mitigation measures are necessary.

Impact REC-2: No construction or expansion of recreational facilities that might have an adverse physical effect on the environment (less than significant)

Summary of Impact REC-2 by Component

Component	Level of Significance before Mitigation	Mitigation Measures Required	Level of Significance after Mitigation
Make-ready projects	NI	None	–
California Tower construction, Surgery and Emergency Services Pavilion interior renovation, Central Utility Plant upgrades	LTS	None	–
Parking Structure 5 construction	NI	None	–
East Main Hospital Wing demolition	NI	None	–
Whole project	LTS	None	–

NI = no impact; LTS = less than significant; S = significant; SU = significant and unavoidable.

The California Hospital Tower Project includes some open space areas, including tree-lined walkways and a rooftop garden on the West Wing (Figure 2-7). The make-ready projects, PS5, and demolition of the East Wing do not contain any recreation elements. The recreational features associated with the California Tower would be minor. The new walkways and vegetation would require minor construction activity for paving and planting, and significant ground disturbance is not anticipated. Impacts that would result from construction equipment are analyzed in other sections of this EIR, including but not limited to Section 3.2, *Air Quality*; Section 3.7; *Greenhouse Gases*, and Section 3.11; *Noise*. The California Hospital Tower Project would not include the construction or expansion of any recreational facilities that might have an adverse physical effect on the environment. Therefore, this impact would **be less than significant.**

Mitigation Measures

No mitigation measures are necessary.

3.15 Transportation and Circulation

This section describes the regulatory and environmental setting for transportation and circulation on the project site and in the project vicinity, analyzes effects on transportation and circulation that would result from implementation of the project, and provides mitigation measures, if applicable, to reduce the effects of any significant impacts.

In response to the Notice of Preparation for this EIR, commenters expressed concerns related to increased traffic including cut-through traffic and speeds, additional parking capacity impacts, safety impacts, and potential impacts on existing Sacramento Regional Transit (SacRT) service.

3.15.1 Existing Conditions

Regulatory Setting

University of California

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

University of California Policy on Sustainable Practices

The UC Sustainable Practices Policy (University of California 2020), effective July 24, 2020, applies to all campuses and contains the following goals related to reducing vehicle travel.

- The University recognizes that single-occupant vehicle (SOV) commuting is a primary contributor to commute GHG emissions and localized transportation impacts.
  - By 2025, each location shall strive to reduce its percentage of employees and students commuting by SOV by 10 percent relative to its 2015 SOV commute rates.
  - By 2050, each location shall strive to have no more 40 percent of its employees and no more than 30 percent of all employees and students commuting to the location by SOV.
- Each location (campus) will develop a business-case analysis for any proposed parking structures serving University affiliates or visitors to campus to document how a capital investment in parking aligns with each campus' Climate Action Plans and/or sustainable transportation policies.

UC Davis Sacramento Campus Long Range Development Plan

The 2020 Long Range Development Plan Update (2020 LRDP Update) includes the following relevant planning principles related to transportation and access for the campus.

- Enhance campus public realm and landscape character
  - Complete a network of comfortable landscaped spaces across campus that are connected by pedestrian-oriented trails and walkways, allowing for the ability to traverse campus safely on a primarily off-street route with supporting amenities including pedestrian-scaled lighting and seating
  - Create an "urban street" pedestrian corridor running north-south along 45th Street including the 45th Street extension into Aggie Square
- Provide convenient multimodal access to and within the campus
  - Provide a variety of transportation modes that are equally convenient and welcoming to support people no matter their chosen mode, as well as to support the University's sustainability goals
  - Implement a robust transportation demand management program, including incentive programs, enhanced partnerships with transit, more consideration of TNCs, and enhanced infrastructure for bikes, pedestrians, and transit
  - Create a Mobility Hub to accommodate multimodal connections
  - Consolidate surface parking into convenient structures in the various districts across campus
  - Focus vehicular movements on the outer roads, including X Street, 48th Street, 49th Street, and 2nd Avenue to reduce potential conflicts and to increase the feeling of safety and comfort for pedestrians and cyclists. Design other streets on campus to support a pedestrian and bike network in the campus core
- Improve pedestrian connections throughout the campus
  - Improve pedestrian access across all areas of campus
  - Provide pedestrian walkways and tree-lined sidewalks to ensure safe, comfortable, and efficient ways to move throughout the campus without needing to drive
  - Provide a consistent treatment including shade, paving, and plant treatments to orient pedestrians and provide clear direction along the path of travel
  - Design patient access to be clear and convenient, requiring minimal walking from parking and transit access, and with parking located in close proximity to the hospital and other clinical destinations
  - Create generous, comfortable, and highly visible pedestrian connections between parking areas and treatment facilities
- Provide attractive campus entries and edges
  - Provide a number of different entries and entry types for the various members of the campus community and the modes in which they arrive
  - Provide special pedestrian scale and character at the two main pedestrian-focused entries to campus off of Stockton Boulevard: at the new green space in the hospital district between Parking Structure 1 and the hospital, and at 3rd Avenue into the Market Plaza at Aggie Square
  - Primary entry points for cyclists connecting to the local and regional bicycle network will be along 2nd Avenue, 49th Street both at V Street and Broadway, and 48th Street at V Street.

Important considerations at bicycle entries will be seamless connectivity to bike routes on and off campus, bicycle-scaled signage, and separation of modes to prevent conflict with pedestrians and vehicles.

- Establish primary transit entry points at the Mobility Hub on 45th Street and on the connection along 48th Street to the light rail station
- Focus primary vehicular entry points at Stockton Boulevard/X Street and at Broadway/50th Street. Focus secondary vehicular entry points at V Street/49th Street, Stockton Boulevard/ 3rd Avenue, and Broadway/39th Street.

- Continue to develop a sustainable campus
  - Promote use of active and shared transportation for both carbon emissions reduction and human health

Federal

No federal plans, policies, regulations, or laws related to transportation and circulation apply to the project. However, federal regulations relating to the Americans with Disabilities Act, Title VI, and environmental justice relate to transit service. Federal regulations related to helicopters are discussed in Section 3.11, *Noise*.

State

The State of California has enacted several pieces of legislation that outline the state's commitment to encourage land use and transportation planning decisions and investments that reduce vehicle miles traveled (VMT) and contribute to reductions in greenhouse gas (GHG) emissions in line with state climate goals. This legislation includes the following.

- Assembly Bill (AB) 32 (2006)
- Senate Bill (SB) 375 (2008)
- SB 226 (2011)
- SB 743 (2013)

Assembly Bill 32

AB 32 establishes regulatory, reporting, and market mechanisms to achieve quantifiable reductions in GHG emissions and a cap on statewide GHG emissions. AB 32 requires that statewide GHG emissions be reduced to 1990 levels by 2020. AB 32 also requires the following.

(a) the statewide GHG emissions limit shall remain in effect unless otherwise amended or repealed.

(b) it is the intent of the Legislature that the statewide GHG emissions limit continues in existence and be used to maintain and continue reductions in emissions of GHGs beyond 2020.

(c) the CARB shall make recommendations to the Governor and the Legislature on how to continue reductions of GHG emissions beyond 2020.

Senate Bill 375

SB 375 requires metropolitan planning organizations (MPOs) to prepare a sustainable communities strategy (SCS) as part of their regional transportation plans (RTPs). The SCS demonstrates how the region will meet its GHG reduction targets through integrated land use, housing, and transportation planning. Specifically, the SCS must identify a transportation network that is integrated with the forecasted development pattern for the plan area and will reduce GHG emissions from automobiles and light trucks in accordance with targets set by the California Air Resources Board (CARB).

In 2017, the State Legislature passed SB 150, which requires CARB to prepare a report beginning in 2018 and every 4 years thereafter analyzing the progress made by each MPO in meeting regional GHG emission reduction targets.

The Sacramento Area Council of Governments (SACOG) serves as the MPO for Sacramento, Placer, El Dorado, Yuba, Sutter, and Yolo Counties, excluding those lands in the Lake Tahoe Basin. The Sacramento Campus is in Sacramento County and therefore is within the SACOG MPO.

SB 375 also provides streamlining (i.e., limited CEQA review) for certain transit priority projects that are consistent with the SCS.

Senate Bill 226

SB 226 revises the State CEQA Guidelines to set forth a streamlined review process for infill projects, including performance standards to determine an infill project's eligibility for that streamlined review. One of the requirements for streamlined review is that the project be consistent with the general use designation, density, building intensity, and applicable policies specified for the project area in either a SCS or an alternative planning strategy.

Senate Bill 743

SB 743 creates or encourages several statewide changes to the evaluation of transportation and traffic impacts under CEQA. First, it directs the Governor's Office of Planning and Research (OPR) to amend the State CEQA Guidelines to establish new metrics for determining the significance of transportation impacts of projects within transit priority areas (TPAs) and allows OPR to extend use of the new metrics beyond TPAs. In the amended State CEQA Guidelines, OPR selected VMT as the preferred transportation impact metric and applied its discretion to recommend the use of VMT statewide. The California Natural Resources Agency certified and adopted the amended State CEQA Guidelines in December 2018. The amended State CEQA Guidelines state that "generally, VMT is the most appropriate measure of transportation impacts" and the provisions requiring the use of VMT shall apply statewide as of July 1, 2020. The amended State CEQA Guidelines further state that land use "projects within 0.5 mile of either an existing major transit stop or a stop along an existing high quality transit corridor should be presumed to cause a less-than-significant transportation impact."

Second, SB 743 establishes that aesthetic and parking impacts of a residential, mixed-use residential, or employment center projects on an infill site within a TPA shall not be considered significant impacts on the environment.

Third, SB 743 added Section 21099 to the Public Resources Code, which states that automobile delay, as described by level of service (LOS) or similar measures of vehicular capacity or traffic congestion, shall not be considered a significant impact on the environment upon certification of the State CEQA Guidelines by the California Natural Resources Agency. Since the amended State CEQA Guidelines were certified in December 2018, changes in LOS or similar measures of vehicular capacity or traffic congestion are not considered a significant impact on the environment.

Lastly, SB 743 establishes a new CEQA exemption for a residential, mixed-use, and employment center project (a) within a TPA, (b) consistent with a specific plan for which an EIR has been certified, and (c) consistent with an SCS. This exemption requires further review if the project or circumstances changes significantly.

Technical Advisory on Evaluating Transportation Impacts in CEQA

To aid in SB 743 implementation, OPR released a *Technical Advisory on Evaluating Transportation Impacts in CEQA* (Technical Advisory) in December 2018. The Technical Advisory provides advice and recommendations to CEQA lead agencies on how to implement SB 743 changes. This includes technical recommendations regarding the assessment of VMT, thresholds of significance, VMT mitigation measures, and screening thresholds for certain land use projects. Lead agencies may consider and use these recommendations at their discretion.

The Technical Advisory identifies screening thresholds to quickly identify when a project should be expected to cause a less-than-significant impact without conducting a detailed study. The Technical Advisory suggests that projects meeting one or more of the following criteria should be expected to have a less-than-significant impact on VMT.

- Small projects—projects consistent with a SCS and local general plan that generate or attract fewer than 110 trips per day.
- Projects near major transit stops—certain projects (residential, retail, office, or a mix of these uses) proposed within 0.5 mile of an existing major transit stop or an existing stop along a high-quality transit corridor.
- Affordable residential development—a project consisting of a high percentage of affordable housing may be a basis to find a less-than-significant impact on VMT.
- Local-serving retail—local-serving retail development tends to shorten trips and reduce VMT. The Technical Advisory encourages lead agencies to decide when a project will likely be local-serving, but generally acknowledges that retail development including stores larger than 50,000 square feet might be considered regional-serving. The Technical Advisory suggests lead agencies analyze whether regional-serving retail would increase or decrease VMT (i.e., not presume a less-than-significant impact).
- Projects in low-VMT areas—residential and office projects that incorporate similar features (i.e., density, mix of uses, transit accessibility) as existing development in areas with low VMT will tend to exhibit similarly low VMT.

The Technical Advisory also identifies recommended numeric VMT thresholds for residential, office, and retail projects, as described below.

- Residential development that would generate vehicle travel exceeding 15 percent below existing residential VMT per capita may indicate a significant transportation impact. Existing VMT per capita may be measured as a regional VMT per capita or as city VMT per capita.
- Office projects that would generate vehicle travel exceeding 15 percent below existing regional VMT per employee may indicate a significant transportation impact.
- Retail projects that result in a net increase in total VMT may indicate a significant transportation impact.

For mixed-use projects, the Technical Advisory suggests evaluating each component independently and applying the significance threshold for each project type included. Alternatively, the lead agency may consider only the project's dominant use.

The Technical Advisory also provides guidance on impacts to transit. Specifically, the Technical Advisory suggests that lead agencies generally should not treat the addition of new transit users as an adverse impact. As an example, the Technical Advisory suggests the following.

> [An] infill development may add riders to transit systems and the additional boarding and alighting may slow transit vehicles, but it also adds destinations, improving proximity and accessibility. Such development also improves regional vehicle flow by adding less vehicle travel onto the regional network. (Governor's Office of Planning and Research 2018)

California Department of Transportation

The California Department of Transportation (Caltrans) is responsible for planning, designing, constructing, operating, and maintaining the State Highway System (SHS). Federal highway standards are implemented in California by Caltrans. Any improvements or modifications to the SHS within the project vicinity would need to be approved by Caltrans. The following Caltrans planning documents emphasize the State of California's focus on transportation infrastructure that supports mobility choice through multimodal options, smart growth, and efficient development.

- *Smart Mobility 2010: A Call to Action for the New Decade* (Smart Mobility Framework) (California Department of Transportation 2010a).
- *Complete Streets Implementation Action Plan* (California Department of Transportation 2010b).
- *California Transportation Plan 2040* (California Department of Transportation 2016).
- *Strategic Management Plan 2015-2020—2019 Update* (California Department of Transportation 2019a).

Within the project vicinity, Caltrans has developed the following plans and studies that set expectations for the performance of U.S. Route 50 (US 50) and State Route 99 (SR 99).

- *SR 99 & Interstate 5 Corridor System Management Plan* (California Department of Transportation 2009).
- *District System Management and Development Plan, Caltrans District 3* (California Department of Transportation 2013).
- *Transportation Concept Report and Corridor System Management Plan, United States Route 50, District 3* (California Department of Transportation 2014).
- *Transportation Concept Report, State Route 99, District 3* (California Department of Transportation 2017).

VMT-Focused Transportation Impact Study Guide

On May 20, 2020, Caltrans adopted the *VMT-Focused Transportation Impact Study Guide* (TISG) to provide updated guidance to Caltrans Districts, lead agencies, tribal governments, developers, and consultants based on changes to the agency's review process for transportation analysis of land use projects and plans under the updated State CEQA Guidelines. The TISG outlines how Caltrans will review land use projects with a focus on supporting state land use goals, state planning priorities, and GHG emission reduction goals; the TISG identifies land use projects' possible transportation impacts on the SHS and potential non-capacity increasing mitigation measures. The TISG emphasizes that VMT analysis is the primary review focus of Caltrans and references OPR's Technical Advisory as a basis for the guidance in the TISG. Notably, the TISG recommends use of the recommended thresholds in the Technical Advisory for land use projects. The TISG also references the Technical Advisory for screening thresholds that would identify projects and areas presumed to have a less-than-significant transportation impact. Caltrans supports streamlining for projects that meet these screening thresholds because they help achieve VMT reduction and mode shift goals.

Interim Local Development Intergovernmental Review Safety Review Practitioners Guidance

On December 18, 2020, Caltrans released the Interim Local Development Intergovernmental Review Safety Review Practitioners Guidance (Safety Guidance) to provide updated guidance to Caltrans Districts, lead agencies, developers, and consultants conducting safety review for proposed land use projects and plans that would affect the State Highway System. The interim guidance recommends that safety analyses include a review of three primary elements related to transportation safety—design standard compliance, collision history, and collision risk (consistent with the Federal Highway Administration's Systemic Approach to Safety). The interim guidance does not establish specific analysis methods or significance thresholds for determining safety impacts under CEQA. Additionally, Caltrans notes that local agencies may use the interim guidance at their own discretion as a guide for review of local facilities.

Regional and Local

Sacramento Area Council of Governments

SACOG is the MPO governing the six-county Sacramento region consisting of El Dorado, Placer, Sacramento, Sutter, Yolo, and Yuba Counties and their 22 cities. SACOG is responsible for the preparation of, and updates to, the Metropolitan Transportation Plan/Sustainable Communities Strategy (MTP/SCS) (Sacramento Area Council of Governments 2019) and the associated Metropolitan Transportation Improvement Program (MTIP) for the six-county region. The SACOG 2020 MTP/SCS provides a 20-year transportation vision and corresponding list of transportation projects. The MTIP identifies short-term projects (i.e., projects with a 7-year horizon) in more detail. The current SACOG 2020 MTP/SCS was adopted by the SACOG board on November 18, 2019.

The SACOG 2020 MTP/SCS (Sacramento Area Council of Governments 2019) provides the basis for air quality conformity findings related to the national Clean Air Act and determinations of whether the region is complying with GHG reduction targets for automobiles and light trucks established under SB 375. Major projects that are inconsistent with the plan could jeopardize the plan's effectiveness for air pollution and GHG reduction. Consequently, consistency with the MTP/SCS is a potential basis for determining adverse impacts related to these environmental topics.

The SACOG 2020 MTP/SCS acknowledges the following.

> A more compact land development pattern and providing alternatives to driving alone are critical strategies for reducing the amount of driving we do in our daily lives. Location within the region is likely the most important variable in determining how much time people spend in their vehicles. Communities within existing urban areas, and with a mix and density of uses, tend to produce less VMT per resident than places that are farther away and spread out. These "lower VMT" areas also tend to have the density and mix of uses to support better transit service and are friendlier to biking and walking for some trips. (Sacramento Area Council of Governments 2019)

To this end, the SACOG 2020 MTP/SCS includes two figures showing the distribution of VMT generation in the SACOG region presented in VMT per capita. One figure presents the VMT generation for the base year (2016), and one presents the VMT generation in the horizon year of the MTP/SCS (2040). These maps are presented as Figure 3.15-1 and Figure 3.15-2.

City of Sacramento 2035 General Plan

On March 3, 2015, the City of Sacramento City Council adopted the *Sacramento 2035 General Plan* (City of Sacramento 2015). The Mobility Element of this general plan outlines goals and policies that coordinate the transportation and circulation system with planned land uses. The following policies from the Mobility Element apply to this analysis.

Policy M1.2.3: Transportation Evaluation. The City shall evaluate discretionary projects for potential impacts to traffic operations, traffic safety, transit service, bicycle facilities, and pedestrian facilities, consistent with the City's Traffic Study Guidelines.

Policy M 1.2.4: Multimodal Access. The City shall facilitate the provision of multimodal access to activity centers such as commercial centers and corridors, employment centers, transit stops/stations, airports, schools, parks, recreation areas, medical centers, and tourist attractions.

Policy M 1.3.1: Grid Network. To promote efficient travel for all modes, the City shall require all new residential, commercial, or mixed-use development that proposes or is required to construct or extend streets to develop a transportation network that is well-connected, both internally and to offsite networks preferably with a grid or modified grid-form.

Policy M 1.4.2: Automobile Commute Trip Reduction. The City shall encourage employers to reduce the number of single-occupant vehicle commute trips to their sites by enforcing the existing trip reduction ordinance in the City Code.

Policy M 3.3.4: Private Shuttle Services. The City shall support the integration of privately-operated shuttle services into the transportation system that complement existing public bus and rail transit service.

Policy M 4.1.1: Emergency Access. The City shall develop a roadway system that is redundant (i.e., includes multiple alternative routes) to the extent feasible to ensure mobility in the event of emergencies.

Policy M 4.2.1: Accommodate All Users. The City shall ensure that all new roadway projects and any reconstruction projects designate sufficient travel space for all users including bicyclists, pedestrians, transit riders, and motorists except where pedestrians and bicyclists are prohibited by law from using a given facility.

Policy M 4.3.1: Neighborhood Traffic Management. The City shall continue wherever possible to design streets and approve development applications in a manner as to reduce high traffic flows and parking problems within residential neighborhoods.

Policy M 4.4.2: Transportation Performance Metrics. The City shall apply appropriate transportation performance metrics and thresholds in a manner consistent with State law and the community values expressed in the goals and policies of this general plan when measuring transportation system impacts for subsequent projects, making General Plan consistency determinations, and developing transportation financing programs. (City of Sacramento 2015)

Stockton Boulevard Corridor Study

The City of Sacramento has undertaken a study to understand community transportation needs and how safety and mobility could be improved in the Stockton Boulevard corridor, which spans 4.2 miles from Alhambra Boulevard to 47th Avenue. The study's goals include improving safety and increasing mobility and connections to Sacramento transit. The north segment of the corridor borders the Sacramento Campus on the west and encompasses the area between Alhambra Boulevard and Broadway (City of Sacramento 2021).

Environmental Setting

Roadway System

The project site and the UC Davis Sacramento Campus are centrally located in the Sacramento metropolitan area with access to three of the region's major freeways: US 50, SR 99, and the Capital City Freeway (also known as "Business 80"). Access to the project site is provided by Stockton Boulevard to the west (via Colonial Way), X Street to the south, and 45th Street to the east.

Key roadways in the project vicinity are described below.

Regional Roadways

Regional access to the project site is provided by US 50, SR 99, and the Capital City Freeway. Local freeway access is primarily provided by the US 50 interchange at Stockton Boulevard and the westbound off-ramp at 34th Street. Additional freeway access points in the project vicinity include the US 50 interchanges at 59th and 65th Streets; the SR 99 interchanges at Broadway, 12th Avenue, Fruitridge Road, and Martin Luther King Jr. Boulevard; and the Capital City Freeway interchange at P Street.

US 50 is a cross-country east–west highway that provides access to the Sacramento region. Locally, US 50 connects the area to Yolo County to the west and Rancho Cordova, Folsom, and El Dorado County to the east. In the project vicinity, US 50 is a limited-access freeway and generally consists of eight travel lanes (four mixed-flow lanes in each direction).

SR 99 is a north–south state highway that connects the area to south Sacramento and Elk Grove to the south. In the project vicinity, SR 99 is a limited-access freeway and generally consists of eight travel lanes (four mixed-flow lanes in each direction).

Capital City Freeway is an east–west business loop that consists of two distinct segments in the project vicinity. West of the US 50/SR 99 Oak Park interchange, it is co-signed with US 50 and extends westerly into West Sacramento. East of the US 50/SR 99 Oak Park interchange, it is also known as SR 51 and extends northeasterly toward the unincorporated Arden-Arcade and Carmichael communities in Sacramento County.

Local Roadways

Stockton Boulevard is a north–south roadway that runs from Alhambra Boulevard north of the Sacramento Campus to Power Inn Road in south Sacramento. Beyond Alhambra Boulevard, Stockton Boulevard becomes P Street, which extends west to Capital City Freeway and the central city grid. Stockton Boulevard is a four-lane divided roadway with a posted speed limit of 30–35 miles per hour (mph) adjacent to the Sacramento Campus with a striped median serving as a center two-way left-turn lane along the campus frontage. North of the campus, Stockton Boulevard serves as the primary access route to US 50 and Capital City Freeway at the P Street interchange.

T Street is an east–west roadway that serves the Elmhurst neighborhood to the north of the Sacramento Campus. It extends from Alhambra Boulevard to Kroy Way just west of 65th Street. It also serves as the primary connection from the US 50 34th Street off-ramp to Stockton Boulevard.

V Street is an east–west roadway that extends from Stockton Boulevard to 57th Street. Within the project vicinity, V Street is a two-lane roadway that forms the northern boundary of the Sacramento Campus. It serves the Elmhurst residential neighborhood to the north of the Sacramento Campus.

Colonial Way is an east–west roadway that extends west into the Oak Park neighborhood and east into the Sacramento Campus. Colonial Way provides access to Parking Structure 1 as well as the loading dock and surface parking lots located on the north side of the hospital complex.

X Street is an east-west campus roadway that extends from Stockton Boulevard to 48th Street. X Street is a divided four-lane roadway and serves as one of the main roadways to access Sacramento Campus facilities from Stockton Boulevard.

Y Street is an east–west roadway that extends from Stockton Boulevard to 45th Street, then as a Sacramento Campus roadway from 48th Street to 49th Street. Y Street provides one travel lane in each direction. It serves as one of three main roadways to access campus facilities from Stockton Boulevard.

2nd Avenue is an east–west roadway that extends from Riverside Boulevard in Land Park to 50th Street on the eastern side of the Sacramento Campus. In addition to serving as one of the main roadways to access campus facilities from Stockton Boulevard, 2nd Avenue provides access to Oak Park, Curtis Park, and Land Park to the east and is one of several routes between the campus and the SR 99/Broadway interchange.

3rd Avenue is a minor east–west roadway that extends west from Stockton Boulevard approximately 550 feet to 43rd Street. It is proposed to be extended easterly from Stockton Boulevard onto the Sacramento Campus as part of the 2020 LRDP Update.

Broadway is an east–west arterial roadway that extends from I-5 south of downtown Sacramento to 65th Street. East of Stockton Boulevard, Broadway is a two-lane roadway with a posted speed limit of 30 mph that serves both commercial and residential uses. West of Stockton Boulevard, Broadway is a four-lane roadway with a posted speed limit of 35 mph.

45th Street is a north–south two-lane Sacramento Campus roadway that extends from 2nd Avenue to just north of X Street. 45th Street is proposed to extend south to 3rd Avenue as part of the 2020 LRDP Update and be the location of a mobility hub north of 2nd Avenue.

48th Street is a north–south campus roadway that extends from X Street to 2nd Avenue. It is a four-lane divided roadway with a raised median. It also provides access to Parking Lot 4 north of X Street as a two-lane roadway.

49th Street is a north–south roadway that extends from V Street to Broadway along the eastern side of the Sacramento Campus. In the project vicinity, 49th Street is a two-lane roadway with on-street parallel parking.

Vehicle Travel

The following describes the baseline VMT levels in the project vicinity. In addition to the 2016 and 2040 VMT per-capita maps prepared for the SACOG 2020 MTP/SCS (Figures 3.15-1 and 3.15-2, respectively), SACOG prepared draft maps that present 2016 work (i.e., workplace-based) VMT per job and 2016 residential (i.e., household) VMT per capita for the SACOG region (Sacramento Area Council of Governments 2016a, 2016b). These draft maps are based on outputs from the SACSIM 2016 base year travel forecasting model. SACSIM is an activity/tour-based model that simulates individuals' daily travel accounting for land use, transportation, and demographic factors that influence travel behavior. SACOG recently updated SACSIM as part of its 2020 MTP/SCS. As part of this update, SACOG conducted a validation and calibration of the SACSIM 2016 base year travel model that included using household travel surveys, transit boarding data, on-board transit surveys, traffic count data, and VMT estimates from annual Highway Performance Monitory Systems (HPMS) data to verify the SACSIM model reasonably replicated actual travel behavior.

In May 2021, SACOG updated the 2016 work VMT per job and 2016 residential VMT per capita maps to incorporate VMT that occurs outside of the six-county SACOG region. Previous versions of these maps did not include VMT that occurs outside of the SACOG region (i.e., trips with a trip end outside of the SACOG region were truncated at the regional boundary, thus their trip lengths and associated VMT outside of the SACOG region were not accounted for).

The SACOG maps present 2016 baseline VMT data using "hex" geography, or hexagon-shaped tiles, across the SACOG region The SACOG maps present work VMT per job and residential VMT per capita for each hex in the region. The maps also present the region, county, and jurisdiction averages for workplace VMT per job and total household VMT per capita for reference. The map uses a range of colors to compare the VMT characteristics of each hex to the regional average, with cooler colors (i.e., blue, green, and yellow) representing VMT values that are below the regional average and warmer colors (i.e., orange, pink, and red) representing VMT values that are above the regional average. Figure 3.15-3 and Figure 3.15-4 present example screenshots of these maps.

Work VMT per job and residential VMT per capita are a subset of total VMT generated by a given site or geographic area. Work VMT per job accounts for the vehicle trips and trip lengths associated with work-based tours and sub-tours (i.e., trips made as part of one's commute from home to work—including intermediate stops, such as a coffee shop or gas station—or trips made to or from the workplace during the workday). Residential VMT per capita is calculated by tallying all household VMT generated by residents living in the hex (i.e., only trips by residents). Per the technical advisory guidance for analyzing VMT impacts of employment uses, and given the characteristics of the project, the transportation impact analysis focuses on the work VMT per job metric.

The average work VMT per job is computed by summing the VMT from all work-based tours and sub-tours at a workplace located in the hex. This work VMT is then divided by the jobs in the hex available for residents inside the SACOG region. Similarly, the average residential VMT per capita is calculated by tallying all residential VMT generated by residents living in the hex and dividing that value by the total population living in the hex. At the time of this analysis, these maps are presented in draft form, provided for informational purposes only, and subject to change as guidelines and SACOG data are updated.

The hex geography does not follow jurisdictional boundaries, roadway alignments, or other political or geographic features. Therefore, this hex geography does not perfectly coincide with the Sacramento Campus boundaries. Two hexes cover the majority of the Sacramento Campus.

- **North Campus Hex**: Contains the area immediately east and west of Stockton Boulevard between V Street and 2nd Avenue, including the main hospital building, Shriners Hospital, and the Marriott hotel. This hex also contains non-campus uses, such as the commercial uses fronting the western edge of Stockton Boulevard.
- **South Campus Hex**: Contains the area east of Stockton Boulevard between V Street and Broadway, including the Cancer Center, the Ambulatory Care Center, the Education Core District (e.g., the Education Building, Moore Hall), the Central Plant, the Facilities Support and Fleet

Services building, and Governors Hall. This hex also contains non-campus uses, such as the Language Academy of Sacramento and the California Department of Justice.

The project site is located within the North Campus Hex. As noted above, this hex contains uses unrelated to the Sacramento Campus, including non-campus (e.g., commercial uses on the west side of Stockton Boulevard). Moreover, this hex excludes Sacramento Campus uses that would influence travel to and from the proposed project (e.g., the Education Core District). For these reasons, reference to the North Campus Hex alone would not provide a complete representation of the existing VMT characteristics of the project site vicinity.

In addition to the hex geographies, SACOG SACSIM19 travel demand model users can analyze VMT using other geographical boundaries, including traffic analysis zones (TAZs). TAZs are geographies commonly used in travel demand models. TAZs typically represent geographic areas of similar residential/employment quantities, land use composition, or jurisdictional characteristics. TAZs are typically defined by major roads, neighborhood boundaries, or jurisdictional boundaries.

A review of the TAZ structure in SACSIM19 indicates that TAZs in the Sacramento Campus vicinity closely align with campus boundaries. Together, TAZs 478 and 1042 are bounded by V Street to the north, 51st Street to the east, 2nd Avenue to the south, and Stockton Boulevard to the west (Figure 3.15-5). TAZs 478 and 1042 are almost wholly contained within the Sacramento Campus and primarily comprise the major hospital, primary care medical, and medical education uses on the Sacramento Campus. Specific facilities within TAZs 478 and 1042 include the main hospital building, the Cancer Center, the Ambulatory Care Center, Shriners Hospital, and the Education Core District. The project site is contained within TAZ 1042, and the proposed project would be similar in use, density, and composition to the existing uses in TAZs 478 and 1042. For these reasons, TAZs 478 and 1042 together provide a more suitable geography for the purposes of understanding existing VMT characteristics of the project site vicinity than the North Campus Hex described above.

Table 3.15-1 presents the work VMT per job for the Sacramento Campus TAZs surrounding the project site (TAZs 478 and 1042), along with the average work VMT per job for the SACOG region.

Table 3.15-1. Baseline Work VMT per Job

Geography	Baseline Work VMT per Job (2016)
TAZs 478 and 1042[a]	15.78
SACOG Region	19.55

Source: Output from trip generation tool, Fehr & Peers, SACSIM19 travel demand model, 2021.

[a] Note: TAZs 478 and 1042 are bounded by V Street to the north, 51st Street to the east, 2nd Avenue to the south, and Stockton Boulevard to the west. In addition to the project site, they contain the major hospital, primary medical care, and medical education uses on the Sacramento Campus, including the main hospital building, the Cancer Center, the Ambulatory Care Center, Shriners Hospital, and the Education Core District.

As shown in Table 3.14-1, work VMT per job for the Sacramento Campus TAZs surrounding the project site (TAZs 478 and 1042) is 15 percent or more (19.3 percent) below the existing regional average. Therefore, the project site is located in a low-VMT-generating area for work VMT per job.

Bicycle Facilities

The *California Highway Design Manual* (California Department of Transportation 2019b) identifies four primary types of bicycle facilities: Class I bicycle paths (including shared use paths), Class II bicycle lanes, Class III bicycle routes, and Class IV separated bikeways. These bicycle facilities are briefly described below.

- Class I (Bicycle Path)—A facility with exclusive right-of-way with cross flows by vehicles minimized. Motor vehicles are prohibited from bicycle paths. Unless adjacent to an adequate pedestrian facility, Class I facilities are for the exclusive use of bicycles and pedestrians.
- Class II (Bicycle Lane)—A dedicated facility for bicyclists adjacent to motor vehicle traffic on streets. They are identified with striping, pavement markings, and signage. The striping on Class II bicycle lanes is intended to delineate the right-of-way assigned to bicyclists and motorists and to provide for more predictable movements by each.
- Class III (Bicycle Route)—On-street bicycle routes where bicycles and motor vehicles share the road. They are identified with signage and may also be indicated with pavement markings (e.g., "sharrows"). Class III facilities are intended to provide continuity to other bicycle facilities (usually Class II bikeways) or designate preferred routes through high demand corridors. These routes are typically assigned to low-volume and/or low-speed streets.
- Class IV (Separated Bikeway)—Facility for the exclusive use of bicycles that is separated from adjacent vehicular traffic. The separation may include grade separation, flexible posts, inflexible barriers, or on-street parking. Also referred to as protected bicycle lanes or cycle tracks.

Bicycle activity is facilitated by both on-and off-street bicycle facilities. Figure 3.15-6 shows the existing bicycle facilities on the Sacramento Campus and in the surrounding neighborhoods. As shown in Figure 3.15-6, the existing bicycle network in the project vicinity consists of Class II bicycle lanes and Class III bicycle routes. The Sacramento Campus has a network of bicycle lanes on X Street, 2nd Avenue, and 49th Street. The surrounding neighborhoods feature a mix of well-connected bicycle facilities, such as 2nd Avenue, T Street, V Street, 48th Street, and 51st Street, as well as disjointed bicycle facilities with substantial gaps, such as along Broadway and Stockton Boulevard.

Roadways serving the project site generally lack designated bicycle facilities, including Stockton Boulevard, 45th Street, and V Street. A bike lane is currently provided on X Street; however, this facility is not in compliance with the minimum width requirements for a Class II bicycle lane set forth in the *California Highway Design Manual*.

The X Street/48th Street intersection is currently being reconfigured from a traffic circle to a conventional signalized four-legged intersection as part of the PS4 project. The intersection will be a protected intersection with separated crossings on all four legs for bicyclists and pedestrians. A Class I shared-use path will extend from the northwestern corner of the intersection to V Street.

Community feedback collected during the preparation of the *City of Sacramento Bicycle Master Plan* (City of Sacramento 2018) noted that the intersection of Stockton Boulevard and Broadway near the southwest corner of the campus is considered a "difficult intersection" for bicyclists, and that Stockton Boulevard from Alhambra Boulevard to Broadway is a primary "gap in the network." The City of Sacramento proposes a Class IV separated bikeway on Stockton Boulevard from Broadway to T Street, which is near the project site vicinity, as a near-term priority project in the *City of Sacramento Bicycle Master Plan* to address this gap in the network. Additionally, the City of

Sacramento is currently conducting a study of the Stockton Boulevard corridor to increase transportation choices along the corridor, including promoting bicycling and walking. The *Draft Stockton Boulevard Corridor Study* recommends a Class I bicycle path on the east side of Stockton Boulevard in the project vicinity.

Pedestrian Facilities

The Sacramento Campus is a compactly developed site with several medical and educational destinations and parking areas distributed around the campus. This development pattern results in pedestrian activity on the campus as employees, providers, patients, visitors, and students walk short distances between medical, employment, or education destinations, or from these destinations to parking structures and surface parking lots.

Sidewalks along on-campus and off-campus roadways and internal campus walkways are the primary facilities serving pedestrian travel in the project vicinity. Sidewalks are generally present on both sides of roadways within the immediate project vicinity, including Stockton Boulevard, X Street, 45th Street (north of X Street), Colonial Way, and V Street. Notable sidewalk gaps include the west side of 45th Street between X and Y Streets and the south side of Colonial Way along the Parking Structure 1 frontage. In addition to sidewalks, an extensive network of pedestrian paths provides convenient connections from sidewalks to the primary entry/exit points for the main hospital building.

Marked crosswalks and traffic control devices facilitate pedestrian movements across roadways within the immediate project site vicinity. Marked crosswalks are present at the signalized intersections at Stockton Boulevard/Colonial Way, Stockton Boulevard/X Street, and X Street/45th Street. A pedestrian hybrid beacon signal is located at the Stockton Boulevard/Sherman Way intersection to facilitate pedestrian movements across Stockton Boulevard.

Marked crosswalks are also present at the all-way stop-controlled X Street intersections at the main hospital building patient loading zone driveway and at the Cancer Center driveway. At these locations, crossing pedestrians experience increased exposure to conflicting vehicle traffic due to the existing stop-controlled, multi-lane north–south crossings. North–south crossing distances at these locations measure approximately 70 feet long. The existing design and operation of these intersections create “double-jeopardy” conflict points typical of uncontrolled and stop-controlled multi-lane pedestrian crossings (Figure 3.15-7).

Transit Services and Facilities

Figure 3.15-8 shows existing transit services and facilities in the project vicinity. SacRT is the primary transit operator. The Causeway Connection, a SacRT and Yolobus service that connects the UC Davis main campus to the Sacramento Campus, started service in spring 2020. Additionally, UC Davis operates a courtesy onsite shuttle service.

The Sacramento Campus is served by SacRT bus Routes 38 and 51. Route 38 operates between 6:00 a.m. and 9:30 p.m. on weekdays with 1-hour headways. On weekends and holidays, the line runs between 7:30 a.m. and 9:00 p.m. with 1-hour headways. Route 38 serves bus stops along Stockton Boulevard north of Broadway and Broadway west of Stockton Boulevard, generally along the western and southern edges of the campus. Route 51 offers service on weekdays between 6:00 a.m. and 10:00 p.m. with 15-minute headways and on weekends/holidays between 6:00 a.m. and 9:30 p.m. with 20-minute headways. This route runs between downtown Sacramento and Florin Towne

Centre serving bus stops by the intersection of Broadway/Stockton Boulevard, which is just southwest of the Sacramento Campus. In February 2020, the maximum peak load experienced by Routes 38 and 51 was 18 and 29 passengers, respectively, during a typical weekday. For comparison, for a 40-foot standard fixed-route bus, the seated capacity is 34 passengers, and the total capacity (seated plus standing capacity) is 60 passengers.[1] Routes 38 and 51 generated 12.6 and 25.9 weekday boardings per revenue hour, respectively.[2] Route 38 operates at 76.4 percent on-time and Route 51 operates at 73 percent on-time.

SacRT also operates the Gold Line light rail service, which runs between the city of Folsom and downtown Sacramento, parallel to US 50. The Gold Line offers service on weekdays between 5:00 a.m. and 12:30 a.m. and on weekends and holidays between 5:00 a.m. and 10:30 p.m. Headways are typically half an hour, except during weekday peak periods when they are 15 minutes. There are two Gold Line stations near the Sacramento Campus at 39th and 48th Streets. The 39th Street station is co-signed as the UC Davis Health station, as it is served by the UC Davis shuttle (see details below). In February 2020, the maximum peak load experienced by the Gold Line was 224 passengers during a typical weekday.[3] As comparison, for a typical four-car light-rail train, the seated capacity is 256 passengers, and the total capacity (seated plus standing capacity) is 512 passengers.[4]

The Causeway Connection, funded by UC Davis and jointly operated by SacRT and Yolobus, runs with stops at the UC Davis main campus and the Sacramento campus. The route operates with zero-emission electric battery buses and offers service on weekdays from 6:00 a.m. to 9:00 p.m. Prior to the COVID-19 pandemic, the service was planned to operate with 20-minute headways during peak periods and hourly headways during off-peak periods. As of May 2021, the headways are hourly during peak and off-peak periods. On the Sacramento Campus, the Causeway Connection currently uses a temporary terminal at the southeast corner of the Y Street/45th Street intersection. The Causeway Connection will be rerouted to the planned campus mobility hub on 45th Street upon its completion.

In addition to the bus and light rail service provided by SacRT, UC Davis operates a courtesy on-site shuttle service to connect the hospital, clinic and education buildings, parking areas, and other key destinations around the campus. The shuttle service system consists of three lines that operate Monday through Friday from approximately 5:30 a.m. to 5:30 p.m.: the Gold Line, Blue Line, and Green Line. These shuttle lines are shown in Figure 3.15-8. The Gold Line and Blue Line run continuously on approximately 7- to 10-minute headways. The Green Line connects the Sacramento Campus with the 39th Street light rail station on SacRT's Gold Line. The Green Line operates on roughly 20-minute headways from 6:10 a.m. to 5:30 p.m. The primary transit center for the shuttle system is on the north side of X Street west of 45th Street, immediately south of the main hospital building. The transit center is an on-street bus bay with approximately 130 feet of storage for dwelling shuttles. Other shuttle stops are provided throughout the campus.

As noted in the *Regulatory Setting* section, the State CEQA Guidelines and the Technical Advisory identify several screening thresholds to quickly identify, without conducting a detailed study, when a project should be expected to result in a less-than-significant impact. One screening threshold

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[1] Per the SacRT Service Standards.

[2] Based on February 2020 average weekday ridership data provided by SacRT.

[3] Based on February 2020 average weekday ridership data provided by SacRT.

[4] Per the SacRT Service Standards.

identified in the Technical Advisory is location within 0.5 mile of an existing major transit stop or an existing stop along a high-quality transit corridor. The light rail stations along SacRT's Gold Line light rail transit service are the only transit stops in the project vicinity that qualify as a "major transit stop" per the definition in the CEQA statute (i.e., Public Resources Code Section 21064.3). Figure 3.15-8 shows the areas that are within 0.5 mile of a major transit stop. As shown in Figure 3.15-8, the project site is located within this 0.5-mile buffer.

Disruptive Trends in Travel

Transportation and mobility are being transformed through a number of forces ranging from new technologies, different personal preferences, and the unique effects of the COVID-19 pandemic, the combination of which could alter traditional travel demand relationships in the near- and long-term. These disruptive trends increase uncertainty in forecasting future travel conditions, especially considering that new technologies such as automated vehicles (AVs) may be operating on future transportation networks once the California Hospital Tower Project would be complete and operational. Information about how technology is affecting and will affect travel is accumulating over time.

Furthermore, the COVID-19 pandemic and subsequent actions by federal, state, and local governments to curtail mobility and encourage physical distancing (i.e., limit in-person economic and social interactions) has temporarily but profoundly changed travel conditions. While travel activity will likely return to some form of normality after government shelter-in-place orders are lifted and the pandemic has subsided, it is possible that some of these temporary changes will influence people's travel choices into the future, including either accelerating or diminishing some of the emerging trends in transportation that were already underway prior to the pandemic. Some of the emergent changes already influencing travel behavior that could accelerate in the future include the following.

- Substituting internet shopping and home delivery for some shopping or meal-related travel.
- Substituting participating on social media platforms for social/recreational travel.
- Substituting telework for in-office work/commute travel.
- Substituting telemedicine appointments for eligible in-person medical appointments.
- Using new travel modes and choices. Transportation network companies such as Uber and Lyft, car sharing, bicycle/scooter sharing, and on-demand microtransit services have increased the options available to travelers in the Sacramento area, and have contributed to changes in traditional travel demand relationships. For example, combined bus and rail ridership on SacRT has declined by approximately 19 percent between 2016 and 2019. The SACSIM model was calibrated to 2016 conditions and may not fully capture all the factors influencing transit ridership declines today or in the future.
- Automation of vehicles. Both passenger vehicles and commercial vehicles and trucks are evolving to include more automation. Research, development, and deployment testing is proceeding on AVs; AVs do not require an operator and navigate roadways autonomously. Forecasts of how quickly research, development, and deployment testing will transition to full deployment and marketing of AVs vary widely both on the pace of the transition and the market acceptance of fully automated operation. More uncertainty exists around the behavioral response to AVs. In terms of VMT impacts on the transportation system and the environment,

the worst-case scenario would be one in which AVs are privately owned, as they are now, but the automated function of AVs would cause them to be used more as described below.

- AVs could be repositioned to serve different members of a household (e.g., have an AV drop a worker at their workplace, then drive back home empty to serve another trip such as taking a student to school). The repositioning of AVs could add significantly to traffic volumes and VMT.
- AVs could reduce the value travelers place on time spent in a vehicle, resulting in an increase in willingness to make longer trips. For example, if a person could read or do work in an AV instead of focusing on driving, they might be willing to commute longer distances to work. Conversely, a worker who would prefer to live in a rural area but is unwilling to drive far enough to act on that preference in a conventional vehicle may be willing to do so using an AV.
- AVs could increase willingness to drive more to avoid parking costs or tolls. For example, a person going to a sporting event in an area that charges for parking might use an AV to be dropped off at the venue, and then re-position and park the AV in an area that does not charge for parking.
- Connected vehicles (CVs) can communicate wirelessly with its surroundings, including other vehicles, bicyclists, pedestrians, roadway infrastructure (i.e., traffic signals, toll facilities, and traffic management facilities), and the internet. The influence that CVs may have is still speculative but includes potential for reductions in collisions and congestion and greater overall network performance optimization.

3.15.2 Environmental Impacts

This section describes the environmental impacts associated with transportation and circulation that would result from the California Hospital Tower Project. It describes the methods used to determine the effects of the California Hospital Tower Project and lists the thresholds used to conclude whether an impact would be significant. Measures to mitigate (i.e., avoid, minimize, rectify, reduce, eliminate, or compensate for) significant impacts are provided, if available.

Thresholds of Significance

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

- Conflict with a program, plan, ordinance, or policy addressing the circulation system including transit, roadway, bicycle, and pedestrian facilities.
- Conflict or be inconsistent with State CEQA Guidelines Section 15064.3, subdivision (b).
- Substantial increase in hazards because of a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment).
- Potential to cause inadequate emergency access.

This analysis considers the significance criteria obtained from Appendix G to identify refined thresholds of significance for each criterion. These thresholds are identified below.

Conflict with Existing and Planned Facilities

The project would result in a significant transportation impact if it would do any of the following.

- Physically disrupt an existing bicycle facility, pedestrian facility, or transit service/facility.
- Interfere with the implementation of a planned bicycle facility, pedestrian facility, or transit service/facility.
- Cause a degradation in transit service such that service does not meet performance standards established by the transit operator.

Note that the Technical Advisory suggests the addition of new transit riders or incurring additional delay from increased boardings and alightings is not considered an adverse impact. However, maintaining transit level and quality of service is necessary to retain and expand ridership. Failure to meet performance standards established by the transit operator could lead to losses of ridership and increases in travel by other modes (e.g., automobiles), which could result in environmental effects such as increased emissions.

Vehicle Miles Traveled Impacts

State CEQA Guidelines Section 15064.3, subdivision (b) outlines criteria for analyzing transportation impacts using VMT. For land use projects, VMT exceeding an applicable threshold of significance may indicate a significant impact.

Neither UC Davis nor the City of Sacramento have formally adopted guidance or thresholds related to VMT impact analysis (i.e., tailored screening criteria, preferred metrics and calculation methods, and use-specific thresholds). Therefore, this analysis relies on guidance from the Technical Advisory. Per the Technical Advisory, the project would result in a significant impact if it would do any of the following.

- Generate vehicle travel exceeding 15 percent below existing regional household VMT per capita for residential uses.
- Generate vehicle travel exceeding 15 percent below existing regional work VMT per employee for employment uses.
- Include retail development that would result in a net increase in total VMT.

The transportation impact assessment evaluates household VMT per capita for residential uses and work VMT per employee for employment uses for potential VMT impacts per the Technical Advisory as guidance. Household VMT and work VMT are VMT metrics that only capture specific users and/or trip purposes. A separate VMT metric, total VMT, which accounts for all vehicle trips generated by the project and their associated trip length, is used as an input into the air quality, GHG, and energy analyses to determine the impact of the project’s mobile emissions, as described in those resource sections. Readers should refer to those resource sections for more information about how the project’s travel characteristics affect those specific topics. Because each section is focused on a specific environmental effect with its own specific metrics, thresholds, or significance criteria, it is possible to have a different conclusion for transportation impacts than other resource topics that also reference project-related travel.

Hazards Impacts

The project would result in a significant transportation impact if it would do any of the following.

- Result in a geometric design feature that is inconsistent with applicable design standards.

- Result in a change to the volume, mix, or speed of traffic that is not compatible with the existing facility design.

Emergency Access Impacts

The project would result in a significant transportation impact if it would result in roadway and transportation facilities that impede access for emergency response vehicles.

Construction Impacts

The project would result in a significant transportation impact if construction-related activity would do any of the following.

- Result in hazardous conditions for motorists, bicyclists, pedestrians, or transit users.
- Inhibit access for emergency response vehicles.

Methods for Analysis

The transportation impact analysis methodology includes a combination of quantitative and qualitative evaluations of the transportation system. The specific analysis methods are described below.

Project Travel Characteristics

The proposed California Hospital Tower Project would include the demolition of the 120,000 gross square foot (gsf) East Main Hospital Wing (East Wing) and the construction of the new 890,000 gsf California Tower. California Tower would connect with the main hospital building via the existing Surgery and Emergency Service Pavilion. The construction of the California Hospital Tower Project would enable UC Davis to reconfigure existing space within the main hospital building, resulting in a reallocation of inpatient beds throughout the entirety of the main hospital. Table 2-1 presents a summary of the changes to the number of inpatient beds in the main hospital building that would result from the completion of the California Hospital Tower Project. The existing number of inpatient beds would increase from 625 to 700. Additionally, the project would add 250 new employees.

Additionally, the proposed California Hospital Tower Project would include the following components that would affect transportation and circulation.

- Construction of the new 1,100-space Parking Structure 5 (PS5), located on the site of existing Parking Lot 4. Vehicular access to and from PS5 would be provided via X Street. Pedestrian connections would be provided between PS5, the Cancer Center, and the proposed California Tower, including a new pedestrian promenade across 45th Street. PS5 would include modifications to the X Street/48th Street intersection, which is currently being reconfigured from a traffic circle to a conventional signalized four-legged intersection as part of the PS4 project. The intersection will be a protected intersection with separated crossings for bicyclists and pedestrians on all four intersection legs. A Class I shared-use path will extend from the northwest corner of the intersection to V Street across the easterly frontage of PS5.
- Construction of make-ready projects to facilitate the construction of the California Tower, including roadway modifications on X Street and 45th Street, new service vehicle access on Colonial Way, relocation of the existing on-site shuttle transit center (see below for details),

modifications to 45th Street pedestrian routing and Cancer Center drop-off area, and modifications to Emergency Department ambulance access.

- Modifications to the intersection of X Street and the main hospital loading zone driveway, including relocation of the intersection further west on X Street and the lengthening of the eastbound left-turn pocket.
- Reconfiguration of 45th Street, including a new ambulance entrance, a new Emergency Department patient loading zone, and a reconfiguration of the existing Cancer Center patient loading zone. North of X Street, 45th Street would include two northbound travel lanes and one southbound travel lane. Northbound vehicles would utilize the left-most travel lane to access the Emergency Department ambulance entrance as well as the new patient loading zone. The right-most northbound travel lane would be used to access surface parking surrounding the Cancer Center as well as the Cancer Center passenger loading zone.
- Relocation of the existing on-site shuttle transit center from its current location on the north side of X Street west of 45th Street to the north side of X Street, west of the main hospital loading zone driveway, within the hospital main entrance loading area or the east side of 45th Street south of X Street.
- Construction of a new patient loading zone on the west side of 45th Street north of X Street near the California Tower entrance.

During regular operations, X Street, 45th Street, and Colonial Way would be the primary vehicular access routes to the California Tower site. Large delivery trucks (greater than 45 feet long) would utilize X Street and 45th Street to access the loading dock on the north side of the main hospital building (entering via X Street to 45th Street to Doctor Way and exiting via Doctor Way to 45th Street to X Street). Service vehicles and small delivery trucks (less than 45 feet long) would utilize Colonial Way or 45th Street to access the loading dock. Ambulance access to and from the Emergency Department would be provided via 45th Street. Vehicular access to and from PS5 would be provided via two driveways on X Street, one located immediately east of the Cancer Center and the other located at 48th Street.

The operation of the California Hospital Tower Project would generate new travel demand associated with increased numbers of patients, visitors, and employees that would result from the project. While PS5 would not generate new travel demand in and of itself, it would result in a redistribution of existing and future parking demand and related vehicle traffic generated by the campus, as described below.

Overall, the California Hospital Tower Project would generate approximately 1,000 new daily vehicle trips to and from the Sacramento Campus (refer to Table 3.15-2). Vehicle trip estimates were prepared using the Fehr & Peers MXD+ mixed-use project trip generation tool. Conventional methods of estimating trip generation (e.g., ITE Trip Generation Manual trip rates) systemically overestimate the trips generated by and impacts of mixed-use development because they do not accurately reflect the amount of internal trip making or the level of external trips made by transit, biking, or walking. MXD+ is designed to more reasonably estimate travel characteristics associated with mixed-use development projects, recognizing that traffic generation by mixed-use and other forms of sustainable development relate closely to the density, diversity, design, and destination accessibility, transit proximity, and scale of development. MXD+ begins with the latest ITE Trip Generation Manual trip rates, and then estimates internal trips and external walk, bike, and transit trips based on empirical data collected at comparable sites throughout the country. Those estimates are then subtracted from the raw ITE trips to yield the external/new vehicle trips that the project would generate. The application of MXD+ for the Sacramento Campus is appropriate given the variety and amount of medical, educational, and employment uses present on-campus.

Table 3.15-2. California Hospital Tower Project—Vehicle Trip Generation

Scenario	Beds	External Vehicle Trips
Existing (2019)	625	11,629
Existing Plus California Hospital Tower Project	700	13,018
Net New Project Trips	+75	+1,389

Source: Institute of Transportation Engineers (ITE) *Trip Generation Manual, 10th Edition*, 2017; output from trip generation tool, Fehr & Peers, 2021.
Note: Estimates represent beds and vehicle trip generation for the main hospital building only.

Vehicles that currently use the surface parking lots on the California Tower site would redistribute to other parking areas on the Sacramento Campus, including PS5. The construction of PS5 would redistribute existing and future parking demand across the Sacramento Campus by increasing the parking supply near the main hospital building, the Cancer Center, and other surrounding campus uses.

The change in parking location of existing trips would result in localized trip pattern changes. Some trip lengths may be shortened slightly while others may be lengthened slightly, depending on the origin of the trip. Generally, many individual trip lengths are expected to change minimally in length, and most trips are not expected to change by more than 1 mile in length. The net change in trip lengths resulting from displaced parking are expected to result in a negligible change in overall VMT.

The construction of PS5 aligns with the 2020 LRDP Update goal of increasing parking supply on the Sacramento Campus from the existing 7,676 spaces to 11,080 spaces by 2030 (a 44 percent increase) and 12,000 spaces at buildout of the LRDP (a 56 percent increase). This increase is expected to occur as the campus population grows, as new parking structures (such as PS5) are constructed, and as surface parking lots are replaced by new buildings or parking structures.

Table 4.1 of the 2020 LRDP Update indicates that the Sacramento Campus daytime population (employees, students, patients, visitors, etc.) will increase from 13,547 persons in 2016 to 21,200 persons at buildout of the 2020 LRDP Update (a 56 percent increase). The rate of expansion of on-campus parking supply will be equal to the rate of growth in campus population. Therefore, the Sacramento Campus will maintain a ratio of approximately 0.56 parking space per person between 2016 baseline and 2040 buildout conditions.

Bicycle and Pedestrian Facilities

The impact assessment for bicycle and pedestrian travel considers existing and planned bicycle and pedestrian facilities and reviews the California Hospital Tower Project to determine whether it would physically disrupt an existing facility or prevent the implementation of a planned facility. This assessment also considers whether the project would increase conflicts between bicyclists and pedestrians and other modes of travel.

Transit Service and Facilities

The impact assessment for transit considers existing and planned transit facilities and services and reviews the California Hospital Tower Project to determine whether it would physically disrupt an existing service or facility or prevent the implementation of a planned service or facility. This assessment also considers whether the project could conflict with transit performance standards established by transit operators.

Future California Hospital Tower Project transit demand was estimated based on longitudinal employer-household dynamics data, Journey-to-Work Census data, and estimates of employment growth that would result from the California Hospital Tower Project. Generally, transit demand is linked to the availability and quality of transit service in combination with travel distance and the cost of travel (i.e., passenger fare).

The estimated increase in transit demand presumes that future background travel conditions remain relatively constant and does not account for potential changes associated with emerging travel technologies or increased mobility choices. As noted earlier, these emerging travel trends are already contributing to changes in the traditional travel demand relationships, as exemplified in a 19 percent decline in bus and rail ridership on SacRT between 2015 and 2018. Furthermore, the current COVID-19 pandemic and subsequent response by government agencies has reduced transit demand and shared mobility options; it is uncertain how this will translate into longer-term transit demand changes.

Transit performance is measured against performance standards outlined in the SacRT Service Standards document (Sacramento Regional Transit 2013). The performance standards used in this analysis include the following.

- Vehicle loading standards.
- Productivity standards (headway standard).
- On-time performance standards.

Vehicle Miles Traveled Impact Assessment

As discussed above, LOS can no longer be used for evaluating project traffic impacts under CEQA with the passage of SB 743 and adoption of the amended CEQA Guidelines implementing SB 743 (see State CEQA Guidelines Section 15064.3). Per State CEQA Guidelines Section 15064.3, subdivision (c), the provisions in Section 15064.3 recommending VMT as the primary metric for analyzing traffic impacts applies as of July 1, 2020.

This analysis relies on guidance provided in the Technical Advisory to assess the project's VMT impact. Specifically, this analysis considers the following.

- Does the project meet one or more of the screening thresholds identified in the Technical Advisory such that a detailed analysis is not necessary?
    - If so, what information or data are available to support the conclusion that the project meets the screening threshold and should be considered to have a less-than-significant transportation impact?
- If the project does not meet one or more of the "screening thresholds," this analysis would proceed to a detailed analysis of the project's VMT impact. This includes quantifying the

project's VMT generation and determining whether this VMT generation would exceed the recommended thresholds of significance in the Technical Advisory (i.e., 15 percent below existing regional VMT per capita/employee).

Vehicle Miles Traveled Screening Analysis

The Technical Advisory identifies "screening thresholds" to quickly identify, without conducting a detailed study, when a project should be expected to cause a less-than-significant transportation impact. As described in the *Regulatory Setting* section, the Technical Advisory suggests the following projects should be expected to have a less-than-significant impact on VMT.

- Small projects.
- Projects near major transit stops.
- Affordable residential development.
- Local-serving retail.
- Projects in low-VMT areas.

Of these project types, only the criterion for projects near major transit stops are codified in the updated State CEQA Guidelines. The remaining criteria for small projects, affordable residential development, local-serving retail, or projects in low-VMT areas are not codified in the State CEQA Guidelines but are suggested by OPR based on research cited in the Technical Advisory.

For mixed-use projects, the Technical Advisory suggests evaluating each component independently and applying the screening threshold for the applicable land use type. The Technical Advisory alternatively suggests that the lead agency may consider only the project's dominant use.

Of these screening criteria, the following potentially apply to the California Hospital Tower Project.

- Projects near major transit stops.
- Projects in low-VMT areas.

The California Hospital Tower Project does not qualify as a small project, an affordable residential development, or local-serving retail for screening purposes. Therefore, this EIR does not rely on these screening criteria and does not discuss these criteria further.

Presumption of Less-Than-Significant Impact near Existing Major Transit Stops

State CEQA Guidelines Section 15064.3, subdivision (b)(1), states that lead agencies should generally presume projects within 0.5 mile of an existing major transit stop or a stop along an existing high quality transit corridor will have a less-than-significant transportation impact. This presumption assumes development with better access to high quality transit service is likely to result in more transit mode share and a reduction in VMT.

The Technical Advisory states this presumption would not apply if project-specific or location-specific information indicates that the project will still generate significant levels of VMT. For example, the presumption may not be appropriate if the project has or does any of the following.

- Has a floor area ratio of less than 0.75.

- Includes more parking for use by residents, customers, or employees of the project than required by the jurisdiction (if the jurisdiction requires the project to supply parking).
- Is inconsistent with the applicable SCS as determined by the lead agency, with input from the MPO.
- Replaces affordable residential units with a smaller number of moderate-or high-income residential units.

The light rail stations along SacRT's Gold Line light rail transit service are the only transit stops in the project vicinity that qualify as a major transit stop per the definition in the CEQA statute (Public Resources Code Section 21064.3). Figure 3.15-8 shows the Sacramento Campus and the areas that are within this 0.5-mile buffer of a major transit stop, including the project site.

As shown in Figure 3.15-8, the entirety of the project site is within 0.5 mile of a major transit stop (i.e., a SacRT Gold Line light rail transit station). Moreover, the project would not meet any of the four criteria listed above that would indicate that the project would generate significant levels of VMT. Therefore, the California Hospital Tower Project may qualify for a presumption of a less-than-significant transportation impact pursuant to State CEQA Guidelines Section 15064.3, subdivision (b)(1).

Presumption of Less-Than-Significant Impact for Projects in Low Vehicle Miles Traveled Areas

The OPR Technical Advisory states that residential and office projects that are located in "areas with low VMT, and that incorporate similar features (i.e., density, mix of uses, transit accessibility), will tend to exhibit similarly low VMT, further stating that "maps created with VMT data, for example from a travel survey or a travel demand model, can illustrate areas that are currently below threshold VMT." The Technical Advisory goes on to state that "new development in such locations would likely result in a similar level of VMT" and "such maps can be used to screen out residential and office projects from needing to prepare a detailed VMT analysis" (Governor's Office of Planning and Research 2018).

For the purposes of this VMT analysis, the project is considered an office use, as it is primarily an employment site and, comparable to a typical office use, project employee travel would be the primary contributor to project-generated VMT. Consideration of the project as an office use for VMT analysis purposes also allows for comparisons to VMT per employee generated by employment sites elsewhere throughout the region, based on the screening maps described below.

The Environmental Setting section presents information regarding the existing VMT characteristics of the project site and immediate vicinity based upon the SACOG SACSIM19 travel demand model. As shown in Table 3.15-1, the Sacramento Campus TAZs surrounding the project site generate 15.78 work VMT per job, which is 19.3 percent below the existing regional average. Because the work VMT per job for the project site vicinity is 15 percent or more below the existing regional average, it is considered a low VMT area for work VMT per job. Therefore, the project may qualify for a presumption of a less-than significant transportation impact on the basis of being located within a low VMT area.

Other Impacts

Potential transportation impacts related to transportation hazards, emergency access, and construction activity are based on a review of project changes to the transportation network and a qualitative assessment of whether those changes would conflict with applicable standards or result in detrimental conditions based on the thresholds of significance.

Impacts and Mitigation Measures

Impact TRA-1: Conflict with a program, plan, ordinance, or policy addressing the circulation system including transit, roadway, bicycle, and pedestrian facilities (significant and unavoidable)

Summary of Impact TRA-1 by Component

Component	Level of Significance before Mitigation	Mitigation Measures Required	Level of Significance after Mitigation
Make-ready projects	LTS	None	–
California Tower construction, Surgery and Emergency Services Pavilion interior renovation, Central Utility Plant upgrades	S	TRA-1a TRA-1b TRA-1c TRA-1d TRA-1e TRA-1f TRA-1g	SU
Parking Structure 5 construction	S	TRA-1a TRA-1b	LTS
East Main Hospital Wing demolition	LTS	None	–
Whole project	S	TRA-1a TRA-1b TRA-1c TRA-1d TRA-1e TRA-1f TRA-1g	SU

NI = no impact; LTS = less than significant; S = significant; SU = significant and unavoidable.

Bicycle Travel

The 2020 LRDP Update includes several policies that promote the use of bicycles to, from, and within the Sacramento Campus. Key policies include the provision of enhanced infrastructure for bicyclists, as well as the provision of primary campus entries for bicyclists featuring seamless connectivity to bike routes on and off campus, bicycle-scaled signage, and separation of modes to prevent conflict with pedestrians and vehicles. 48th Street at V Street is identified as a primary campus entry point for bicyclists. UC Davis is currently developing an Active Transportation Plan for the Sacramento Campus, which will identify and prioritize bicycle facility improvements throughout campus. While the specific recommendations of this plan are not known at this time, the identified improvements will support the policies identified in the 2020 LRDP Update.

The development of the California Hospital Tower Project would include new medical and employment uses, which would result in increased bicycle travel. The PS5 component of the project would include the construction of a large bicycle enclosure within PS5, which would serve bicycle parking demand generated by the project as well as other existing and future Sacramento Campus uses. The construction of the PS5 bicycle enclosure would result in increased bicycling activity on roadways and paths within the vicinity of PS5, particularly X Street and 48th Street.

Bicycle use on existing bicycle facilities is relatively low, and existing and planned bicycle facilities would generally be capable of accommodating increases in bicycle demand. One notable exception is X Street between Stockton Boulevard and 48th Street, which currently features Class II bicycle lanes that are not in compliance with the minimum Class II bicycle lane width requirements established in the *California Highway Design Manual*. The PS5 component of the project would increase the volume of vehicle and bicycle traffic on this segment of X Street by redistributing existing and future vehicle and bicycle trips throughout the Sacramento Campus to and from parking facilities that would be provided within PS5 (i.e., vehicle and bicycle parking in PS5). This would include an increase in the volume of bicyclists utilizing the existing Class II bicycle lanes that do not meet minimum width requirements. As such, the project would increase the potential for vehicle-bicycle conflicts on X Street between Stockton Boulevard and 48th Street (e.g., bicyclists utilizing the existing Class II bicycle lanes on X Street would experience increased exposure to passing vehicles).

The PS5 component of the project would also include the construction of a protected intersection at the X Street/48th Street intersection, which would provide separated bicyclist and pedestrian crossings as well as additional physical protection between bicyclists and turning vehicles. These improvements would also include the construction of a Class I shared-use path along the easterly PS5 frontage between V Street and X Street (along the existing 48th Street alignment). This facility would accommodate bicycle travel between the Sacramento Campus and the Elmhurst neighborhood and the SacRT Gold Line light rail transit stations located to the north of campus, and would fulfill the 2020 LRDP Update policy of establishing a primary campus entry for bicyclists at 48th Street at V Street.

Vehicular access to the PS5 parking garage on X Street immediately east of the Cancer Center could also affect bicycle travel on X Street.

The California Hospital Tower Project would not physically disrupt an existing bicycle facility or interfere with implementation of a planned bicycle facility identified in the *City of Sacramento Bicycle Master Plan* (City of Sacramento 2018).

Increased bicycle travel demand generated by the California Hospital Tower Project may result in additional bicycle trips on local roadways without existing bicycle facilities, such as Broadway and Stockton Boulevard. Additional vehicle trips resulting from the development of the California Tower Hospital Project would also use these roadways. This could increase potential for conflicts between vehicles and bicycles on these off-campus roadways without dedicated bicycle facilities.

The City of Sacramento is currently conducting a study of the Stockton Boulevard corridor to increase transportation choices along the corridor, including promoting bicycling and walking. Data in the *City of Sacramento Bicycle Master Plan* indicate that communities along the Stockton Boulevard corridor exhibit some of the lowest rates of auto ownership as well as some of the greatest bicycle commute mode share in the city of Sacramento, indicating a potential greater reliance and proclivity for bicycling. Therefore, the recommended improvements that are ultimately developed for the study of the Stockton Boulevard corridor are likely to improve bicycle safety and facilitate bicycle travel.

One of the gaps in the bicycling network is along Broadway west of Stockton Boulevard. The City of Sacramento is identifying near-term improvements for this stretch of Broadway as part of the Vision Zero Top Five Corridor Study (City of Sacramento 2017). The recommended near-term improvements for Broadway include striping improvements that would reduce the number of vehicle travel lanes on Broadway from four through-lanes to two through-lanes, add a center two-way left-turn lane, and add a separated/buffered bikeway from Stockton Boulevard to Martin Luther King Jr. Boulevard. This would likely reduce vehicle travel speeds and improve bicyclist comfort, resulting in greater facilitation of bicycle travel.

The timing for these planned improvements on Broadway and Stockton Boulevard is not clearly established by the City of Sacramento. However, the documentation from the *City of Sacramento Bicycle Master Plan* (City of Sacramento 2018) and Vision Zero Top Five Corridor Study (City of Sacramento 2017) indicate that the City plans to implement these improvements in the near term; and the SACOG 2020 MTP/SCS identifies the Stockton Boulevard Mobility Project as occurring between 2026 and 2030. Therefore, it is likely these bikeway improvements would be in place prior to the completion of the California Hospital Tower Project, which would open in 2030. These projects will be implemented at the discretion of the City of Sacramento, and because they are slated for near-term implementation, further actions by UC Davis are not likely to expedite their construction.

Initial increases in bicycle and vehicle travel generated by the California Hospital Tower Project may result in potential increased vehicle and bicycle conflicts before bikeway improvements are constructed on Stockton Boulevard and Broadway. However, existing bikeways, such as the Class II bicycle lanes on 2nd Avenue, T Street, 49th Street, and 50th Street and Class III bicycle routes on V Street, 48th Street, and 51st Street create an interconnected bicycle network that bicyclists may use as alternate routes to Stockton Boulevard and Broadway prior to these forthcoming bikeway and corridor improvements. Furthermore, these planned improvements to Stockton Boulevard and Broadway would address these potential conflicts and complement UC Davis's efforts to increase bicycling as a viable travel option to and from the Sacramento Campus.

The project would increase the potential for vehicle–bicycle conflicts on X Street between Stockton Boulevard and 48th Street and at the PS5 access point to X Street immediately east of the Cancer Center. These conditions would conflict with 2020 LRDP Update policies that pertain to the promotion of bicycle travel and the provision of enhanced infrastructure for bicyclists on the Sacramento Campus. Therefore, this impact would be **significant**.

Implementation of Mitigation Measure TRA-1a would reduce this impact by reducing the potential for vehicle–bicycle conflicts on X Street between Stockton Boulevard and 48th Street by improving the X Street bicycle facilities. Implementation of Mitigation Measure TRA-1b would reduce this impact and ensure that the PS5 access points would comply with applicable design standards and reduce the potential for adverse effects to bicycle travel. Therefore, this impact would be **less than significant with mitigation**.

Pedestrian Travel

The 2020 LRDP Update includes several policies that promote walking to, from, and within the Sacramento Campus. Key policies include the provision of enhanced infrastructure for pedestrians and general improvements to pedestrian connections throughout campus to promote safe, comfortable, and efficient pedestrian travel. UC Davis is currently developing an Active Transportation Plan for the Sacramento Campus, which will identify and prioritize pedestrian facility improvements throughout campus. While the specific recommendations of this plan are not known at this time, the identified improvements will support the policies identified in the 2020 LRDP.

The California Hospital Tower Project would result in increased pedestrian activity generated by the proposed medical uses. The PS5 component of the project would increase the parking supply in the northeast portion of campus and serve parking demand generated by uses throughout campus. PS5 would result in redistribution of parking demand generated by existing and future campus uses and increased pedestrian activity on roadways and paths within the PS5 vicinity.

Moreover, increases in transit and vehicle trips would generate additional pedestrian trips between the California Tower and parking and transit facilities, as all transit and vehicle trips begin and end with a pedestrian trip. Pedestrian activity would be greatest near building accesses and between the California Tower and adjacent parking areas, including PS1, PS3, and PS5. The project would also generate additional demand for north–south pedestrian travel across X Street, particularly between the main hospital building, PS5, and campus uses located south of X Street (e.g., the School of Medicine). This pedestrian activity would most likely be most pronounced near the beginning and end of the typical workday, during hospital shift changes, and at midday.

This pedestrian activity would be accommodated by existing pedestrian infrastructure in and near the project site, including sidewalks, crosswalks, and intersection traffic controls. These include sidewalks on X Street and crossings of X Street at its intersections with Stockton Boulevard (signalized), the main hospital building patient loading zone driveway (stop-controlled), 45th Street (signalized), and the Cancer Center driveway (stop-controlled). Additionally, the California Tower Hospital Project includes the construction of new pedestrian facilities to support increases in pedestrian activity. The proposed realignment of 45th Street would include sidewalks or pedestrian paths on both sides of 45th Street north of X Street. The project would also include a new pedestrian promenade between the California Tower and PS5, including an enhanced crossing across 45th Street immediately east of the California Tower. The segment of the pedestrian promenade between the Cancer Center and PS5 could result in conflicts between pedestrians and vehicles, which would be a significant impact. As noted previously, the PS5 component of the project would include enhanced pedestrian crossings at the new X Street/48th Street signalized intersection and provide a new shared-use path connection along the easterly PS5 frontage between V Street and X Street. The project would not result in a physical disruption to these existing pedestrian facilities or interfere with the implementation of a planned pedestrian facility.

Generally, existing and planned pedestrian infrastructure would adequately accommodate expected pedestrian activity associated with the project. Notable exceptions include the existing stop-controlled pedestrian crossings at the X Street intersections at the main hospital building patient loading zone driveway and at the Cancer Center driveway. These stop-controlled, multi-lane crossings increase pedestrian exposure to conflicting vehicle traffic and, when coupled with increased north–south pedestrian activity and east–west vehicle traffic caused by the project, would result in increased potential for vehicle–pedestrian conflicts at these locations. Of particular note is the increased potential for “double jeopardy” conflicts typical of uncontrolled and stop-controlled multi-lane pedestrian crossings. This condition would conflict with 2020 LRDP policies pertaining to the provision of safe and comfortable pedestrian connections throughout the Sacramento Campus. Therefore, this impact would be **significant**.

Implementation of Mitigation Measure TRA-1c would reduce this impact by reducing the potential for vehicle-pedestrian conflicts at the X Street intersections at the main hospital building patient loading zone driveway and at the Cancer Center driveway by improving the pedestrian crossings. Implementation of Mitigation Measure TRA-1b would reduce this impact and ensure that the proposed pedestrian promenade between the Cancer Center and PS5 would comply with applicable design standards and reduce the potential for adverse effects on pedestrian travel. Therefore, this impact would be **less than significant with mitigation**.

Transit

During typical operations, the California Hospital Tower Project would increase demand for transit service. An estimated 20 additional employees would use transit service to commute to the California Hospital Tower Project, representing 40 new daily passenger boardings. The California Hospital Tower Project does not propose any new or expanded transit service; as a result, new transit passenger demand generated by the California Hospital Tower Project would rely on existing or planned transit serving the campus. Development of the California Hospital Tower Project would increase peak hour delay on roadways surrounding the Sacramento Campus, including roadways used by existing fixed-route bus service. These potential increases in overall travel time could adversely affect bus transit operations (i.e., on-time performance). Potential degraded service quality could lead to losses of ridership if commuters decide to use other modes of travel (e.g., automobiles). This could result in environmental effects such as increased emissions. While uncertain, decreased ridership caused by degraded service quality could result from development of the California Hospital Tower Project. Unless remedied, degraded transit operations would not meet SacRT performance standards, which would exceed the threshold of significance.

The California Hospital Tower Project does not propose any physical changes to existing SacRT transit service or facilities (e.g., bus stop relocation or route realignment). The California Tower Hospital Project would not interfere with the implementation of planned transit service or facilities identified in the *Sacramento 2035 General Plan* (City of Sacramento 2015) or SacRT's *Short Range Transit Plan* (Sacramento Regional Transit District 2014).

The California Hospital Tower Project would include the relocation of the existing primary on-campus transit center utilized by the UC Davis Health onsite courtesy shuttle. This transit center is currently located on the north side of X Street, west of 45th Street, and provides approximately 130 feet of storage for dwelling shuttles. Currently all three campus shuttle routes stop at this transit center. The transit center would need to be relocated to accommodate the footprint of the new California Tower structure. The project proposes to relocate the existing transit center to the north side of X Street, west of the main hospital loading zone driveway, within the main hospital loading area, and/or the east side of 45th Street south of X Street. The current California Tower site plan indicates that each of these relocated shuttle stops would provide approximately 60 feet of storage for dwelling shuttles. The capacity of each shuttle stop would not be sufficient to accommodate three or more shuttles simultaneously, which could adversely affect campus shuttle operations.

The project site is located less than 0.5 mile from the SacRT Gold Line 39th Street and 48th Street stations. Moreover, the project site is situated near existing SacRT bus stops on Stockton Boulevard and Broadway. The on-campus courtesy shuttle would continue to serve the relocated shuttle stops on X Street near the main hospital building. It is anticipated that most new passenger demand generated by the California Hospital Tower Project would be accommodated at existing SacRT bus stops and light rail stations. Additionally, passenger demand between the project site and Davis would be expected to use the Causeway Connection bus service.

The SacRT Service Standards establish vehicle loading standards for SacRT bus and light rail service based on maximum load factors (i.e., the ratio of total passenger capacity to total seats) for each vehicle type. The load factor standard for 40-foot standard fixed-route buses with a seated capacity of 34 passengers is 1.8 (equal to a maximum load of 60 passengers per bus), and the load factor standard for light rail vehicles is 2.0 (equal to a maximum load of 128 passengers per light rail car, or 512 passengers for a typical four-car light rail train). SacRT considers a route to be overloaded if 25 percent or more of one-way vehicle trips are regularly overloaded. In February 2020, the maximum peak load experienced by Routes 38 and 51 was 18 and 29 passengers, respectively, during a typical weekday.[5] Moreover, in February 2020, the maximum peak load experienced by the Gold Line was 224 passengers during a typical weekday. Zero percent of Route 38, Route 51, and Gold Line trips currently measure above the established load factor during a typical weekday. Thus, the three primary SacRT services that serve the project site currently meet the established SacRT loading standard.

The SacRT Service Standards also establish productivity standards for each service type, where routes exceeding SacRT’s maximum productivity standards are recommended for service increases while corrective action is recommended for routes that fail to meet SacRT’s minimum productivity standards. The maximum productivity standard for regular weekday bus service is 40 boardings per revenue hour, while the maximum productivity standard for weekday light rail service is a maximum load of 400 passengers per train. In February 2020, SacRT Routes 38 and 51 generated 12.6 and 25.9 weekday boardings per revenue hour, respectively. Moreover, in February 2020, the Gold Line experienced a maximum peak load of 224 passengers during a typical weekday. Thus, the three primary SacRT services that serve the project site currently meet the established SacRT productivity standard.

Based on existing ridership and service levels, Routes 38 and 51 could accommodate an additional 1,520 and 1,750 weekday passenger boardings, respectively, before meeting the SacRT productivity standard of 40 boardings per revenue hour. As described previously, the California Hospital Tower Project would generate an additional 40 daily passenger boardings from employees commuting to and from the Sacramento Campus. Therefore, relative to existing SacRT ridership and service levels, transit passenger demand generated by the California Hospital Tower Project alone would not be expected to cause Routes 38 and 51 to exceed the SacRT productivity standard.

The SacRT Service Standards establish on-time performance standard as indicators for service reliability. On-time performance for SacRT is measured at time points. A vehicle is considered on-time if it leaves its time point between 0 and 5 minutes late. SacRT’s target is for the bus system to be 85 percent on-time or better. SacRT’s target is for the light rail system to be 97 percent on-time or better. SacRT’s target is for individual bus routes to be within one standard deviation of 85 percent on-time or better (equal to 76.7 percent or better based on October 2019 data). In October 2019, systemwide on-time performance for SacRT was 73.3 percent, with 3.2 percent early departures and 23.5 percent late departures. SacRT bus routes operating near the Sacramento Campus currently fall below both the systemwide and individual route reliability targets. Route 38 operates at 76.4 percent on-time and Route 51 operates at 73 percent on-time (Sacramento

[5] Based on February 2020 average weekday ridership data provided by SacRT.

Regional Transit 2019). Additional peak hour vehicle trips and, in turn, vehicle delay generated by the California Hospital Tower Project could further exacerbate service reliability issues for existing SacRT bus services that operate on roadways surrounding the Sacramento Campus.

An exceedance of established on-time performance standards would cause transit services to operate below acceptable service level, quality, and/or performance targets, which could be deleterious to the transit passenger experience (i.e., poor reliability, long travel times, crowding on buses, etc.). For passengers who are sensitive to these factors, a degradation of service quality could cause them to choose other modes of transportation that generally cause greater adverse effects on the environment (e.g., driving). Passengers choose to use transit due to a variety of factors and personal preferences, including community context (e.g., urban versus suburban), accessibility, convenience, travel time, and costs of modal options. Because transit passenger expectations regarding service quality will vary, the extent to which a degradation of service quality would affect existing and prospective transit ridership, as well as associated adverse environmental effects, is uncertain.

Additional automobile, transit, bicycle, and pedestrian trips to and from the Sacramento Campus resulting from the development of the California Hospital Tower Project would be accommodated on existing transportation facilities on and surrounding the campus. Additional travel activity could result in the competition for physical space between the modes, which in turn would increase the potential for collisions, including those involving transit vehicles.

Implementation of Mitigation Measures TRA-1d, TRA-1e, TRA-1f, and TRA-1g would reduce the significance of this impact. However, the improvements that are necessary to improve transit performance identified in Mitigation Measure TRA-1f would require implementation by other entities, including SacRT, the City of Sacramento, and Caltrans. Moreover, the effectiveness of the transportation demand management strategies identified in Mitigation Measure TRA-1e are not known, and subsequent vehicle trip reduction effects and, in turn, reductions to delays to transit, cannot be guaranteed. Since UC Davis cannot guarantee that these improvements would be implemented and/or effective, this impact would remain **significant and unavoidable**.

Mitigation Measure TRA-1a: Improve the bicycle facilities on X Street between Stockton Boulevard and 48th Street

UC Davis shall improve the bicycle facilities on X Street between Stockton Boulevard and 48th Street to accommodate changes to bicycle and vehicle travel associated with the project and to reduce the potential for vehicle-bicycle conflicts. Potential improvement alternatives include the following.

1. Restripe the existing Class II bicycle lanes to a width of 5 feet or more to meet the minimum Class II bicycle lane width requirements established in the *California Highway Design Manual*. This modification could be accommodated by reducing the width of existing vehicle travel lanes on X Street.
2. Construct Class IV separated bikeways. This modification could be accommodated by reducing the number of vehicle travel lanes or by reconstructing the sidewalk zone on the outside of the roadway envelope.
3. Reconfigure X Street to accommodate bidirectional vehicle traffic on one side of X Street and convert the other side of X Street to a shared bicycle-transit facility.

Additional, but optional, mitigation features that would further improve the bicycling environment include bike lane conflict markings, intersection crossing markings, reductions to crossing distances, and/or physically separating bicyclists from vehicles (e.g., reconfiguration of intersections into protected intersections).

Implementation of any one of alternatives 1 through 3 above, or an improvement of equal effectiveness, would improve the bicycle facilities on X Street between Stockton Boulevard and 48th Street and reduce the potential for vehicle-bicycle conflicts. The bicycle facility improvements described above shall be constructed and operational prior to the completion of PS5.

Mitigation Measure TRA-1b: Construct the PS5 driveways and driveway intersections with X Street to comply with applicable design standards and to reduce the potential for conflicts involving bicyclists and pedestrians

UC Davis shall design and construct the PS5 driveways and driveway intersections with X Street to comply with applicable design standards and to reduce the potential for conflicts involving bicyclists and pedestrians. These facilities shall achieve the following performance measures.

- Minimize the number and severity of vehicle–pedestrian conflict points along the pedestrian promenade between the Cancer Center and PS5 (generally along the southerly PS5 frontage). This would include the crossing of the pedestrian promenade and the PS5 driveway proposed immediately east of the Cancer Center.
- Minimize the number and severity of vehicle–bicycle conflict points at the intersection of X Street and the PS5 driveway proposed immediately east of the Cancer Center.
- Minimize the potential for vehicle queueing entering/exiting PS5 driveways to spillback and block bicycle and/or pedestrian facilities.
- Comply with applicable driveway and intersection design standards.

The construction of PS5 in compliance of these performance measures would ensure that PS5 driveways and driveway intersections with X Street would comply with applicable design standards and reduce the potential for conflicts involving bicyclists and pedestrians. These facilities and performance measures shall be accomplished prior to the completion of PS5.

Mitigation Measure TRA-1c: Improve the pedestrian crossings across X Street at the X Street intersections at the main hospital building patient loading zone driveway and at the Cancer Center driveway

UC Davis shall construct pedestrian crossing improvements across X Street at the X Street intersections at the main hospital building patient loading zone driveway and at the Cancer Center driveway to reduce the potential for vehicle–pedestrian conflicts. Potential improvement alternatives include the following.

1. Installation of traffic signals.
2. Installation of rapid rectangular flashing beacons.
3. Construction of raised pedestrian crossings.

Implementation of any one of alternatives 1 through 3 above, or an improvement of equal effectiveness, would improve the pedestrian crossings across X Street at the X Street intersections at the main hospital building patient loading zone driveway and at the Cancer Center driveway and reduce the potential for vehicle-pedestrian conflicts at these locations. The installation of traffic signals would provide temporal separation between pedestrians and conflicting vehicular movements (i.e., through the provision of pedestrian crossing phases). The installation of rapid rectangular flashing beacons or the construction of raised pedestrian crossings would enhance the visibility of crossing pedestrians. The pedestrian crossing improvements described above shall be constructed and operational prior to the completion of PS5.

Mitigation Measure TRA-1d: Construct the relocated shuttle stops with sufficient capacity to accommodate campus shuttle operations

UC Davis shall construct the relocated shuttle stops on X Street and/or 45th Street with sufficient capacity to accommodate campus shuttle operations. The stops shall be sufficiently sized to accommodate the anticipated number of shuttles that would dwell simultaneously. The relocated shuttle stops shall be completed as a component of the make ready component of the project.

Mitigation Measure TRA-1e: Monitor transit service performance and implement transportation demand management strategies to minimize delays to transit service

During the 2021–2022 academic year, UC Davis shall coordinate with SacRT and other relevant transit operators to establish baseline on-time performance metrics for routes operating on Broadway and Stockton Boulevard within the vicinity of the Sacramento Campus consistent with established standards and methods. This process should consider the effects of the current COVID-19 pandemic on transit performance. UC Davis shall additionally coordinate with SacRT and other relevant transit operators to assess on-time performance for routes operating on Broadway and Stockton Boulevard within the vicinity of the Sacramento Campus every 2 years over the 2020 LRDP Update planning horizon. During its standard project review process, UC Davis shall forecast and analyze traffic conditions on Broadway and Stockton Boulevard within the vicinity of the Sacramento Campus for individual development projects proposed under the 2020 LRDP Update that are expected to affect operations on these roadways. Relative to baseline levels, if operations on Broadway and Stockton Boulevard are found to cause transit services to fail to meet established standards or to worsen transit performance for services that already fail to meet established standards, or if a project-level analysis indicates the same, UC Davis shall institute transportation demand management (TDM) strategies to reduce peak hour vehicle trips and, in turn, delays to transit service on Broadway and Stockton Boulevard within the vicinity of the Sacramento Campus.

The implementation of TDM strategies shall offset degradations to transit on-time performance in excess of established on-time performance standards (per the most up-to-date SacRT Service Standards) that are attributable to the implementation of the 2020 LRDP Update.

Implementation of TDM strategies that would reduce delays to transit service on Broadway to Stockton Boulevard include strategies to reduce vehicle travel to and from campus and to minimize the effect of campus operations on surrounding roadways. Specific potential TDM strategies include, but are not limited to, the following.

- Modify campus-operated shuttles to avoid Broadway and Stockton Boulevard, to the extent practical.

- Promote walking and bicycling for student and employee trips to and from the UC Davis Sacramento Campus.
- Expand public transit service, including additional service connecting campus with student and employee residential areas.
- Implement a fair value commuting program or other pricing of vehicle travel and parking.
- Provide carpool and/or vanpool incentive programs.
- Allow flexible work hours and schedule classes to reduce arrivals/departures during peak hours.
- Offer remote working options.

The TDM strategies implemented to reduce delays to transit service at these locations will be consistent with existing and planned TDM programs on campus. If these TDM strategies are not sufficient to reduce delays to transit service per the criteria described above, additional TDM measures or adjustments to the measures above shall be implemented, as needed to reduce peak hour intersection delay consistent with the criteria described above.

Mitigation Measure TRA-1f: Monitor transit service performance and implement transit service and/or facility improvements

During the 2021–2022 academic year, UC Davis shall coordinate with SacRT and other relevant transit operators to establish baseline transit performance (i.e., loading, productivity, and on-time performance) and safety metrics for routes operating within the vicinity of the Sacramento Campus consistent with established standards and methods. This process should consider the effects of the current COVID-19 pandemic on transit performance. UC Davis shall additionally coordinate with SacRT and other relevant transit operators to assess transit performance and safety for routes operating within the vicinity of the Sacramento Campus every 2 years over the 2020 LRDP Update planning horizon.

Relative to baseline levels, if the performance of routes operating within the vicinity of the Sacramento Campus is found to fail to meet established standards or if performance worsens for services that already fail to meet established standards, SacRT and other relevant transportation agencies shall implement transit service and/or facility improvements. The implementation of transit service and/or facility improvements shall offset degradations to transit performance in excess of established performance standards (per the most up-to-date SacRT Service Standards) that are attributable to the implementation of the 2020 LRDP Update.

Currently, SacRT and other relevant transit operators regularly monitor transit service performance and adjust service levels, as feasible, according to established service standards. SacRT and other relevant transit operators would continue to implement this monitoring and service change process over the duration of the 2020 LRDP Update implementation. Moreover, UC Davis would continue to adjust campus-operated shuttle routes and schedules as warranted by passenger demand and other operating considerations. Additionally, nearby roadway owners such as the City of Sacramento and Caltrans operate and maintain their facilities consistent with their policies and standards related to multi-modal transportation operations. As requested, UC Davis shall meet with SacRT, the City of Sacramento, Caltrans, and/or other transportation agencies to coordinate the implementation of transit service and/or facility improvements.

Potential transit improvements include modifying existing transit routes or adding new routes to serve areas of the Sacramento Campus underserved by transit, adding service capacity (through increased headways and/or larger vehicles) to prevent chronic overcrowding, constructing transit priority treatments to improve service reliability (i.e., transit only lanes on Broadway and Stockton Boulevard, transit signal priority at traffic signals, etc.), improving terminal facilities to accommodate additional passengers and transit vehicles, and improving coordination between transit providers. Improvements should be selected based on existing performance data and targeted to address those areas not meeting established service standards (e.g., investing in transit priority treatments if on-time performance is the issue, or adding service capacity if vehicle loading is the issue).

Transit facility and roadway improvements shall be designed and constructed in accordance with industry best practices and applicable UC Davis, City of Sacramento, and State of California standards. Improvements shall be implemented or constructed in a manner that would not physically disrupt existing transit service or facilities (e.g., additional bus service that exceeds available bus stop or transit terminal capacity) or otherwise adversely affect transit operations.

Mitigation Measure TRA-1g: Monitor transit-related collisions and implement countermeasures to reduce potential conflicts with transit service and facilities

During the 2021–2022 academic year and every 2 years thereafter, UC Davis shall record on-campus collisions involving a transit vehicle and establish a transit vehicle collision rate. The rate should be sensitive to transit provider, location context, and facility type (e.g., intersection versus segment). UC Davis shall determine the on-campus transit vehicle collision rate as part of a biennial mitigation monitoring program. In instances where the rate increases from the prior observation period, UC Davis shall develop and implement countermeasures that address collision hot-spots and common primary collision factors. UC Davis shall also identify and develop countermeasures for locations where the change in the mix of travel patterns and behavior is determined to be incompatible with the facility as designed. Potential countermeasures include physically separating modes in shared operating environments, particularly high-versus low-speed travel modes, and increased education and enforcement.

Transit facility and roadway improvements that intend to reduce conflicts between transit vehicles and other travel modes shall be designed and constructed in accordance with industry best practices and applicable UC Davis, City of Sacramento (for facilities within the City of Sacramento), and State of California standards. Improvements shall be implemented or constructed in a manner that would not physically disrupt existing transit service or facilities or otherwise adversely affect transit operations.

Impact TRA-2: Conflict or be inconsistent with State CEQA Guidelines Section 15064.3, subdivision (b) (less than significant)

Summary of Impact TRA-2 by Component

Component	Level of Significance before Mitigation	Mitigation Measures Required	Level of Significance after Mitigation
Make-ready projects	LTS	None	–
California Tower construction, Surgery and Emergency Services Pavilion interior renovation, Central Utility Plant upgrades	LTS	None	–
Parking Structure 5 construction	LTS	None	–
East Main Hospital Wing demolition	LTS	None	–
Whole project	LTS	None	–

NI = no impact; LTS = less than significant; S = significant; SU = significant and unavoidable.

The project site is located on the UC Davis Sacramento Campus, a multi-use campus that includes UC Davis Medical Center, UC Davis School of Medicine, and the Betty Irene Moore School of Nursing. According to the 2020 LRDP Update, the majority of UC Davis Health's patient care, research, and educational activities occur on the Sacramento Campus. Additionally, the project site is located just southeast of the central city grid of Sacramento, which is the most densely and diversely developed area in the greater Sacramento region.

The California Hospital Tower Project proposes development that is similar to existing land use and transportation characteristics of the project vicinity (i.e., density, mix of uses, transit accessibility, etc.). The California Hospital Tower Project primarily consists of medical and employment uses that would complement existing uses on the Sacramento Campus. The proposed expansion of medical facilities at the existing main hospital building site would enable more efficient allocation of UC Davis Health personnel and resources when compared to the development of a comparable facility elsewhere in the Sacramento region. For example, a portion of the project's staffing needs would be fulfilled by existing medical personnel who are already employed at (and traveling to/from) the Sacramento Campus. Conversely, a comparable facility developed elsewhere in the Sacramento region as a standalone primary care facility would likely need to be staffed by entirely new medical personnel who would generate new trips to and from their work site.

The project site is considered to be located within a low-VMT area of the Sacramento region as demonstrated by the VMT information presented in the Environmental Setting section. The 2020 MTP/SCS acknowledges that "location within the region is very likely the most important variable in determining how much time people spend in their vehicles. Communities within existing urban areas, and with a mix and density of uses, tend to produce less VMT per resident than places that are farther away and spread out" (Sacramento Area Council of Governments 2019). According to the SACOG SACSIM19 travel demand model, the existing average daily work VMT per job for the Sacramento Campus TAZs surrounding the project site (TAZs 478 and 1042) is below the existing regional average. Specifically, the average daily work-related VMT per employee is 15.78, which is 19.3 percent below the existing regional average daily work-related VMT per employee of 19.55 (refer to Table 3.15-1). Thus, the project site is within an area of the Sacramento region where the existing VMT per employee is more than 15 percent below the regional VMT thresholds and would meet the screening criteria for a low-VMT area.

Moreover, the project site meets the proximity to major transit stop screening criteria, which also indicates that the proposed project would not cause substantial additional VMT. As shown in Figure 3.15-8, the project site is located within a 0.5-mile buffer of a major transit stop (i.e., a SacRT Gold Line light rail transit station). In addition to the SacRT Gold Line light rail transit service, employees, patients, and visitors traveling to the project site would have access to a variety of other transit options, including SacRT Routes 38 and 51, the Causeway Connection, and the UC Davis Health on-site courtesy shuttle.

Additional VMT Considerations

Emerging Trends and SACSIM Model Limitations

This analysis concludes that the California Hospital Tower Project would have a less-than-significant impact on VMT based on the recommended screening analysis methodology presented in the State CEQA Guidelines and the Technical Advisory. This includes reliance on VMT screening maps prepared by SACOG based on data from the SACSIM travel forecasting model. While the SACSIM model represents state of the practice or advance practice, travel behavior and the transportation systems are changing quickly in response to emerging trends, new technologies, and different preferences, as noted in the *Environmental Setting* section. These changes combined with the current effects of the COVID-19 pandemic increase uncertainty about how VMT generation rates may change by the time the California Hospital Tower Project would be constructed and occupied.

The trajectory of deployment, market acceptance, and government regulation of these new travel options and technologies is difficult to predict, and these elements directly influence the inputs and algorithms for the SACSIM model. As such, SACSIM as a travel forecasting model has limitations in the ability to capture the full range of potential travel effects from emerging travel options and technologies.

The SACSIM model does include some scenario testing capabilities that can begin to test different hypotheses of these impacts, but until more research is done about the likely behavioral responses to new modes and technologies is completed, travel models cannot fully capture these changes in a reliable way. Initial testing of automated vehicles effects using SACSIM, such as lowering costs to use vehicles and making them more convenient by eliminating parking at trip ends, does generate increases in overall vehicle travel and reductions in transit ridership with all else being equal. The information suggests the model is sensitive to how cost and convenience influence travel behavior but within the limits of the observed data used to develop the model.

Historical VMT Trends

When making a final VMT impact determination, other available evidence related to VMT trends should be considered. This analysis identified the following two relevant studies.

- *2018 Progress Report, California's Sustainable Communities and Climate Protection Act,* California Air Resources Board, November 2018 (Progress Report; California Air Resources Board 2018).
- California Air Resources Board Improved Program Measurement Would Help California Work More Strategically to Meet Its Climate Change Goals, Auditor of the State of California, February 2021 (Audit Report; Auditor of the State of California 2021).

The Progress Report measures the effect of SB 375 revealing that VMT and GHG per capita increased in California between 2010 and 2016 and are trending upward (Figure 3.15-9).

The Audit Report is a more recent assessment of CARB's GHG reduction programs, which also found that VMT and its associated GHG emissions were trending upward through 2018. Per the audit, the state is not on track to achieve 2030 GHG reduction goals, and emissions from transportation have not been declining.

The evidence from these two reports does not refute the project's VMT impact finding but does suggest greater action on the part of the state may be needed to achieve the state's GHG reduction goals. The project contributes to the basic objectives of SB 743 for local agencies such as adding development in a land use efficient area where the short-trip lengths to destinations allows for more multi-modal choices and low VMT generation. The monitoring of state performance indicates that the state may need to take further action to discourage vehicle travel (i.e., increasing the cost of driving) while reducing the barriers or constraints that prevent more efficient use of vehicles and greater use of transit, walking, and bicycling. If these types of actions are taken, employees, patients, and visitors of the proposed project would have multiple travel options to further reduce their vehicle use because of the proximity to existing complementary uses on the Sacramento Campus and the Sacramento central city.

Vehicle Miles Traveled Effects of COVID-19 Pandemic

The COVID-19 pandemic decreased VMT as a result of government orders that curtailed mobility and suppressed economic activity. While this sudden decline in VMT is expected to be temporary, it is uncertain what long-term effects the COVID-19 pandemic will have on travel behavior. By necessity, sizable portions of the public adapted to a notable increase in teleworking, distance learning, telemedicine, internet shopping, and home delivery. The current physical distancing recommendations have also reduced demand for mass transit and shared mobility options. The combination of these effects could result in increased or decreased VMT per capita levels in the future, depending on how permanent these behavioral changes become. Since the VMT effects of emerging trends and the COVID-19 pandemic are uncertain, and because the COVID-19 pandemic has disrupted the VMT trends documented in the 2018 Progress Report, any definitive conclusions for how these other VMT considerations will affect project VMT-generation is speculative.

Conclusion

The California Hospital Tower Project proposes development that would be similar to the existing characteristics of the surrounding area (i.e., density, mix of uses, and transit accessibility). The California Hospital Tower Project also would expand complementary land uses to the Sacramento Campus, which would increase internal trip capture and reduce VMT per capita.

The project would be located within a low VMT area. Per the Technical Advisory, office projects that are located "in areas with low VMT and incorporate similar features (i.e., density, mix of uses, and transit accessibility) will tend to exhibit similarly low VMT." The Technical Advisory further states that "because new development in such locations would likely result in a similar level of VMT, such maps can be used to screen out residential and office projects from needing to prepare a detailed VMT analysis" (Governor's Office of Planning and Research 2018). As described previously, for the purposes of this VMT analysis, the project is considered an office use (e.g., VMT generated by the project would primarily be associated with project employee travel).

The project would be located within proximity to major transit stops. Per State CEQA Guidelines Section 15064.3, subdivision (b)(1), "generally projects within one-half mile of either an existing major transit stop or a stop along an existing high quality transit corridor should be presumed to cause a less than significant transportation impact."

Altogether, this impact would be **less than significant**.

Mitigation Measures

No mitigation measures are required.

Impact TRA-3: Result in changes to the transportation system that would create hazardous features or incompatible traffic uses (less than significant with mitigation)

Summary of Impact TRA-3 by Component

Component	Level of Significance before Mitigation	Mitigation Measures Required	Level of Significance after Mitigation
Make-ready projects	LTS	None	–
California Tower construction, Surgery and Emergency Services Pavilion interior renovation, Central Utility Plant upgrades	LTS	None	–
Parking Structure 5 construction	S	TRA-1a TRA-1b	LTS
East Main Hospital Wing demolition	LTS	None	–
Whole project	S	TRA-1a TRA-1b	LTS

NI = no impact; LTS = less than significant; S = significant; SU = significant and unavoidable.

The California Hospital Tower Project would result in increased travel activity, including bicycle, pedestrian, transit, and vehicle trips, as discussed in Impacts TRA-1 and TRA-2. These trips would be served by existing and planned facilities that are generally constructed to applicable design standards to serve these travel modes. In these instances, the California Hospital Tower Project would not result in a change to the volume, mix, or speed of traffic that is not compatible with the design of existing roadways and transportation facilities.

As described in Impact TRA-1, one exception is X Street between Stockton Boulevard and 48th Street, which currently features Class II bicycle lanes that are not in compliance with the minimum Class II bicycle lane width requirements established in the *California Highway Design Manual*. The PS5 component of the project would increase the volume of vehicle and bicycle traffic on this segment of X Street by redistributing existing and future vehicle and bicycle trips to and from parking facilities that would be provided within PS5. As such, the project would result in a change to the volume and mix of traffic on X Street between Stockton Boulevard and 48th Street in a manner that would not be compatible with the existing facility design.

As described in Impact TRA-1, the project could increase the potential for vehicle-bicycle conflicts at the PS5 access point to X Street immediately east of the Cancer Center and this impact would be significant.

Implementation of Mitigation Measure TRA-1a would reduce this impact and ensure that the project would not result in a change to the volume and mix of traffic on X Street in a manner that would not be compatible with the existing facility design (by modifying the X Street Class II bicycle lanes to comply with applicable design standards). Implementation of Mitigation Measure TRA-1b would reduce this impact and ensure that the PS5 access points would be in compliance with applicable design standards. Therefore, this impact would be **less than significant with mitigation**.

Mitigation Measure TRA-1a: Improve the bicycle facilities on X Street between Stockton Boulevard and 48th Street

Refer to measure description under Impact TRA-1.

Mitigation Measure TRA-1b: Construct the PS5 driveways and driveway intersections with X Street to comply with applicable design standards and to reduce potential conflicts involving bicyclists and pedestrians

Refer to measure description under Impact TRA-1.

Impact TRA-4: Result in inadequate emergency access (less than significant with mitigation)

Summary of Impact TRA-4 by Component

Component	Level of Significance before Mitigation	Mitigation Measures Required	Level of Significance after Mitigation
Make-ready projects	S	TRA-5	LTS
California Tower construction, Surgery and Emergency Services Pavilion interior renovation, Central Utility Plant upgrades	S	TRA-5	LTS
Parking Structure 5 construction	LTS	None	–
East Main Hospital Wing demolition	S	TRA-5	LTS
Whole project	S	TRA-5	LTS

NI = no impact; LTS = less than significant; S = significant; SU = significant and unavoidable.

The existing transportation network serving the project site provides high levels of accessibility and includes multiple emergency vehicle access facilities that could be used when necessary. The California Hospital Tower Project would include physical modifications to roadways within the project site vicinity, including X Street, 45th Street, and 48th Street. The modifications to X Street and 45th Street would not materially affect emergency vehicle access on these roadways.

The modifications to 48th Street between V Street and X Street would likely preclude the use of 48th Street as an emergency vehicle access route between the Sacramento Campus and the Elmhurst neighborhood located immediately north of campus. However, the surrounding existing roadway network would provide numerous alternative routes to accommodate emergency vehicle access between the Sacramento Campus and the Elmhurst neighborhood (e.g., Stockton Boulevard, 45th Street, 49th Street, etc.).

As described in Impact TRA-5, construction activities associated with the project would require physical mixing of construction vehicles and ambulances on roadways serving the main hospital building Emergency Department ambulance loading area, including X Street, 45th Street, Doctor Way, and Colonial Way. This condition would increase the potential for delays to and conflicts involving ambulances during construction activities. Therefore, this impact would be **significant**.

Implementation of Mitigation Measure TRA-5 would reduce this impact and ensure that construction activities would not significantly impact emergency vehicle access. Therefore, this impact would be **less than significant with mitigation**.

Mitigation Measure TRA-5: Prepare and implement a Construction Traffic Management Plan

Implement Mitigation Measure TRA-5.

[See text below.]

Impact TRA-5: Result in construction activity that could cause temporary impacts to transportation and traffic (less than significant with mitigation)

Summary of Impact TRA-5 by Component

Component	Level of Significance before Mitigation	Mitigation Measures Required	Level of Significance after Mitigation
Make-ready projects	S	TRA-5	LTS
California Tower construction, Surgery and Emergency Services Pavilion interior renovation, Central Utility Plant upgrades	S	TRA-5	LTS
Parking Structure 5 construction	S	TRA-5	LTS
East Main Hospital Wing demolition	S	TRA-5	LTS
Whole project	S	TRA-5	LTS

NI = no impact; LTS = less than significant; S = significant; SU = significant and unavoidable.

Construction of the California Hospital Tower Project would involve construction activities that could cause temporary impacts to transportation facilities, including temporary roadway, bikeway, and sidewalk closures, degrading roadway pavement conditions, temporary degradation in traffic operations, temporary relocation or displacement of transit or shuttle stops, closure of parking lots resulting in displaced parking, increasing the potential for delays to and conflicts involving ambulances, and increasing potential for conflicts between construction vehicles and private vehicles, bicyclists, and pedestrians. Therefore, this impact would be significant.

Construction of the California Hospital Tower Project would occur over several years. During this construction period, construction-related trips would include construction employee trips to and from the project site as well as delivery/refuse trucks for materials and equipment movement. In addition to construction activity at the project site, construction activity may require the use of adjacent transportation facilities (i.e., sidewalks, bikeways, roadways) and/or parking areas for staging of equipment or material. Construction activity could also temporarily close certain roadways and transportation facilities, resulting in the need for temporary detours for bicyclists, pedestrians, buses, shuttles, and vehicles.

Construction vehicles (e.g., dump trucks, concrete trucks, etc.) would primarily utilize the US 50 interchange at Stockton Boulevard/T Street to access the Sacramento Campus. Construction vehicle circulation to and from the project site would primarily utilize a counterclockwise loop composed of southbound Stockton Boulevard, eastbound X Street, northbound 45th Street, westbound Doctor Way/Colonial Way, and northbound Stockton Boulevard. Within the vicinity of the project site, UC Davis Health would deploy flaggers and temporary traffic control devices along the construction vehicle route to manage construction vehicle circulation and interactions between construction vehicles and private vehicles, emergency vehicles (e.g., ambulances), bicyclists, and pedestrians.

The proposed construction vehicle route would overlap with the primary emergency vehicle access route serving the proposed temporary ambulance loading area located immediately north of the main hospital building (i.e., 45th Street to Doctor Way). This condition would require physical mixing of construction vehicles and ambulances, which would in turn increase the potential for delays to and conflicts involving ambulances.

Implementation of Mitigation Measure TRA-5 would reduce this impact and ensure that construction activities would not significantly impact transportation. Therefore, this impact would be **less than significant with mitigation**.

Mitigation Measure TRA-5: Prepare and implement a Construction Traffic Management Plan

Prior to the issuance of any grading or building permits, a Construction Traffic Management Plan (TMP) shall be prepared to the satisfaction of UC Davis Health and the City of Sacramento Department of Public Works for City-owned roadways. The Construction TMP shall include items such as the following.

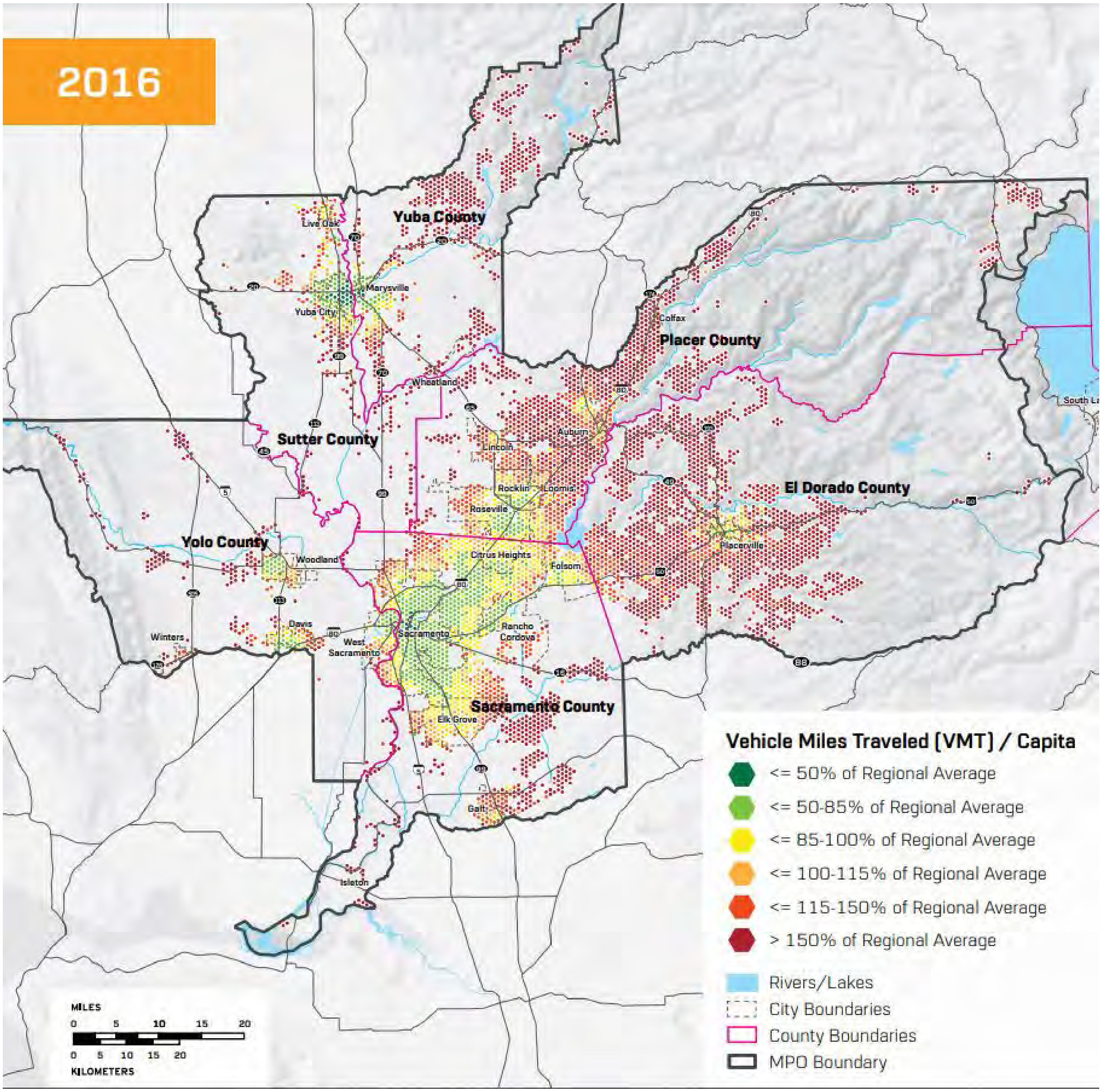
- Preserving emergency vehicle access routes to existing buildings on the Sacramento Campus.
- Preserving emergency vehicle access to the main hospital building Emergency Department temporary ambulance loading area.
- Providing truck circulation routes/patterns that minimizes effects on existing vehicle traffic during peak travel periods and maintains safe bicycle circulation.
- Monitoring for roadbed damage and timing for completing repairs.
- Preserving safe and convenient passage for bicyclists and pedestrians through/around construction areas.
- Creating methods for partial (i.e., single lane)/complete street closures (e.g., timing, signage, location and duration restrictions), if necessary.

- Identifying detour routes for roadways subject to partial/complete street closures.
- Identifying temporary UC Davis shuttle stops and detoured shuttle routes if existing stops or routes are affected.
- Identifying temporary SacRT bus stops and detoured bus routes, if existing stops or routes are affected.
- Developing criteria for use of flaggers and other traffic controls.
- Providing a point of contact for nearby residents, Sacramento Campus staff, students, and visitors, and other stakeholders to contact to obtain construction information and have questions answered.

The Construction TMP shall be developed and implemented so that the following performance standards are achieved throughout project construction.

- Maintain emergency vehicle access to all buildings on the Sacramento Campus at all times.
- Maintain identified emergency vehicle routes to UC Davis Health medical facilities at all times, including the main hospital building Emergency Department temporary ambulance loading area. Notify appropriate contacts for UC Davis Health and/or emergency responders at least 24 hours prior to any construction-related partial/complete closures that may affect emergency vehicle routes, and provide clear identification of detours when necessary.
- Minimize construction traffic during morning and evening peak periods when street traffic on local and campus streets are highest.
- Minimize the potential for conflicts between construction vehicles and private vehicles, transit vehicles, bicyclists, and pedestrians on Stockton Boulevard, X Street, 45th Street, Doctor Way, and Colonial Way.
- Minimize the potential for delays to and conflicts involving ambulances serving the main hospital building Emergency Department temporary ambulance loading area.
- Close (i.e., partially or fully) any construction-related public roadways only during off-peak periods and provide appropriate construction signage, including detour routing.
- Limit detour routing to campus roadways or City collector and arterial roadways, such as Stockton Boulevard and Broadway, to the extent feasible. Include measures to minimize traffic increases on local residential roadways; this may include signage and law enforcement presence during partial/complete closures to discourage through-traffic use of local residential roadways.
- Clear roadways, sidewalks, crosswalks, and bicycle facilities of debris (e.g., rocks) that could otherwise impede travel and impact public safety, and maintain them in this condition.

UC Davis shall also consider any concurrent construction activity and other active Construction TMPs when reviewing the Construction TMP for the California Hospital Tower Project. This review shall verify consistency across the Construction TMPs to address the effects of simultaneous construction activity.

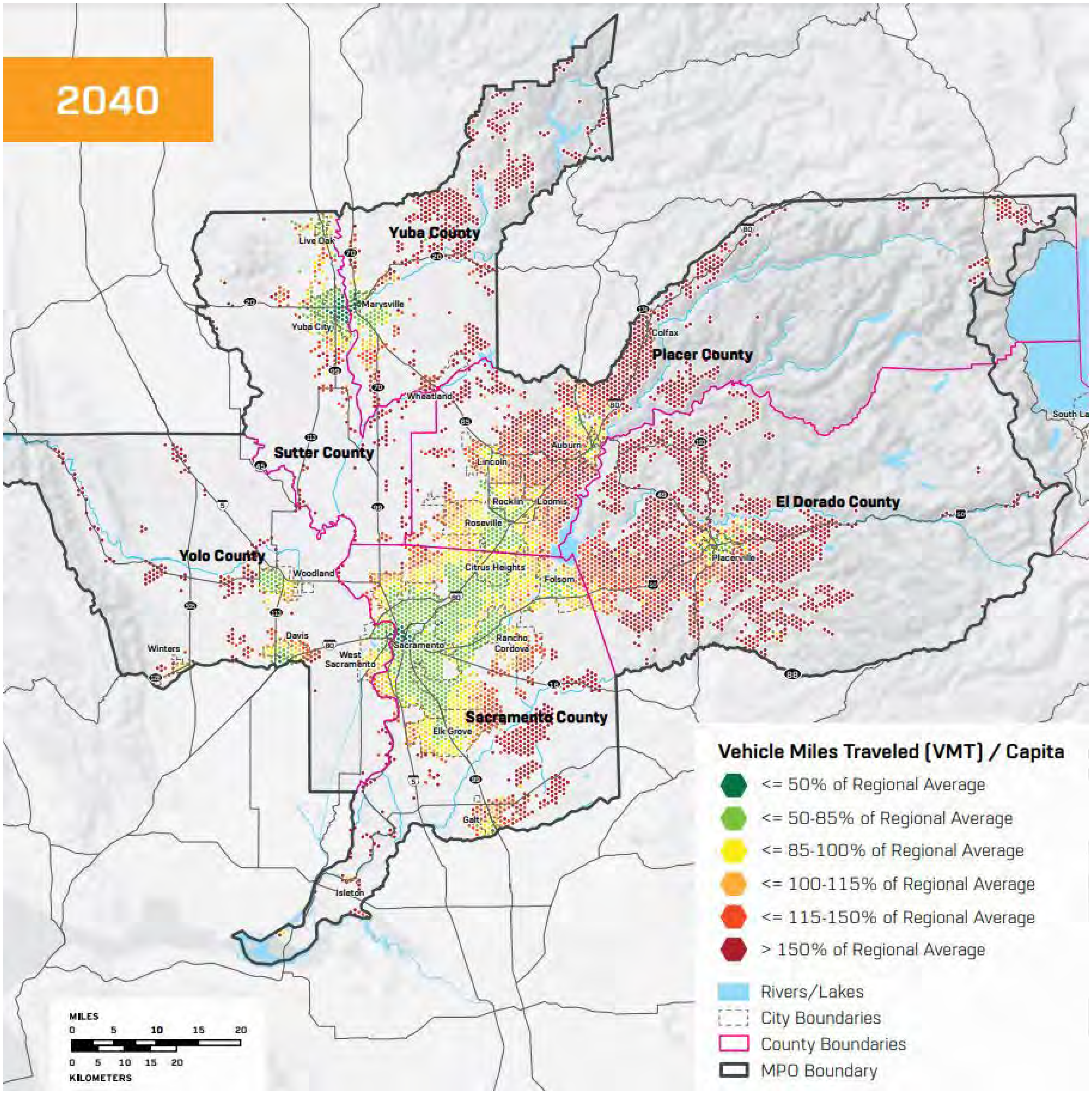


Graphics ... 00683.20 (7/21/21) AB

Source: Sacramento Area Council of Governments, 2020 Metropolitan Transportation Plan/Sustainable Communities Strategy

UCDAVIS

Figure 3.15-1
2016 Vehicle Miles Traveled per Capita



Source: Sacramento Area Council of Governments, 2020 Metropolitan Transportation Plan/Sustainable Communities Strategy

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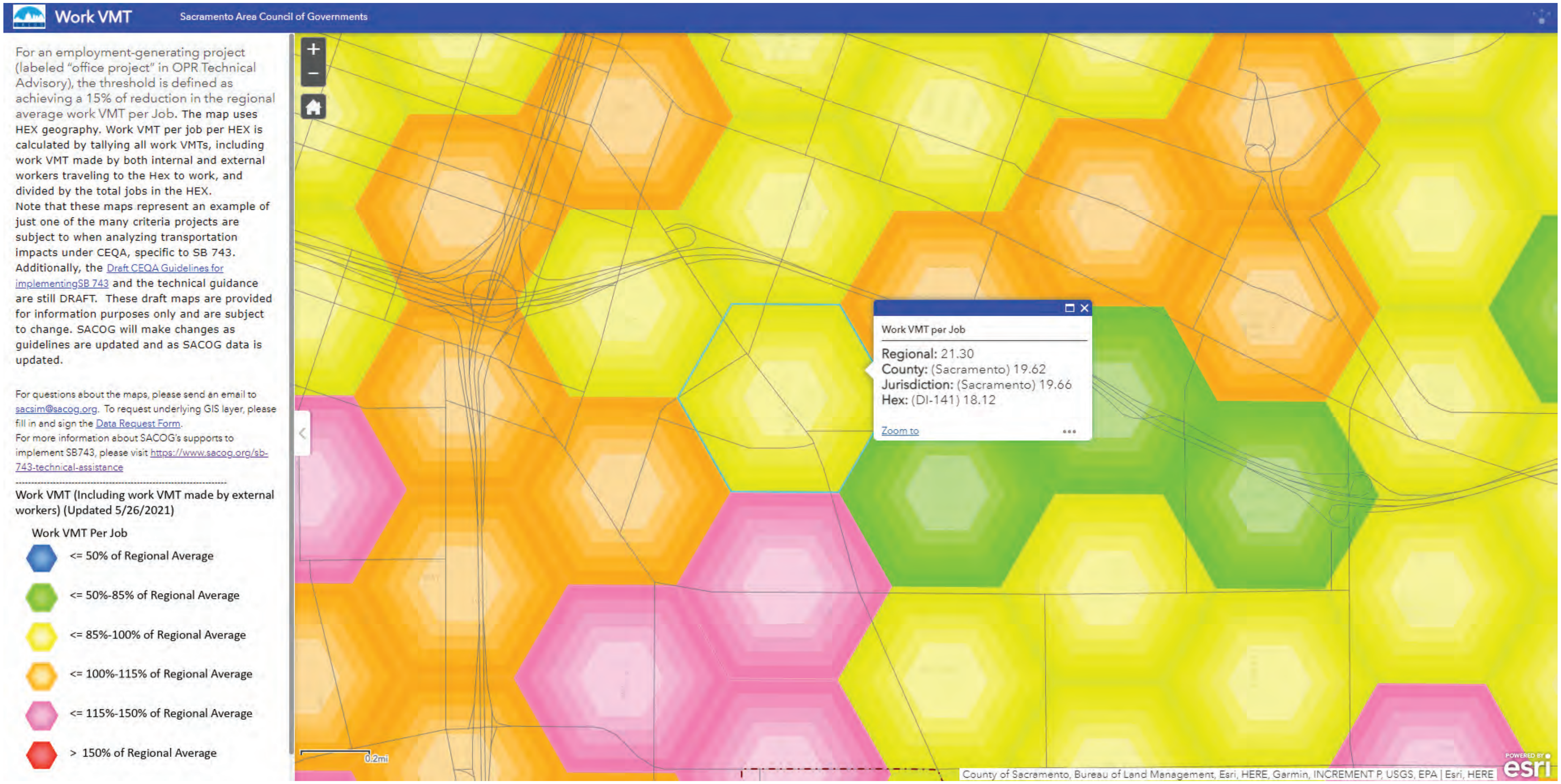
Figure 3.15-2
2040 Vehicle Miles Traveled per Capita



Source: Sacramento Area Council of Governments 2021

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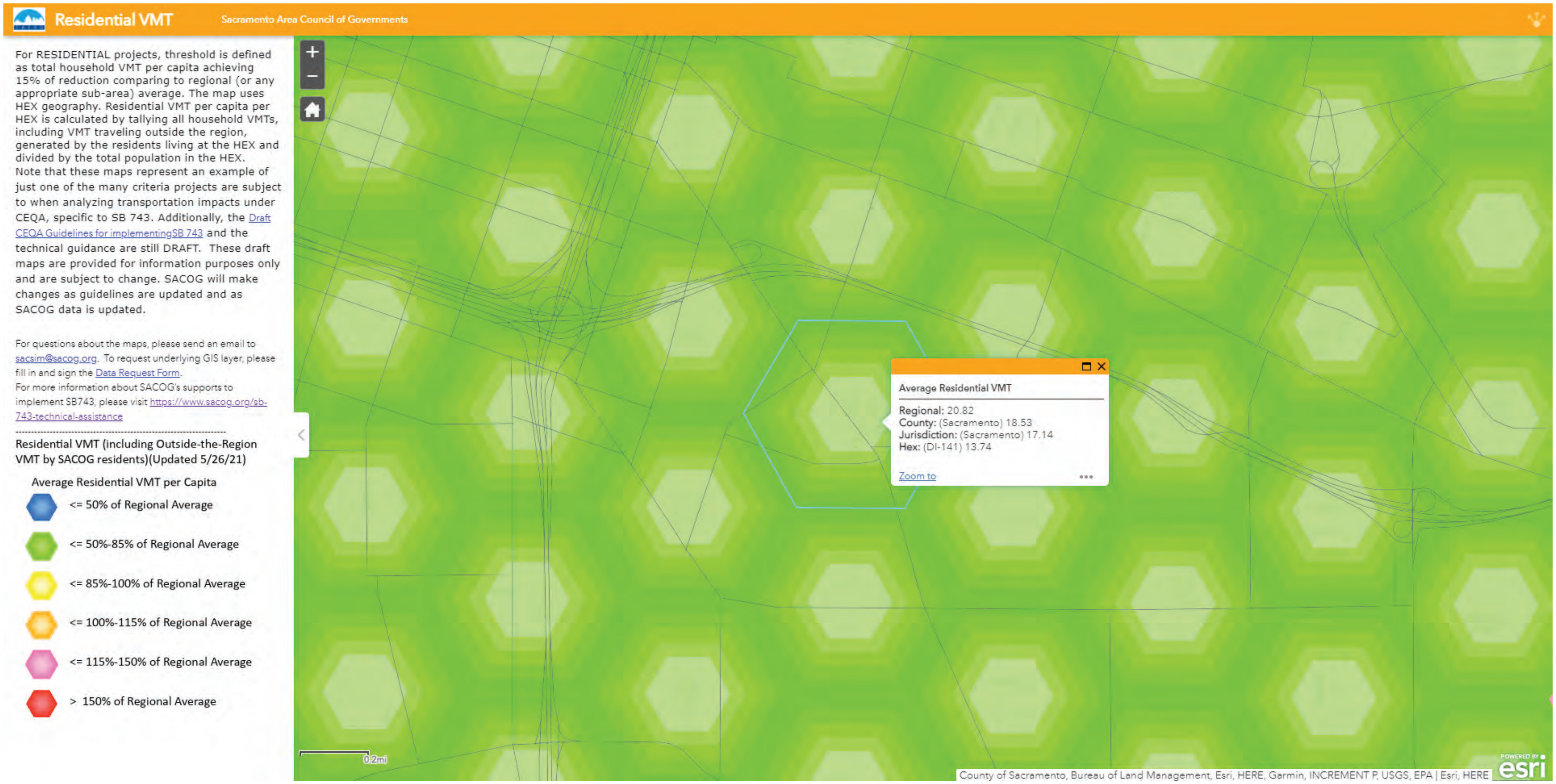
UCDAVIS

Figure 3.15-3
Workplace Vehicle Miles Traveled per Employee



Source: Sacramento Area Council of Governments 2021

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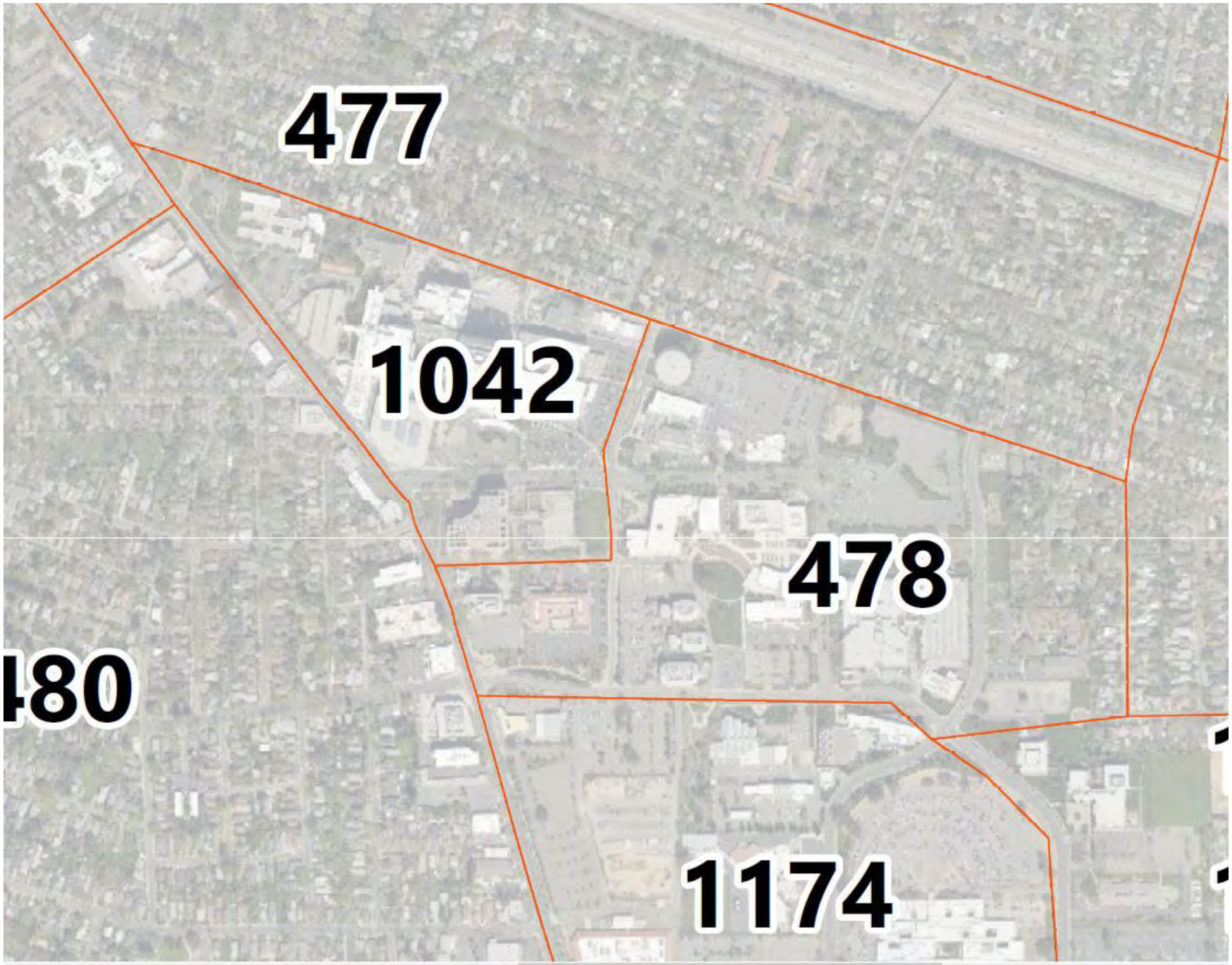
Figure 3.15-4
Household Vehicle Miles Traveled per Household



Source: Fehr & Peers 2021

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Figure 3.15-5
Traffic Analysis Zones in the Project Vicinity

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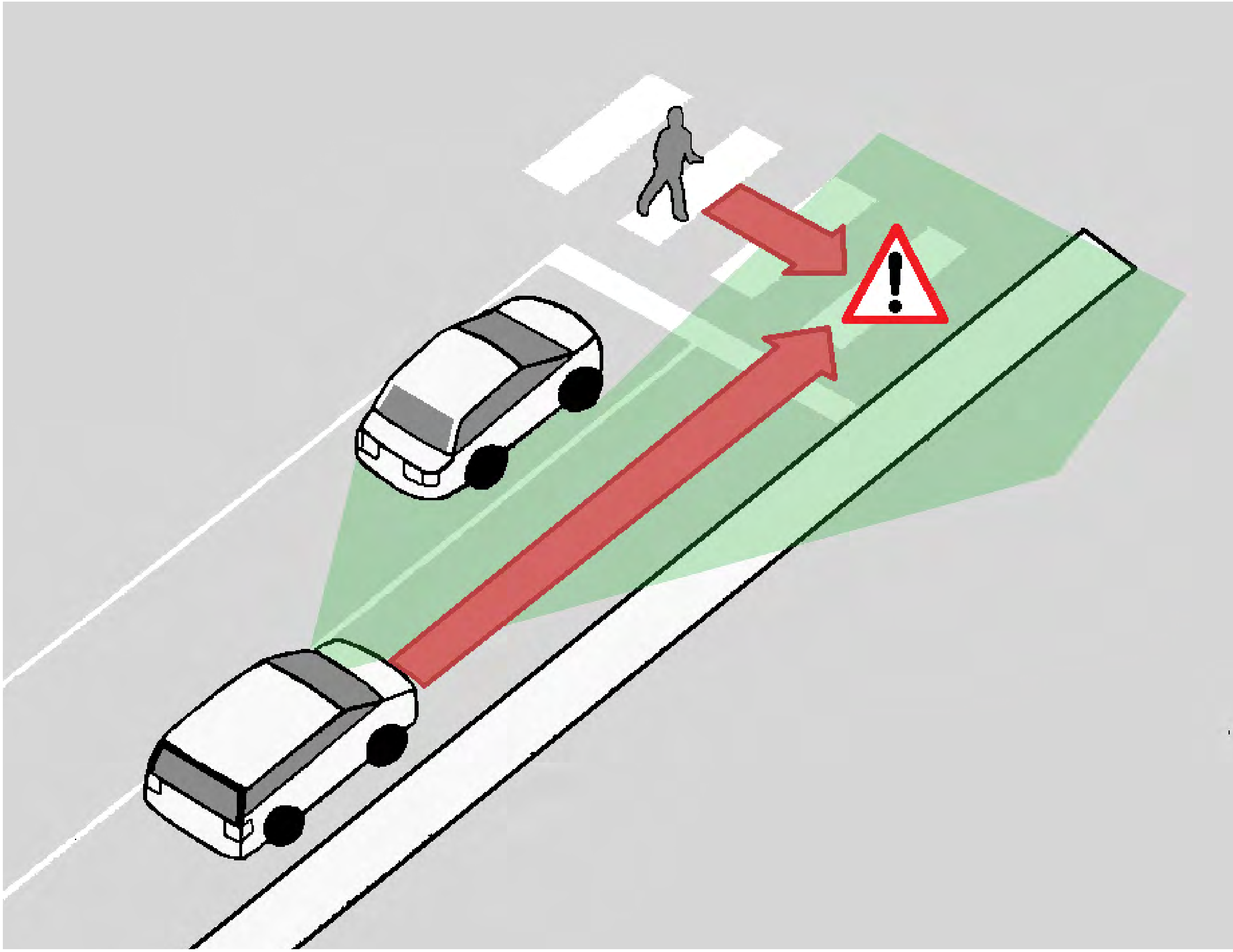
Figure 3.15-6
Existing and Planned Bicycle Facilities



Source: Fehr & Peers 2021

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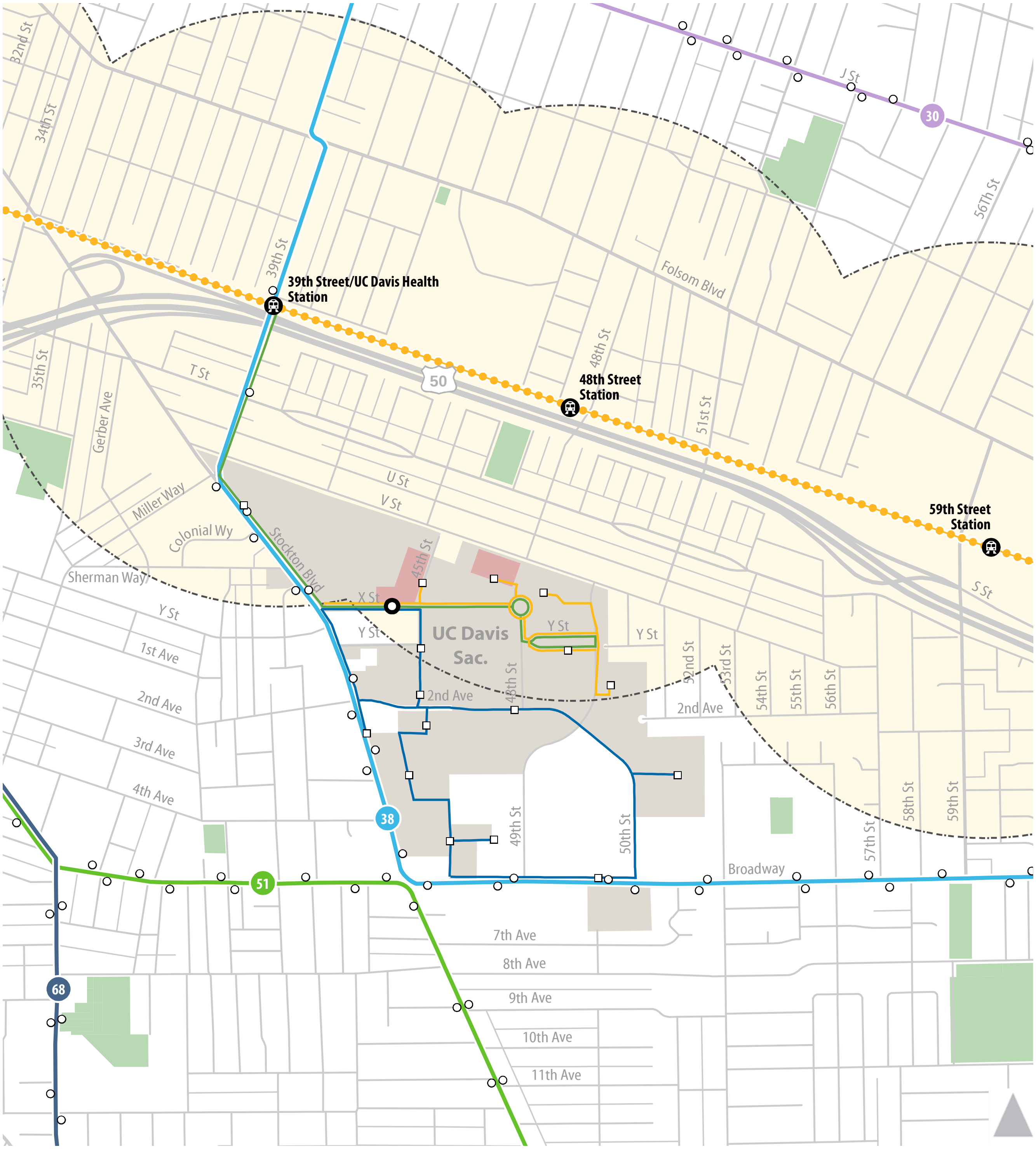
UC DAVIS

Figure 3.15-7
Double-Jeopardy Conflict Point



Bus Stop
Light Rail Station
Project Site
Shuttle Service Stop
Transit Center
SacRT Gold Line
Transit Priority Area

SacRT Bus Route
30
38
51
68

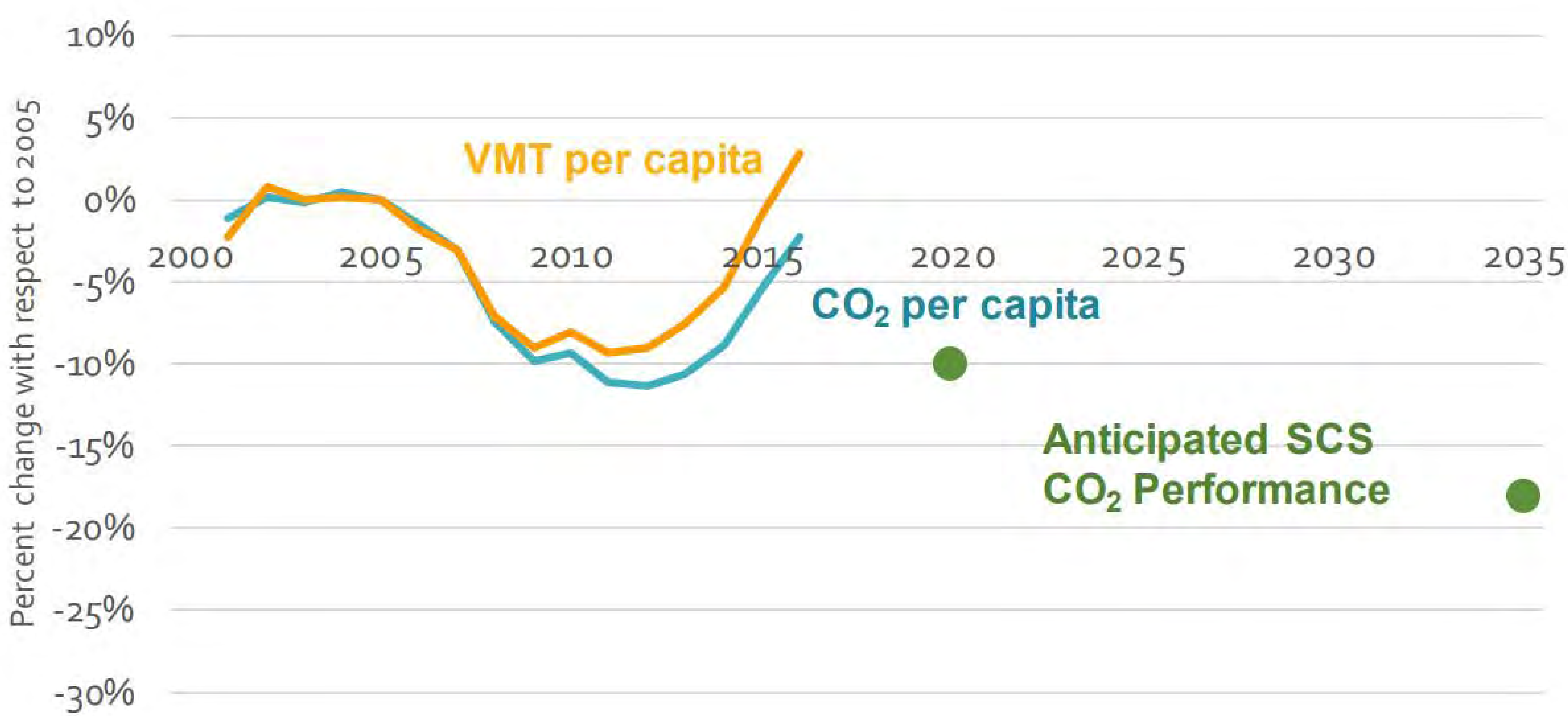
On-Site Shuttle Service
Blue Line
Gold Line
Green Line

Source: Fehr & Peers 2021

Graphics ... 00683.20 (7/21/21) AB

UC DAVIS

Figure 3.15-8
Existing Transit Facilities and Transit Priority Areas (TPA)



VMT = vehicle miles traveled
CO_2 = carbon dioxide

Source: California Air Resources Board 2018

Graphics ... 00683.20 (7/22/21) AB

UCDAVIS

Figure 3.15-9
Statewide Carbon Dioxide and Vehicle Miles Traveled per Capita Trend with Respect to Anticipated Performance of Current Senate Bill 375 Sustainable Communities Strategy

3.16 Utilities and Service Systems

This section describes the regulatory and environmental setting for utilities and service systems on the project site and in the project vicinity, analyzes effects on utilities and service systems that would result from implementation of the project, and provides mitigation measures, if applicable, to reduce the effects of any significant impacts.

Written comments received on the Notice of Preparation include a letter from Sacramento Municipal Utility District (SMUD) describing existing SMUD facilities near the project site, and requirements for an interconnection assessment and an amendment to the Special Facilities Agreement (SFA) SMUD has with the UC Davis Medical Center.

3.16.1 Existing Conditions

Regulatory Setting

University of California

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

University of California Sustainable Practices Policy

The UC adopted the *University of California Policy on Sustainable Practices* (UC Sustainable Practices Policy) in 2006. The policy covers nine areas of operational sustainability: green building design, clean energy, climate protection, sustainable transportation, sustainable procurement, sustainable building operations, recycling and waste management, sustainable food services, and sustainable water systems. The UC Sustainable Practices Policy is frequently updated; the most recent changes were formally issued in July 2020. The policy changes include extensive revisions to the goals and practices of the Zero Waste section (University of California 2020).

The Zero Waste section sets forth the following goals and practices.

- The University will achieve zero waste through prioritizing waste reduction in the following order: reduce, reuse, and then recycle and compost (or other forms of organic recycling) as described in section V.F.6. Minimum compliance for zero waste, at all locations other than health locations, is as follows:
    a. Reduce per capita total municipal solid waste generation by:
        i. 25% per capita from FY2015/16 levels by 2025
        ii. 50% per capita from FY2015/16 levels by 2030.
    b. Divert 90% of municipal solid waste from the landfill.
- The University supports the integration of waste, climate and other sustainability goals, including the reduction of embodied carbon in the supply chain through the promotion of a

circular economy and the management of organic waste to promote atmospheric carbon reduction. In support of this goal, waste reporting will include tracking estimated scope 3 greenhouse gas emissions.

- The University is committed to the reduction and elimination of single-use items in line with the University's and the State of California's Zero Waste goals and in recognition of the severe environmental impact single-use products have globally. In recognition of this commitment, locations will reduce single-use products by taking the following actions:
    a. Eliminate plastic bags in all retail and foodservice establishments in campus facilities or located on university owned land no later than January 1, 2021
    b. Replace disposable single-use plastic foodware accessory items in all foodservice facilities with reusables or locally compostable alternatives and provide only upon request no later than July 1, 2021
    c. Provide reusable foodware items for food consumed onsite at dine-in facilities and to-go facilities no later than July 1, 2022.
    d. Replace single-use plastic foodware items with reusable or locally compostable alternatives at to-go facilities no later than July 1, 2022
    e. Phase out the procurement, sale and distribution of single-use plastic beverage bottles. Non-plastic alternatives shall be locally recyclable or compostable.
        i. Foodservice facilities will provide alternatives no later than January 1, 2023.
        ii. Locations are encouraged to prioritize the installation of water refill stations to support the transition from single-use plastics to reusables.
        iii. Locations will consider eliminating single-use plastic beverage bottles when contracting with suppliers, or upon contract renewal and/or extension if current contract terms prohibit (e.g., vending machines, departmental purchases, etc.).
    f. When selecting prepackaged, sealed food that is mass produced off premises and resold at University locations (e.g., grab-and-go items, such as chips, candy, prepackaged sandwiches, etc.), preference should be given in contract award and negotiations to suppliers that utilize locally compostable or locally recyclable packaging options.

The Sustainable Water Systems section calls for the following goals and practices.

- Locations will reduce growth-adjusted potable water consumption 20% by 2020, and 36% by 2025, when compared to a three-year average baseline of FY2005/06, FY2006/07, and FY2007/08. Locations that achieve this target early are encouraged to set more stringent goals to further reduce potable water consumption. Each Campus shall strive to reduce potable water used for irrigation by converting to recycled water, implementing efficient irrigation systems, drought-tolerant planting selections, and/or by removing turf.
- Each location will develop and maintain a Water Action Plan that identifies long term strategies for achieving sustainable water systems.
    a. Campuses will include in this update quantification of total square feet of used turf and under-used turf areas on campus as well as a plan for phasing out un-used turf irrigated with potable water.
- Each location shall identify existing single-pass cooling systems and constant flow sterilizers and autoclaves in laboratories and develop a plan for replacement.
- New equipment requiring liquid cooling shall be connected to an existing recirculated building cooling water system, new local chiller vented to building exhaust or outdoors, or to the campus chilled water system through an intervening heat exchange system if available.

a. Once-through or single-pass cooling systems shall not be allowed for softplumbed systems using flexible tubing and quick connect fittings for short term research settings.

b. If no alternative to single-pass cooling exists, water flow must be automated and controlled to avoid water waste. (University of California 2020)

University of California Davis Drought Response Action Plan

Potable water conservation and efficiency are necessary to meet the policy targets for water use reduction. The 2014 UC Davis Drought Response Action Plan (Kirk and Phillips 2014) outlines 49 measures across multiple campus sectors: operations; dining services; landscape management; research water use; communication, behavior education, and outreach; utilities infrastructure; and new construction and renovation.

Key conservation actions that can substantially reduce water use include the following.

- Use of reclaimed water in some of the cooling towers.
- Operational changes to cooling tower cycling.
- Retrofit on research fisheries' well to recycle water and pump less water.
- Replacement of some older water fixtures.
- Significantly reduced irrigation.
- Retrofit of some landscaped areas.
- Implementation of behavior education and leak and water waste reporting programs.

The Sacramento Campus has met both the 2020 and the 2025 water conservation targets established in the UC Sustainable Practices Policy through implementing these actions.

Federal

Clean Water Act

The Clean Water Act (CWA) employs a variety of regulatory and non-regulatory tools to reduce direct pollutant discharges into waterways, finance municipal wastewater treatment facilities, and manage polluted runoff. The U.S. Environmental Protection Agency (EPA) established primary drinking water standards in Section 304 of the CWA. States are required to ensure that the public's potable water meets these standards.

Section 402 of the CWA creates the National Pollutant Discharge Elimination System (NPDES) regulatory program. Point sources must obtain a discharge permit from the proper authority (usually a state but sometimes the EPA, a tribe, or a territory). The NPDES permits cover various industrial and municipal discharges, including discharges from storm sewer systems in larger cities, stormwater associated with numerous kinds of industrial activity, runoff from construction sites disturbing more than 1 acre, and mining operations. All so-called "indirect" discharges are not required to obtain the NPDES permits. "Indirect" dischargers send their wastewater into a public sewer system, which carries it to the municipal sewage treatment plant, through which it passes before entering a surface water.

State

Assembly Bill 939

In 1989, Assembly Bill (AB) 939 established the current organization, structure, and mission of the California Integrated Waste Management Board. The purpose was to direct attention to the increasing waste stream and decreasing landfill capacity, and to mandate a reduction of waste being disposed. Jurisdictions were required by AB 939 to meet diversion goals of 25 percent by 1995 and 50 percent by 2000. Each city and county was required to submit a plan (i.e., Source Reduction and Recycling Element) that describes how they would meet the waste reduction mandates. The UC is not subject to this act. However, sustainability is a central element of the 2020 Long-Range Development Plan (LRDP) Update, and the UC Sustainable Practices Policy sets waste diversion goals of 90 percent as soon as feasible through steps that include but are not limited to partnering with local waste haulers to maximize diversion opportunities available and actively engaging with their local campus users to improve source separation. (University of California 2020).

California Universal Waste Law

The California Universal Waste Law went into effect February 2006 (California Code of Regulations, Title 22, Division 4.5, Chapter 23). Universal wastes are hazardous wastes, such as batteries, fluorescent tubes, and some electronic devices, that contain mercury, lead, cadmium, copper, or other substances hazardous to human and environmental health. Universal waste may not be discarded in solid waste landfills, but instead is recyclable and (to encourage recycling and recovery of valuable metals) can be managed under less stringent requirements than those that apply to other hazardous wastes.

Government Code 54999

Government Code Section 54999 provides for the payment of fees in certain specific enumerated situations for capital improvements to utilities serving the UC. A capital facilities fee that is imposed must be nondiscriminatory and the amount must not exceed the prorated amount necessary to provide capital facilities to the UC.

California Green Building Standards Code

The State of California historically establishes progressive standards that serve as models for other states and even the federal government. With the adoption of the 2010 California Green Building Standards Code (CALGreen), California became the first state to incorporate green building strategies into its building code. This section comprises Part 11 of the California Buildings Standards Code in Title 24 of the California Code of Regulations. CALGreen outlines mandatory and voluntary requirements for new residential and nonresidential buildings (e.g., retail, offices, public schools, hospitals) throughout the state beginning January 1, 2011.

The CALGreen Code aims to (1) reduce greenhouse gas (GHG) emissions from buildings; (2) promote environmentally responsible, cost-effective, healthier places to live and work; (3) reduce energy and water consumption; and (4) respond to directives by the Governor. Pursuant to the California Global Warming Solutions Act of 2000 (AB 32), CALGreen provides strategies to reduce building-related sources of GHG to attain California's 2020, 2030, and 2050 goals.

The provisions of CALGreen include both voluntary and mandatory measures for green building. Buildings and communities that have obtained the CALGreen title have met the minimum requirements of the code; these include (1) reduction in water consumption, (2) diversion of construction waste from landfills, (3) installation of low-emitting materials, and (4) commission of new buildings over 10,000 square feet (sf).

CALGreen also includes appendices that consist of voluntary measures designed to be adopted by local governments. This gives local jurisdictions the power to decide which measures they wish to pursue. Tier 1 communities must comply with the provisions of section A4.601.4.2 of CALGreen. This includes compliance with all mandatory measures, improvements in efficiency and reduction of waste, as well as the adoption of at least eight additional measures from five categories: planning and design, energy efficiency, water efficiency and conservation, material conservation and resource efficiency, and environmental quality. Tier 2 rated communities must exceed the Tier 1 standard by adopting at least 12 voluntary measures and establishing even more stringent efficiency policies.

The measures apply to residential and nonresidential projects that include new construction, demolition, and/or additions and alterations. Upon submission of an application, projects must provide plans to comply with the Tier 1 standards set forth by CALGreen.

In implementing a statewide baseline for green building strategies, California recognized the adverse effects of anthropogenic climate change. CALGreen serves as a tool for California to reduce GHG emissions and physical waste, increase energy efficiency, and achieve water conservation and water efficiency.

The standards included in the 2019 CALGreen Code became effective on January 1, 2020. The CALGreen Code was developed to enhance the design and construction of buildings, and the use of sustainable construction practices.

California Water Code, Water Supply Wells, and Groundwater Management

The California Water Code is enforced by California Department of Water Resources (DWR). The DWR's mission is "to manage the water resources of California in cooperation with other agencies, to benefit the State's people, and to protect, restore, and enhance the natural and human environments." The DWR is responsible for promoting California's general welfare by ensuring beneficial water use and development statewide. The laws regarding groundwater wells are described in California Water Code Division 1, Article 2 and Articles 4.300 through 4.311; and Division 7, Articles 1 through 4. Further guidance is provided by bulletins published by the DWR, such as bulletins 74-81 and 74-90 related to groundwater well construction and abandonment standards.

Groundwater management is outlined in the California Water Code, Division 6, Part 2.75, Chapters 1 through 5, Sections 10750 through 10755.4. The Groundwater Management Act was first introduced in 1992 as AB 3030, and has since been modified by Senate Bill (SB) 1938 in 2002, AB 359 in 2011, and AB 1739 in 2014. The intent of the Groundwater Management Act is to encourage local agencies to work cooperatively to manage groundwater resources within their jurisdictions and to provide a methodology for developing a Groundwater Management Plan.

Water Supply Assessment

The State of California adopted SB 610 effective January 1, 2002. SB 610 requires cities and counties, when evaluating large development and redevelopment projects, to request an assessment of the availability of water supplies from the water supply entity that will provide water to a project. The Water Supply Assessment is performed in conjunction with the land use approval process associated with a project and to assess long-term reliability of water supplies. These requirements do not apply to UC Davis, as the UC is a constitutionally created state entity. The City of Sacramento provides water to the Sacramento Campus and is subject to completing Water Supply Assessments; UC Davis would continue to provide expected use data to assist the City in preparing any required Water Supply Assessments.

Sustainable Groundwater Management Act of 2014

The Sustainable Groundwater Management Act of 2014 (SGMA) became law on January 1, 2015, and applies to all groundwater basins in the state (Water Code Section 10720.3). By enacting the SGMA, the legislature intended to provide local agencies with the authority and the technical and financial assistance necessary to cooperatively manage groundwater within their region in a sustainable manner (Water Code Section 10720.1). The SGMA is a follow-up to SB X7-6, adopted in November 2009, which mandated a statewide groundwater elevation monitoring program to track seasonal and long-term trends in groundwater elevations in California's groundwater basins. In accordance with this amendment to the Water Code, the DWR developed the California Statewide Groundwater Elevation Monitoring program.

Pursuant to the SGMA, any local agency that has water supply, water management, or land use responsibilities within a groundwater basin may elect to be a "groundwater sustainability agency" for that basin (Water Code Section 10723). Cities, counties, and water agencies within that basin had until January 1, 2017, to elect to become or form a groundwater sustainability agency. In the event a basin is not within the management area of a groundwater sustainability agency, the county within which the basin is located was presumed to be the groundwater sustainability agency for the basin. However, the county may decline to serve in this capacity (Water Code Section 19724).

The SGMA also requires the DWR to categorize each groundwater basin in the state as high-, medium-, low-, or very low-priority (Water Code Sections 10720.7, 10722.4). All basins designated as high- or medium-priority basins must be managed by a groundwater sustainability agency under a groundwater sustainability plan that complies with Water Code Section 10727 *et seq*. If required to be prepared, groundwater sustainability plans must be prepared by January 31, 2020, for all high- and medium-priority basins that are subject to critical conditions of overdraft, as determined by DWR, or by January 31, 2022, for all other high- and medium-priority basins. In lieu of preparation of a groundwater sustainability plan, a local agency may submit an alternative that complies with the SGMA no later than January 1, 2017 (Water Code Section 10733.6).

California's Integrated Waste Management Act of 1989

The California Integrated Waste Management Act (CIWMA) of 1989 created the California Integrated Waste Management Board, now known as the California Department of Resources Recycling and Recovery (CalRecycle). CalRecycle is the agency designated to oversee, manage, and track California's 92 million tons of waste generated each year. CalRecycle provides grants and loans to help cities, counties, businesses, and organizations meet the state's waste reduction, reuse, and recycling goals. CalRecycle promotes a sustainable environment in which these resources are not wasted but can be reused or recycled. In addition to many programs and incentives, CalRecycle promotes the use of new technologies to divert resources away from landfills. CalRecycle is responsible for ensuring that waste management programs are carried out primarily through local enforcement agencies.

The CIWMA is the result of two pieces of legislation: AB 939 and SB 1322. The CIWMA was intended to minimize the amount of solid waste that must be disposed of through transformation and land disposal by requiring all cities and counties to divert 25 percent of all solid waste from landfill facilities by January 1, 1995, and 50 percent by January 1, 2000.

The 50 percent diversion requirement is measured in terms of per-capita disposal expressed as pounds per day per resident and per employee. The per capita disposal and goal measurement system uses an actual disposal measurement based on population and disposal rates reported by disposal facilities, and it evaluates program implementation efforts.

Assembly Bill 1826 (Chapter 727, Statutes of 2014)

AB 1826 requires a business that generates 4 cubic yards or more of organic waste per week to arrange for recycling services for that organic waste in a specified manner. The bill also requires a business that generates 4 cubic yards or more of commercial solid waste per week, on and after January 1, 2019, to arrange for organic waste recycling services and, if CalRecycle makes a specified determination, decrease that amount to 2 cubic yards, on or after January 1, 2020. The bill requires each jurisdiction to report to CalRecycle on its progress in implementing the organic waste recycling program, and CalRecycle is required to review whether a jurisdiction is complying with this act.

AB 1826 requires CalRecycle to identify and recommend actions to address permitting and siting challenges and to encourage the continued viability of the state's organic waste processing and recycling infrastructure, in partnership with the California Environmental Protection Agency and other specified state and regional agencies. The bill also requires the department to cooperate with local jurisdictions and industry to aid with increasing the feasibility of organic waste recycling and to identify certain state financing mechanisms and state funding incentives and post this information on its website.

Regional and Local

City of Sacramento 2035 General Plan

As stated above, UC is not subject to local land use regulations whenever using property under its control in furtherance of its educational purposes. Accordingly, the *Sacramento 2035 General Plan* goals and policies are provided below for informational purposes. The *Sacramento 2035 General Plan* was adopted in March 2015 (City of Sacramento 2015a). The Environmental Resources and Utilities elements contain the following goals and policies that are relevant to utilities.

> **Policy ER 1.1.3:** Stormwater Quality. The City shall control sources of pollutants and improve and maintain urban runoff water quality through storm water protection measures consistent with the City's National Pollution Discharge Elimination System (NPDES) Permit.

GOAL U 1.1: High-Quality Infrastructure Services. Provide and maintain efficient, high-quality public infrastructure facilities and services throughout the city.

> **Policy U 1.1.1:** Provision of Adequate Utilities. The City shall continue to provide and maintain adequate water, wastewater, and stormwater drainage utility services to areas in the city, and shall provide and maintain adequate water, wastewater, and stormwater drainage utility services to areas in the city that do not currently receive these City services upon funding and construction of necessary infrastructure.

Policy U 1.1.2: Citywide Level of Service Standards. The City shall establish and maintain service standards [Level of Service (LOS)] for water, wastewater, stormwater drainage, and solid waste services.

Policy U 1.1.3: Sustainable Facilities and Services. The City shall continue to provide sustainable utility services and infrastructure in a cost-efficient manner.

Policy 1.1.5: Growth and Level of Service. The City shall require new development to provide adequate facilities or pay its fair share of the cost for facilities needed to provide services to accommodate growth without adversely impacting current service levels.

Policy U 1.1.8: Joint-Use Facilities. The City shall support the development of joint-use water, drainage, and other utility facilities as appropriate in conjunction with schools, parks, golf courses, and other suitable uses to achieve economy and efficiency in the provision of services and facilities.

GOAL U 2.1: High-Quality and Reliable Water Supply. Provide water supply facilities to meet future growth within the city's Place of Use and assure a high-quality and reliable supply of water to existing and future residents.

Policy U 2.1.2: Increase Water Supply Sustainability. The City shall maintain a surface water/groundwater conjunctive use program, which uses more surface water when it is available and more groundwater when the surface water is limited.

Policy U 2.1.3: Water Treatment Capacity and Infrastructure. The City shall plan, secure funding for, and procure sufficient water treatment capacity and infrastructure to meet projected water demands.

Policy U 2.1.9: New Development. The City shall ensure that water supply capacity is in place prior to granting building permits for new development.

Policy U 2.1.10: Water Conservation Standards. The City shall achieve a 20 percent reduction in per-capita water use by 2020 consistent with the State's 20x20x20 Water Conservation Plan.

Policy U 2.1.11: Water Conservation Programs. The City shall implement conservation programs that increase water use efficiency, including providing incentives for adoption of water efficiency measures.

Policy U 2.1.15: Landscaping. The City shall continue to require the use of water-efficient and river-friendly landscaping in all development, and shall use water conservation gardens (e.g., Glen Ellen Water Conservation Office) to demonstrate and promote water conserving landscapes.

GOAL U 3.1: Adequate and Reliable Sewer and Wastewater Facilities. Provide adequate and reliable sewer and wastewater facilities that collect, treat, and safely dispose of wastewater.

Policy U 3.1.1: Sufficient Service. The City shall provide sufficient wastewater conveyance, storage, and pumping capacity for peak sanitary sewer flows and infiltration.

GOAL U 4.1: Adequate Stormwater Drainage. Provide adequate stormwater drainage facilities and services that are environmentally sensitive, accommodate growth, and protect residents and property.

Policy U 4.1.1: Adequate Drainage Facilities. The City shall ensure that all new drainage facilities are adequately sized and constructed to accommodate stormwater runoff in urbanized areas.

Policy U 4.1.4: Watershed Drainage Plans. The City shall require developers to prepare watershed drainage plans for proposed developments that define needed drainage improvements per City standards, estimate construction costs for these improvements per City standards, estimate construction costs for these improvements, and comply with the City's National Pollutant Discharge Elimination System (NPDES) permit.

GOAL U 5.1: Solid Waste Facilities. Provide adequate solid waste facilities, meet or exceed State law requirements, and utilize innovative strategies for economic and efficient collection, transfer, recycling, storage, and disposal of refuse.

Policy U 5.1.1: Zero Waste. The City shall achieve zero waste to landfills by 2040 through reusing, reducing, and recycling solid waste; and using conversion technology if appropriate. In the interim, the City shall achieve a waste reduction goal of 75 percent diversion from the waste stream over 2005 levels by 2020 and 90 percent diversion over 2005 levels by 2030, and shall support the Solid Waste Authority in increasing commercial solid waste diversion rates by 30 percent.

Policy 6.1.5: Energy Consumption per Capita. The City shall encourage residents and business to consume 25 percent less energy by 2030 compared to the baseline year of 2005. (City of Sacramento 2015a)

Environmental Setting

Utilities and Service Systems

Potable and Non-Potable Water

Potable water is supplied to the campus from the City of Sacramento domestic water system. An aboveground water tank is present on V Street adjacent to the project site. This tank contains potable water and is one of the City of Sacramento's 17 water storage facilities, each with a capacity of about 3 million gallons (City of Sacramento 2016). This water is used for domestic, fire protection, Central Utility Plant (CUP), and irrigation uses. UC Davis owns and operates two onsite wells, which also supply irrigation water to the Sacramento Campus grounds.

Campus Chilled Water and Steam Systems

The CUP provides chilled and hot water for cooling and heating, and process steam to most campus buildings. Processed steam is used for various purposes including autoclave and cleaning. It is distributed by underground pipes from the CUP to other campus buildings, including the East Wing. The chilled water system is composed of multiple absorption and centrifugal chillers, with an operating capacity of 12,684 tons of water. Approximately 877 tons of capacity in the chilled water system is used by the East Wing annually (Affiliated Engineers 2019: Figure A4.1). Steam production is used to create medium temperature water, as well as process steam for distribution to the campus. Approximately 9,207 thousand British thermal units (BTU) are used for heating hot water at the East Wing annually.

Wastewater and Stormwater

The sanitary sewer system at the Sacramento Campus has been in use since 1929 and consists of over 9,000 linear feet of collection laterals ranging from 4 to 18 inches in diameter. All of the sewer mains within the campus boundaries, both sanitary sewer and combined sanitary sewer and stormwater systems, are owned and maintained by the City of Sacramento and are located within public utility easements that require coordination with the City for new construction activity or new connections (Affiliated Engineers 2019).

The majority of the wastewater infrastructure on campus is a combined sanitary sewer and stormwater system. A portion of the campus infrastructure is stormwater only. The Sacramento Campus is exempt from the Municipal Stormwater Program for this stormwater-only portion of the campus and the amount of discharge is not monitored. The Sacramento Campus submits monthly reports with flow rate totals to the Sacramento Area Sewer District. The 2019 wastewater total was 7,371,855 gallons (Olaguez pers. comm.).

Wastewater from the campus is conveyed to the City of Sacramento combined sewer and stormwater facilities. It is treated at the Sacramento Regional Wastewater Treatment Plant (SRWTP), which is owned and operated by the Sacramento Regional County Sanitation District. SRWTP is south of the city limits in Elk Grove, approximately 7 miles south of the Sacramento Campus.

The Downtown Combined Sewers Upsizing Project is a 15-year program to upsize downtown sewers to reduce flooding and combined sewer outflows when complete, and to provide additional capacity. Major development projects in the combined sewer area are required to mitigate the additional sewage flows and the added impervious surface, which increases drainage runoff, or to pay the new combined sanitary sewer and stormwater system development fee, which funds this project (City of Sacramento 2015b:4-5).

A City-owned stormwater detention basin designed for 10-year flows is located on the Sacramento Campus. Stormwater flows from the western half and excess flows from the eastern half of the campus are detained onsite before they are discharged into the City's combined sewer system or to the American River. The existing campus land area is estimated to be approximately 80 percent impervious surfaces and 20 percent pervious surfaces. Additional information on water infrastructure is provided in Section 3.9, *Hydrology and Water Quality*.

Municipal Solid Waste

The UC Davis Department of Facilities Operations and Maintenance is responsible for the collection and disposal of solid waste on the Sacramento Campus. Solid waste is separated into appropriate waste streams, and medical waste and hazardous chemical and radioactive waste are packaged and labeled and categorized for transport to appropriate off-campus disposal sites.

The Sacramento Campus disposes of nonrecycled and nonhazardous solid wastes at Republic Services Elder Creek Transfer Station in Sacramento, where it is then transported to Forward Landfill in Manteca (approximately 55 miles south). The Sacramento Campus generates approximately 4,277 tons of solid waste per year (Ocheltree pers. comm.; California Air Pollution Control Officers Association 2017). Of this total, operations of the East Wing generate approximately 639 tons of solid waste per year.

The Sacramento Campus is considered a Large Quantity Generator of hazardous waste and is subject to state and federal regulations affecting these facilities. The campus generates and disposes of corrosive, reactive, ignitable, metallic (e.g., chromium, lead, mercury, and silver), and other wastes on the Resource Conservation and Recovery Act (RCRA) list (i.e., primarily used and spent solvents). Medical waste and hazardous chemical and radioactive waste disposal and handling are discussed in Section 3.8, *Hazards and Hazardous Materials*, of this EIR.

Electricity and Natural Gas

The CUP provides normal and emergency electrical power to the Sacramento Campus buildings that are owned and operated by UC Davis. PG&E provides natural gas to the campus from gas distribution piping mains on V Street, Stockton Boulevard, Broadway, 45th Street, Y Street, and 2nd Avenue. A 6-inch transmission main extension was built in 1997 from an existing transmission main located at 24th Street and T Street to 49th Street and 2nd Avenue to provide transmission level service to the campus. Additionally, PG&E provides redundant/backup power when the CUP is offline or undergoing maintenance.

SMUD currently provides service to the Sacramento Campus under a SFA entered on March 5th, 1996, which includes the following facilities.

- SMUD has an existing dedicated 115/21 kV 40 MVA transformer located at SMUD's "Mid City" substation connected by means of underground (UG) 21 kV circuits to the CUP.
- SMUD has existing 21 kV UG circuits along the east side of Stockton Blvd from V Street to X Street.
- SMUD has existing 21 kV UG circuits along the north side of X Street from Stockton Blvd to 45thStreet.
- SMUD has existing 21 kV UG and overhead (OH) circuits and equipment (including transformers and switches) adjacent to the UCDMC that are not part of the SFA.

The electricity use at the CUP is 5,323,349 kWh per year.

Telecommunications

The Sacramento Campus owns and operates its own telecommunications infrastructure. The underground infrastructure and cable plant currently support over 12,000 faculty, staff, students, residents and fellows' data needs (Affiliated Engineers 2019:10-1). Education and health care generate and consume a greater-than-average amount of bandwidth compared to other land uses such as residential, commercial, or industrial, due to the amount of technology used on the campus. The Sacramento Campus's Utility Master Plan (UMP) predicts that additional physical infrastructure in the form of optical fiber and underground conduit is required to support the campus (Affiliated Engineers 2019:10-4).

Commercial telecommunications services are also provided to some campus buildings, which include both wired and wireless services.

3.16.2 Environmental Impacts

This section describes the environmental impacts associated with utilities and service systems that would result from implementation of the California Hospital Tower Project. It describes the methods used to determine the effects of the project and lists the thresholds used to conclude whether an impact would be significant. Measures to mitigate (i.e., avoid, minimize, rectify, reduce, eliminate, or compensate for) any significant impacts are provided, if available.

Methods for Analysis

This analysis evaluates the potential for adverse physical impacts to occur as a result of the provision of new or altered utilities and service systems due to the California Hospital Tower Project. This analysis is based on review of existing policies, ordinances, and other regulations pertinent to utilities and service systems.

Thresholds of Significance

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

- Relocation or construction of new or expanded water, wastewater treatment, stormwater drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects.
- Creation of a need for new or expanded entitlements or resources for sufficient water supply available to serve the project and reasonably foreseeable future development during normal, dry, and multiple dry years.
- A determination by the wastewater treatment provider that serves or may serve the project that it does not have adequate capacity to serve the project's projected demand in addition to the provider's existing commitments.
- Generation of solid waste in exceedance of state or local standards or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals.
- Failure to comply with federal, state, and local management and reduction statutes and regulations related to solid waste.

Impacts and Mitigation Measures

Impact UT-1: Relocation or construction of new or expanded water, wastewater treatment, stormwater drainage, electric power, natural gas, or telecommunications facilities, with the potential to cause significant environmental effects (less than significant)

Summary of Impact UT-1 by Component

Component	Level of Significance before Mitigation	Mitigation Measures Required	Level of Significance after Mitigation
Make-ready projects	LTS	None	–
California Tower construction, Surgery and Emergency Services Pavilion interior renovation, Central Utility Plant upgrades	LTS	None	–
Parking Structure 5 construction	LTS	None	–
East Main Hospital Wing demolition	NI	None	–
Whole project	LTS	None	–

NI = no impact; LTS = less than significant; S = significant; SU = significant and unavoidable.

Water

The California Hospital Tower Project would require more water for domestic uses and fire suppression water supply than under existing conditions. Operation of the California Hospital Tower Project would require approximately 21,245,000 gallons of water per year for both indoor and outdoor use (Sebright pers. comm.). Demolition of the East Wing and construction of a major new hospital facility (i.e., California Tower) was included in the overall utility planning for the Sacramento Campus. The 2019 UMP for the Sacramento Campus estimated that by 2040, the entire campus would utilize approximately 260,483,018 gallons of potable water and 29,385,214 gallons of non-potable water. The approximately 26 million gallons of water per year projected for the California Hospital Tower Project is covered by and is within the estimated future demand projection and distribution planning in the 2019 UMP (Affiliated Engineers 2019:1-11). According to the UMP, on which water needs for the 2020 LRDP Update were based, existing water systems have sufficient supply and overall distribution capacity to meet the increased demand associated with future campus improvements, including the California Tower.

The City of Sacramento would continue to supply water to the Sacramento Campus. The existing water infrastructure throughout the Sacramento Campus would provide the distribution infrastructure necessary to provide water service for the project, with utility relocations described in Section 2.4.1. This impact would be **less than significant.**

Wastewater and Stormwater

Quantitative data on existing wastewater from the East Wing and projected wastewater from the California Tower are not available. However, it is reasonable to assume that the volume of wastewater would increase compared to existing conditions because the California Tower would utilize more water overall than the existing East Wing. The projected wastewater and stormwater quantities from the California Tower were analyzed in the 2020 LRDP Update overall planning scenario.

As stated previously, the campus discharges wastewater to the City's combined sanitary sewer and stormwater system, which is ultimately treated at SRWTP. The existing SRWTP permitted capacity is 181 million gallons per day (mgd) and a daily peak wet weather flow of 392 mgd. The average dry weather flow is approximately 150 mgd. The SRWTP *2020 Master Plan* states that additional facilities are needed to treat future process capacity, and this is achieved by adding future treatment process facilities to mirror existing facilities. The SRWTP *2020 Master Plan* recommends implementation of cost effective programs including improvements in source control, evaluation of watershed offsets, and an expanded water recycling program (Sacramento Regional County Sanitation District 2008:6, 10).

Existing and proposed treatment facilities were designed for gradual expansion as future wastewater flows increase. Some existing facilities have available capacity for future flows and loads, while other facilities would require expansion (City of Sacramento 2015b: 4-9). Construction of the EchoWater Project is underway for a project to rehabilitate the older facilities at the SRWTP to increase capacity, and when the project is complete (2023), the SRWTP will be the largest advanced wastewater treatment facility in the United States (Sacramento Regional County Sanitation District 2019).

Currently, the SRWTP treats 115 mgd. The Sacramento Campus, including the California Hospital Tower Project, is anticipated to generate approximately 167.3 million gallons annually by the year 2040, which averages approximately 458,400 gallons of wastewater per day. This represents approximately 0.3 percent of the amount the SRWTP currently treats, and it is reasonable to assume that the SRWTP infrastructure would be significantly improved at the time of project operations, with completion of the EchoWater and other projects.

The project site is entirely paved. Both the California Tower and Parking Structure 5 (PS5) would be located on paved areas that are currently surface parking lots. The project would not increase the amount of impervious surface, and thus, would not increase the amount of stormwater runoff compared to existing conditions. See Section 3.9, *Hydrology and Water Quality*, for additional analysis related to wastewater and stormwater facilities.

No substantial expansions would be needed to wastewater and stormwater systems, but individual distribution pipes on- and off-campus may require modification or replacement to support the project. These upgrades would occur in a developed, urbanized area. The environmental effects of constructing these types of improvements on the campus are addressed in other sections of this EIR, including but not limited to Section 3.2, *Air Quality*, Section 3.3, *Biological Resources*, Section 3.4, *Cultural Resources*, and Section 3.11, *Noise*. Connections and extensions of these water and wastewater systems would occur primarily along roadways or other areas that are already developed or disturbed and unlikely to have sensitive biological or cultural resources. Impacts related to both on-campus and off-campus wastewater and stormwater would be **less than significant.**

Electricity, Natural Gas, and Telecommunications

As described in Section 3.5, *Energy*, the California Hospital Tower Project would result in a minor increase in electricity use compared to existing conditions. Approximately 5,323,349 kWh/year of purchased electricity is currently used by the Sacramento Campus, and approximately 5,400,000 kWh/year would be required with the addition of the California Hospital Tower Project (including PS5). This number also includes other planned campus growth. As discussed in Section 3.7.1, GHG Existing Conditions, pursuant to the UC's Sustainable Practices Policy, the UC Davis Sacramento Campus is required to obtain 100 percent clean electricity beginning in 2025. Accordingly, there would be zero GHG emissions generated by purchased electricity at the CUP under future build conditions.

Natural gas use/consumption from stationary sources includes turbines and boilers. As shown in Table 3.5-3, turbine natural gas consumption would increase from 1,078,398 million BTU (MMBTU) to 1,650,000 MMBTU in 2030 after demolition of the East Wing. Boiler natural gas consumption would increase from 741,176 therms to 1,150,000 therms in 2031 after demolition of the East Wing.

Utilities for the California Hospital Tower Project would be supplied from the CUP. There are planned make-ready projects that are inherently linked to the construction of the California Tower Hospital Project. These projects include utilities relocation between the existing Hospital facilities and the California Tower, CUP upgrades necessary to support the addition of the California Tower as well as renovation to the existing Surgical Pavilion to connect the California Tower and the current facility. The environmental effects of constructing these systems are addressed in other sections of this EIR, including but not limited to Section 3.1, *Noise,* Section 3.2, *Air Quality*; Section 3.3, *Biological Resources*; and Section 3.4, *Archaeological, Historical, and Tribal Cultural Resources*. Utility systems would be installed primarily along roadways or other areas that are already developed or disturbed and unlikely to have sensitive biological or cultural resources.

The Sacramento Campus owns and operates its own telecommunications infrastructure (e.g., telecommunications lines and conduits, utility boxes, and electronic equipment located within existing buildings). Some expansion of the existing telecommunications infrastructure may be necessary to serve the California Hospital Tower Project. However, the telecommunications infrastructure necessary to serve the new facilities are evaluated throughout this document as part of the analysis of the new facilities, and would not result in substantial physical changes. Therefore, the impact would be **less than significant**.

Mitigation Measures

No mitigation measures are necessary.

Impact UT-2: Creation of a need for new or expanded entitlements or resources for sufficient water supply to serve the project and reasonably foreseeable future development during normal, dry, and multiple dry years (less than significant)

Summary of Impact UT-2 by Component

Component	Level of Significance before Mitigation	Mitigation Measures Required	Level of Significance after Mitigation
Make-ready projects	LTS	None	–
California Tower construction, Surgery and Emergency Services Pavilion interior renovation, Central Utility Plant upgrades	LTS	None	–
Parking Structure 5 construction	LTS	None	–
East Main Hospital Wing demolition	NI	None	–
Whole project	LTS	None	–

NI = no impact; LTS = less than significant; S = significant; SU = significant and unavoidable.

Operation of the California Tower would require approximately 21,450,000 million gallons of water per year, which is supplied by the City.

Growth projections used in the City's UWMP were based on the City's land use designations and land use acreages. The City's 2015 UWMP projected increases in overall water demand through 2040 due to increases in population but decreases in per capita water use as the result of continued and expanded water conservation efforts (City of Sacramento 2016). According to the UWMP, the City's water system is adequate to meet existing demands, and the City continues to make improvements to meet future demands and improve reliability. Furthermore, the combination of groundwater and surface water (from the American River) results in a highly reliable water source for Sacramento (City of Sacramento 2016:7-2).

With the continued and expanded water conservation efforts described in the UWMP, the City has sufficient water supplies to meet projected water demands during a normal year with the use of both surface and groundwater entitlements (City of Sacramento 2016). The *Sacramento 2035 General Plan* also found that the City's water entitlements are sufficient to serve the entire city (including future expansions of the city limits) and also provide water to other local providers in need of water supply.

In addition, per the UC Sustainable Practices Policy and the campus Climate Action Plan, strategies are in place to minimize campus water consumption, including water-efficient landscaping, fixture retrofits, efficient fixtures in new buildings, education, and energy conservation initiatives that would minimize water use. These practices would be implemented within the design and operation of the California Tower.

Because the City has sufficient water supply to meet future demand, and because the project would incorporate strategies to minimize water consumption as described in the UC Sustainable Practices Policy, the increased water demand from the California Hospital Tower Project would not result in the need for the City of Sacramento to obtain additional entitlements to serve the project. The impact would be **less than significant.**

Impact UT-3: Project-related exceedance of existing wastewater treatment capacity (less than significant)

Summary of Impact UT-3 by Component

Component	Level of Significance before Mitigation	Mitigation Measures Required	Level of Significance after Mitigation
Make-ready projects	LTS	None	–
California Tower construction, Surgery and Emergency Services Pavilion interior renovation, Central Utility Plant upgrades	LTS	None	–
Parking Structure 5 construction	LTS	None	–
East Main Hospital Wing demolition	NI	None	–
Whole project	LTS	None	–

NI = no impact; LTS = less than significant; S = significant; SU = significant and unavoidable.

The California Hospital Tower Project would result in an increase in wastewater compared to existing conditions. The campus contains a combined storm–sewer overflow system that consists of a combined sewer main under Y Street connecting to the existing main under Stockton Boulevard and which ultimately flows to a concrete storage tank. Under normal operations, no combined stormwater–sanitary sewage flows to the storage tank. When the combined sewer hydraulic grade elevation is above the sewer high point, excess combined sewage flows toward the tanks. A lift station at the north end of the storage tanks pumps stored combined sewage to another combined sewer under V Street that has a higher capacity than the Stockton Boulevard and Y Street combined sewers. New sewer pipes and sewer mains would be added to serve the California Tower but would not require an increase in capacity.

Wastewater from the California Tower would continue to be treated at the SRWTP. The Central Valley Regional Water Quality Control Board would regulate the quality and quantity of effluent discharged from SRWTP. The project would comply with the discharge requirements of SRWTP. As described under Impact WQ-1, operational activities associated with implementation of the California Hospital Tower Project would not contribute pollutants in wastewater that is discharged into the sanitary sewer system that could cause a violation of waste discharge requirements of the SRWTP and thereby require any substantial infrastructure improvements at the SRWTP. The SRWTP did not experienced any major sanitary sewer overflows in 2019, and the California Hospital Tower Project would not require any infrastructure improvements to the SRWTP. This impact would be **less than significant**.

Mitigation Measures

No mitigation measures are necessary.

Impact UT-4: Project-related exceedance of state or local solid waste standards or of the capacity of local infrastructure, or other impediments to attaining solid waste reduction goals (less than significant)

Summary of Impact UT-4 by Component

Component	Level of Significance before Mitigation	Mitigation Measures Required	Level of Significance after Mitigation
Make-ready projects	LTS	None	–
California Tower construction, Surgery and Emergency Services Pavilion interior renovation, Central Utility Plant upgrades	LTS	None	–
Parking Structure 5 construction	LTS	None	–
East Main Hospital Wing demolition	LTS	None	–
Whole project	LTS	None	–

NI = no impact; LTS = less than significant; S = significant; SU = significant and unavoidable.

Generation of solid waste is expected to increase as the number hospital beds and employees would increase under the California Hospital Tower Project. Overall, the California Tower would have an additional 500 people (including 250 patients and 250 employees) compared to existing conditions at the East Wing. Project designers estimated solid waste generation for the project to be approximately 3,618 tons of solid waste per year.

Solid waste from the California Hospital Tower Project would be disposed of at Forward Landfill in Manteca through the year 2036. In 2018, a Supplemental EIR for the expansion of the Forward Landfill project was adopted. The expansion would increase the total landfill capacity to 35 million cubic yards and allow disposal at the landfill to continue until the year 2036, approximately (San Joaquin County Community Development Department 2018:I-4). After 2036, it is assumed that waste would be transported to Foothill Landfill in San Joaquin County (Ocheltree pers. comm.) Although it is not subject to the CIWMA, the UC has adopted the UC Sustainable Practices Policy, which sets goals to reduce waste generation. The Sacramento Campus aimed to establish a waste reduction goal by the end of the 2020 calendar year. On average, the Sacramento Campus has reduced approximately 15,000 pounds per month of waste in 2020 compared to 2019 (Davis pers. comm.) The UC Sustainable Practices Policy also encourages recycling of construction waste, which would be implemented with the demolition of the East Wing. The Sacramento Campus is also implementing a new recycling program. Together these policies would minimize the amount of solid waste that would go to landfills.

In addition, the City of Sacramento committed to the goal of achieving 70 percent waste reduction by 2020 and zero waste to landfills by 2040. To help reach this goal, the City has adopted policies to recycle as many waste materials as possible, restrict purchase of bottled water, use recycled materials (paper), and increase public outreach.

The California Hospital Tower Project would generate more solid waste than existing conditions. There is adequate capacity available at the Forward Landfill to serve the campus through 2036, and expansion for the landfill is already planned and has undergone environmental review. After 2036, Foothill Landfill would serve the Sacramento Campus. The City of Sacramento has committed to achieving zero waste to landfills by 2040. In addition, compliance with the UC Sustainable Practices Policy would continue to reduce landfill contributions. The impact would be **less than significant.**

Mitigation Measures

No mitigation measures are necessary.

Impact UT-5: Inconsistency with federal, state, and local management and reduction statutes and regulations related to solid waste (no impact)

Summary of Impact UT-5 by Component

Component	Level of Significance before Mitigation	Mitigation Measures Required	Level of Significance after Mitigation
Make-ready projects	NI	None	–
California Tower construction, Surgery and Emergency Services Pavilion interior renovation, Central Utility Plant upgrades	NI	None	–
Parking Structure 5 construction	NI	None	–
East Main Hospital Wing demolition	NI	None	–
Whole project	NI	None	–

NI = no impact; LTS = less than significant; S = significant; SU = significant and unavoidable.

The UC has adopted the UC Sustainable Practices Policy, which sets ambitious waste reduction targets that are consistent with the requirements of the CIWMA, AB 341, SB 1374, and AB 1826. Medical centers are exempt from these waste reduction targets.

As noted in Section 3.16.1, *Existing Conditions*, the UC, a constitutionally created state entity, is not subject to municipal regulations of surrounding local governments for uses on property owned or controlled by the UC that are in furtherance of its educational purposes.

Although UC is not subject to state and local regulations related to solid waste, development associated with implementation of the 2020 LRDP Update would comply with the UC Sustainable Practices Policy, which encourages waste reduction and diversion programs and is consistent with the management and reduction regulations related to solid waste, such as CIWMA, AB 341, SB 1374, and AB 1826. The project would comply with these existing regulations and there would be **no impact.** Information on hazardous waste is provided in Section 3.8, *Hazards and Hazardous Materials.*

Mitigation Measures

No mitigation measures are necessary.

Chapter 4
Cumulative Impacts

4.1 CEQA Requirements

The State CEQA Guidelines (California Code of Regulations [CCR]) Section 15130) requires that an EIR discuss the cumulative impacts of a project. A project's contribution to a cumulative impact is considered significant when the project's incremental effect is "cumulatively considerable." The definition of cumulatively considerable is provided in CCR Section 15065(a)(3) as follows.

> "Cumulatively considerable" means that the incremental effects of an individual project are significant when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.

According to the CEQA Guidelines (CCR Section 15130[b]),

> The discussion of cumulative impacts shall reflect the severity of the impacts and their likelihood of occurrence, but the discussion need not provide as great detail as is provided for the effects attributable to the project alone. The discussion should be guided by standards of practicality and reasonableness, and should focus on the cumulative impact to which the identified other projects contribute rather than the attributes of other projects which do not contribute to the cumulative impact.

For purposes of this EIR, the project would have a significant cumulative effect if it meets either one of the following criteria.

- The cumulative effects of related projects (past, current, and probable future projects) without the project are not significant but the project's incremental impact is substantial enough, when added to the cumulative effects, to result in a significant impact.
- The cumulative effects of related projects (past, current, and probable future projects) without the project are already significant and the project represents a considerable contribution to the already significant effect. The standards used herein to determine "considerable contribution" are that the impact either must be substantial or must exceed an established threshold of significance.

Mitigation measures are to be developed, where feasible, to reduce the project's contribution to cumulative effects such that the contribution is not considerable.

This cumulative analysis assumes that all mitigation measures identified in Sections 3.1 through 3.16 to mitigate project impacts are adopted, unless otherwise specified. Analysis presented in this chapter determines whether, after adoption of mitigation, the residual impacts of the project would cause a cumulatively significant impact or would contribute considerably to existing or anticipated (without the project) cumulatively significant effects.

4.2 Scope of the Cumulative Analysis

The geographic area that could be affected by development of the project varies depending on the type of environmental resource being considered. The general geographic area associated with various environmental effects of project construction and operation defines the boundaries of the area used for compiling the list of projects considered in the cumulative impact analysis. Table 4-1 lists the general geographic areas associated with the different resources addressed in this EIR and lists those evaluated during cumulative analysis.

Table 4-1. Geographic Scope of Cumulative Impacts

Resource Issue	Geographic Area
Aesthetics	Local (project site and surrounding public viewpoints)
Air Quality	Regional (Sacramento Metropolitan Air Quality Management District—pollutant emissions that have regional effects) Local (immediate vicinity—pollutant emissions that are highly localized such as carbon monoxide)
Archaeological, Historical, and Tribal Cultural Resources	Local
Biological Resources	Regional and local
Energy	Regional (Sacramento Municipal Utility District and Pacific Gas and Electric Company energy grid within Sacramento County)
Geology, Soils, and Seismicity	Local
Greenhouse Gas Emissions	Global
Hazards and Hazardous Materials	Local (immediate project vicinity)
Hydrology and Water Quality	Regional and local
Land Use and Planning	Local (City of Sacramento)
Noise	Local (immediate project vicinity where effects are localized)
Population and Housing	Local and regional
Public Services	Local service areas
Recreation	Local
Transportation and Circulation	Regional and local
Utilities and Service Systems	Local service areas

As noted in Table 4-1, the potential geographic scope of some cumulative effects is more localized than others. To account for both regional and localized cumulative impacts, this EIR uses regional growth projections to assess regionally cumulative impacts and the list method to assess more localized cumulative impacts. Table 4-2 lists past, present, and future development projects near the UC Davis Sacramento Campus that are considered in the analysis of cumulative impacts. This list is not all-inclusive of projects in the region; rather, it identifies projects constructed, approved, or under review within approximately 1 mile of the project site that have some relation to the environmental impacts of construction and operation of the California Hospital Tower Project. The list of projects used for this cumulative analysis is based on information provided by the City of Sacramento about approved and pending projects. Table 4-2 also lists approved and pending UC Davis Sacramento Campus projects.

Table 4-2. Cumulative Projects List

Project Name/ Number	Developed or Proposed Land Use	Description/Size (Acreage and/or Dwelling Units)	Built/ Approved/ Proposed
UC Davis Sacramento Campus			
ACC Eye Center	Hospital building expansion	Expansion of existing ACC building, addition of Eye Center and changes to parking lot 18	Approved
Rehabilitation Hospital	Hospital building	Demolition of existing building and construction of 58,623-gross-square-foot inpatient rehabilitation hospital	Approved
Parking Structure 4	Parking structure	Construction and operation of new 1,221-stall parking structure, removal of the roundabout, installation of a new traffic signal, reconfigure parking lot 18, and other improvements	Approved
North/South Hospital Wing and East Wing Façade	Demolition and facade improvements	Demolition of the 235,000-square-foot North/South Hospital Wing	Approved
Housestaff Demo	Demolition	Demolition of the 20,000-square-foot Housestaff building	Approved
Aggie Square Phase I	New education, research and technology buildings	Construction of three new high rises and an on-campus housing building with marketplace	Approved
Aggie Square Phase II	New education, research and technology buildings	Construction of research and office buildings and parking structure	Proposed
City of Sacramento			
Downtown Mobility Project	Roadway improvements	Conversion of 5th Street (from X Street to H Street) and I Street (from 16th Street to 21st Street) from one-way to two-way streets, and construction of bicycle lanes on I Street between 12th and 16th Streets	Approved
Ramona Avenue Extension Phase 1 Improvements	Roadway improvements	Extension of Ramona Avenue from its current terminus at Brighton Avenue to a new signalized intersection at Folsom Boulevard; installation of a roundabout at the Brighton Avenue intersection and an at-grade crossing	Approved
DR20-011	Mixed-use building	Construction of a three-story mixed-use building with two levels of apartments (total 12 dwelling units) over 2,500 square feet of retail/commercial space on approximately 0.11 vacant acre	Proposed
DR20-057	Apartment building	Development of a six-unit apartment building from the existing two-story structure located in the C-2-SPD zone	Proposed
DR20-040	Mixed-use building	Construction of a 29,000-square-foot, four-story, mixed-use building with 38 dwelling units on three parcels in the C-2-SPD zone	Proposed

Project Name/ Number	Developed or Proposed Land Use	Description/Size (Acreage and/or Dwelling Units)	Built/ Approved/ Proposed
Sacramento Municipal Utility District (SMUD) Projects	Various	Modifications and/or upgrades to the existing dedicated 115/21 kV 40 MVA transformer, switchgear, and any relevant equipment at SMUD's "Mid City" Substation. Modifications and/or upgrades to the existing 21 kV UG circuit from the "Mid City" Substation to UCDMC. This circuit currently runs along the east side of Stockton Boulevard and the north side of X Street to the Central Utility Plant (CUP) on the UC Davis Medical Center Sacramento Campus. Additional 21 kV UG circuit(s) from the "Mid City" Substation to the CUP. Any additional circuits may require additional underground conduits, manholes, and other infrastructure associated with UG line construction. This construction would most likely occur adjacent to the existing 21 kV UG route along Stockton Boulevard and X Street.	Proposed

Sources: UC Davis Sacramento Campus Facilities Department; City of Sacramento 2020a, 2020b.
ACC = Lawrence J. Ellison Ambulatory Care Center; C-2-SPD = commercial special planning district.

4.3 Cumulative Impact Analysis

4.3.1 Aesthetics

The California Hospital Tower Project would not result in impacts related to scenic vistas or scenic highways. Therefore, it would not contribute to cumulative impacts related to these issues. Impacts regarding construction would result in impacts on scenic quality; however, these impacts would be temporary and mitigation measures would reduce construction impacts to less-than-significant levels. There would not be operational impacts related to scenic quality, and therefore the project would not contribute to cumulative impacts related to scenic quality.

The project site is an urbanized area with numerous existing sources of glare and nighttime lighting. Existing development in the city of Sacramento and the surrounding Sacramento County has resulted in a cumulative increase in nighttime lighting. The cumulative effect of this past development has resulted in a cumulative loss of available nighttime views. The project would be built within existing urban uses, which would already be subject to lighting from existing development. With implementation of Mitigation Measures LRDP-AES-2a through LRDP-AES-2d, and Mitigation Measures AES-2a and AES-2b the project's contribution to cumulative increases of nighttime lighting would be further minimized and would not be cumulatively considerable. Therefore, cumulative light and glare impacts would be **less than significant with mitigation**.

Downtown Sacramento and the neighborhoods surrounding downtown are composed of development with single-level to high-rise buildings. The project would have a significant and unavoidable impact related to shade and shadow. The City of Sacramento is experiencing growth, development, and redevelopment through the implementation of the City's specific plans and individual development projects. Many of these projects include redeveloping vacant lots and lots with aging one- to three-story buildings with taller, mid-rise buildings that have more than three stories. Residential land uses, neighborhoods parks, and existing commercial land uses within neighborhoods commonly abut these development and redevelopment areas. Replacement of vacant lots and low-rise structures with mid-rise buildings contribute to increased shading for neighboring residences, parks, and commercial areas and have the potential to result in significant and unavoidable impacts. Shading from the California Tower would contribute to this increase in shading of sensitive receptors in the city that would result from building height increases occurring within the city. Therefore, the proposed project would result in cumulatively considerable impact resulting from shade and shadowing.

4.3.2 Air Quality

The cumulative context for air quality is both regional (i.e., Sacramento Valley Air Basin [SVAB]) and local (i.e., within 1,000 feet of the project site). The project would result in an increase of emissions from mobile (e.g., patient trips) and area (e.g., landscaping equipment) sources. Planned upgrades at the CUP would result in stationary source (e.g., emergency diesel generator) emissions. Cumulative development in the region will continue to increase the concentration of pollutants from traffic, natural gas combustion in buildings, area sources, and stationary sources, but would be partially offset by State and federal policies that set emissions standards for mobile and non-mobile sources.

The Sacramento Metropolitan Air Quality Management District (SMAQMD) has developed significance thresholds for ozone precursors—reactive organic gases (ROG) and nitrogen oxides (NO_X)—and particulate matter (PM10 and PM2.5). SMAQMD thresholds consider whether a project's emissions would result in a cumulatively considerable adverse contribution to existing air quality conditions, which do not currently attain the federal ozone, PM2.5 or PM10 standards. If a project's emissions would be less than these levels, the project would not be expected to result in a cumulatively considerable contribution to the significant cumulative impact (Sacramento Metropolitan Air Quality Management District 2020). SMAQMD has likewise established incremental cancer and hazard thresholds to evaluate receptor exposure to toxic air contaminants (TACs). These health risk thresholds "should be used to determine whether a project's TAC emissions are cumulatively considerable" (Sacramento Metropolitan Air Quality Management District 2020). The project level impact analysis is therefore inherently cumulative, as seen in the thresholds considered for air quality impacts, especially the threshold for Impact AQ-2: *Cumulatively considerable net increase of any criteria pollutant for which the project region is a nonattainment area for an applicable federal or state ambient air quality standard*.

Short-Term Construction

Construction of the proposed project would result in an exceedance of SMAQMD's NO_x thresholds. Implementation of Mitigation Measures LRDP-AQ-2a through 2c, LRDP-AQ-3a, AQ-2a, and AQ-2b would reduce NO_x emissions to below SMAQMD's threshold of significance. Accordingly, emissions generated by construction of the project would be reduced **to less than cumulatively considerable** with implementation of these mitigation measures.

Because construction emissions would not exceed SMAQMD's thresholds, they are not expected to contribute a significant level of air pollution that could degrade regional air quality within the SVAB. Likewise, the project would comply with SMAQMD's rules related to asbestos and would not expose receptors to localized particulate matter concentrations with implementation of Mitigation Measures LRPD-AQ-2a and LRDP-AQ-2b. While construction would not expose receptors to substantial criteria pollutant or asbestos concentrations, diesel particulate matter (DPM) generated by diesel fueled equipment and vehicles would contribute to health risks in excess of SMAQMD's threshold. Mitigation Measure LRDP-AQ-2b, LRDP-AQ-3a, and AQ-2a would reduce the severity of this impact, but not to a less-than-significant level. Accordingly, construction of the project would result in a **significant-and-unavoidable** cumulative impact from exposure of receptors to substantial concentrations of DPM.

Using diesel-fueled equipment, applying architectural coatings, and asphalt paving during construction could generate minor odors. However, these odors would be short-term and would not be pervasive. Therefore, construction-generated odors **would not contribute to a cumulative impact**.

Long-Term Operation

The net increase in operational ROG, PM10, and PM2.5 emissions resulting from implementation of the project would not exceed SMAQMD's thresholds. NOx emissions are projected to decrease relative to existing conditions. Accordingly, emissions generated by operation of the project would make a **less than cumulatively considerable contribution to a cumulative air quality impact**. Likewise, DPM generated by diesel fueled equipment and vehicles would not contribute to health risks in excess of SMAQMD's thresholds.

Operation of the project could result in minor levels of odor emissions from diesel combustion (delivery trucks, generators). These types of sources are not different from those that are currently generated by the campus or surrounding land uses. Therefore, there would be **no cumulative impact**.

4.3.3 Biological Resources

Implementation of the California Hospital Tower Project would not contribute to a significant cumulative impact on special-status species or their habitat or loss of heritage trees in the region.

As development in the City of Sacramento and in the greater Sacramento Valley continues, sensitive plant and wildlife species native to the region and their habitat would be lost through conversion of existing open space to urban development. These losses would include species listed under the federal Endangered Species Act or the California Endangered Species Act and would include individuals identified by state and federal resources agencies as Species of Concern, Fully Protected, or Sensitive. The conversion of plant and wildlife habitat on a regional level could result in a cumulatively considerable impact on special-status species and their habitats.

The California Hospital Tower Project is located in a heavily developed urban area that does not provide suitable habitat for most special-status species in the area. While nesting birds and raptors including Swainson's hawk, white-tailed kite, and purple martin could be disturbed during project construction, these impacts would be small due to the limited availability of suitable habitat and would not be cumulatively considerable. Removal or alteration of existing structures on the California Hospital Tower Project site that contain active bat roosts could contribute to the local reduction of bat roosting habitat and disturbance of roost colonies. However, within the city of Sacramento, building structure roosting habitat is not a limiting resource and loss of a potential roost site would not be cumulatively considerable. Disturbance of an active bat colony that results in the loss of individuals would contribute to the cumulative loss of bats in the greater Sacramento Valley Region. Any potential project-level impacts would be reduced by implementation of Mitigation Measures LRDP-BIO-2, LRDP-BIO-3, and Mitigation Measure BIO-3, which require preconstruction surveys and implementation of protective measures if sensitive species are identified during the surveys. Therefore, implementation of Mitigation Measures LRDP-BIO-2, LRDP-BIO-3, and Mitigation Measure BIO-3 would reduce the contribution of California Hospital Tower Project to the cumulative loss of special-status species in the region to **less than cumulatively considerable**.

Regional development in the greater Sacramento area would also result in the removal of native trees. Although many cities and counties in the greater Sacramento Valley have programs in place to avoid and minimize the removal of mature, native trees, and especially those that meet the definition of heritage trees, some removal is inevitable. The loss of heritage trees due to development is considered a cumulative impact. No heritage trees are identified on the project site and, therefore, none would be removed. Native trees would be replanted at a 1:1 ratio. Therefore, though a cumulative impact related to the loss of heritage trees exists, the project would **not contribute to this cumulative loss of trees**.

4.3.4 Archaeological, Historical, and Tribal Cultural Resources

Any disturbance of native soils carries the potential to result in impacts on archaeological resources. Development on the Sacramento Campus and other development in Sacramento County over time could result in some impacts on built environment historical resources and unique archaeological resources. These impacts may be significant if a significant resource is disturbed or destroyed. Because some unique archaeological or historical resources in Sacramento County could be damaged or destroyed over time, particularly in areas with greater potential for such resources to be located, and some historic buildings may be demolished or altered, and mitigation to reduce this impact to a less-than-significant level does not exist, a cumulative impact exists.

Based on the nature and types of structures on campus that would be altered or removed for the California Hospital Tower Project, it is not anticipated that built-environment historical resources would be affected by the project. However, ground disturbance associated with each of the project components could result in disturbances to unidentified buried archaeological resources. The disturbance or destruction of unidentified buried archaeological resources would be a significant impact that would contribute to an overall cumulative impact. However, implementation of Mitigation Measures LRDP-CUL-2a and LRDP-CUL-2b would reduce the project's contribution to **less than cumulatively considerable**.

The cemetery is not itself a historic resource for the purposes of CEQA, and the impact is to each individual burial. Because each burial could only be affected once, there is **no potential for a cumulative impact** related to the disturbance of burials associated with the Sacramento County Hospital.

4.3.5 Energy

The geographic area considered for cumulative impacts related to energy use includes the Pacific Gas and Electric Company (PG&E) service area for natural gas, and the Central Energy Plant for electricity. PG&E provides the physical infrastructure in the region for electricity and natural gas; PG&E anticipates having adequate energy capacity through the year 2050. The project, in combination with planned and approved projects in the area would contribute to the increased demand for energy, including electricity and natural gas. Therefore, a cumulative impact exists.

The California Hospital Tower Project would require additional natural gas from PG&E. The project would minimize energy demand to the extent feasible through exceedance of Title 24 CCR standards for energy efficiency in effect at the time of construction. Design features and practices specified in the UC Davis Physical Design Framework and the UC Sustainable Practices Policy would further improve the project's energy efficiency and reduce energy demand through design features, such as efficient lighting and energy efficient plumbing fixtures. Regarding electricity, the entire Sacramento Campus will start purchasing clean electricity from SMUD by the year 2025. Therefore, the project's contribution to cumulative energy demand impacts would **not be cumulatively considerable**.

4.3.6 Geology, Soils, and Seismicity

Geotechnical impacts are site-specific rather than regional in nature, and the project would be subject to, at minimum, uniform site development and construction and regulatory standards relative to seismic and other geologic conditions that are prevalent in the region, such as California Building Code standards. Other development in the region would also be site-specific and subject to the same regulations. As such, there is no cumulative impact related to geology, soils, and seismicity to which the California Hospital Tower Project could contribute.

Regarding paleontological resources, the project site is located on the Riverbank formation, which is considered sensitive for paleontological resources. Any projects that are constructed on this formation could result in impacts on similar sensitive paleontological resources and therefore a cumulative impact exists. The California Hospital Tower Project includes Mitigation Measure GEO-6, which requires monitoring for and recovery of paleontological resources and reduces the project-level impact to a less-than-significant level. Implementation of this mitigation would also reduce the contribution of the project to the cumulative impact to **less than cumulatively considerable**.

4.3.7 Greenhouse Gas Emissions

With implementation of the UC Sustainable Practices Policy (University of California 2020), the project would reduce GHG emissions below existing conditions, and therefore would not contribute a significant amount of GHG emissions or contribute to existing cumulative emissions. However, per capita mobile source emissions would exceed SACOG's *2020 Metropolitan Transportation Plan/Sustainable Communities Strategy* (2020 MTP/SCS; Sacramento Area Council of Governments 2019) GHG reduction target. Total emissions resulting from the project could also conflict with the state's long-term climate change goals under Senate Bill (SB) 32 and Executive Order (EO) B-55-18. Implementation of the UC Sustainable Practices Policy (University of California 2020), Mitigation Measures LRDP-AQ-2e, TRA 1e, and LRDP-GHG-2 would reduce emissions consistent with the state's climate change reduction trajectory, as articulated under statewide regulations and legislation (e.g., SB 32, EO B-55-18).

These mitigation measures would reduce the contribution of the project to the cumulative impact to meet statewide planning goals and therefore, with implementation of the mitigation measures, the contribution would be **less than cumulatively considerable**.

4.3.8 Hazards and Hazardous Materials

Although some hazardous material releases can cover a large area and interact with other releases (e.g., atmospheric contamination, contamination of groundwater aquifers), incidents of hazardous materials contamination are more typically isolated to small areas, such as leaking underground storage tank sites or releases at individual businesses. These relatively isolated areas of contamination typically do not interact in a cumulative manner with other sites of hazardous materials contamination. Impacts related to emergency vehicle access and response are considered site-specific and therefore there is no cumulative impact to which the project could contribute.

There are three existing hazardous materials sites that have been remediated and investigated and no longer pose a threat to human health. Further, implementation of Mitigation Measure LRDP-HAZ-2 to prepare a Phase I Environmental Site Assessment would ensure this project-level impact was less than significant. Other projects on the Sacramento Campus may be under construction at the same time and may result in the disturbance of hazardous material sites or accidental release of hazardous materials during construction and exposure of the public to hazardous materials. These other projects would also require the preparation of Phase I Environmental Site Assessments. Therefore, there would be **no cumulative impact**.

4.3.9 Hydrology and Water Quality

The cumulative context for evaluation of hydrology and water quality impacts includes development proposed on the Sacramento Campus in combination with anticipated development in the city of Sacramento that has the potential to affect the watershed or the underlying groundwater aquifers. The geographic context for consideration of cumulative hydrology and water quality impacts is the Sacramento River Basin for surface waters and the Sacramento Valley Groundwater Basin for groundwater.

Runoff and Water Quality

By implementing stormwater best management practices (BMPs) and complying with applicable water quality requirements, construction and operational activities associated with the California Hospital Tower Project would not contribute substantial pollutant loads in stormwater runoff that could degrade receiving water quality. Future development could increase the amount of impervious surfaces, resulting in increased runoff rates and degradation of surface and groundwater quality in the basin. However future development would comply with applicable regulatory water quality requirements and permits, such as the National Pollutant Discharge Elimination System (NPDES) Construction General Permit. Implementation of post-construction measures as required by the City's Stormwater Quality Improvement Program would reduce or eliminate water quality issues, include source control measures, and treat polluted runoff using techniques such as detention or retention basins. Even with these requirements, there is a potential for a cumulative impact on water quality resulting from increases in impervious surfaces and contributions to pollutant loads in stormwater runoff.

Short-term water quality impacts associated with soil erosion and subsequent sediment transport, as well as the release of litter, oil, and other pollutants that could contaminate water runoff may occur from the project site and contribute to a cumulative impact. Construction of the California Hospital Tower Project would not increase impervious surface on campus. Furthermore, the project would be conducted in accordance with applicable regulatory water quality requirements and permits. Therefore, the project's contribution to any cumulative effect on water quality would **not be cumulatively considerable**.

Stormwater Drainage and Flooding

The California Hospital Tower Project would not result in substantial alterations to drainage patterns, would not increase stormwater runoff that would result in flooding, and would not exceed stormwater drainage system capacity.

Stormwater from the project site would be detained in the onsite stormwater detention basin before discharge into the City's combined sewer system for treatment at the City's Combined Wastewater Treatment Plant. The combined sewer system is considered at or near capacity and requires all additional inflow to be offset. The Combined Wastewater Treatment Plant may discharge untreated combined wastewater under extreme high flow conditions, which could contribute to flooding and potential violation of water quality discharge requirements. Therefore, a cumulative impact exists. However, the City requires post-construction stormwater and sanitary sewer flow rates to be less than or equal to pre-construction stormwater and sanitary sewer flow rates for discharges from the combined system (City of Sacramento 2009). Further, all new development is required to handle stormwater, which ensures that flooding will not increase or be redirected to other areas. The Sacramento 2035 General Plan requires all new development to provide a no-net increase in stormwater runoff peak flows over existing conditions associated with a 100-year storm event (City of Sacramento 2015). Therefore, there would be **no cumulative impact** on stormwater drainage system capacity.

Water Supply and Groundwater Recharge

The project is within the South American Groundwater Subbasin, within the larger Sacramento Valley Groundwater Basin. Intensive use of groundwater in the basin has resulted in a general lowering of groundwater elevations near the center of the basin away from the sources of recharge and a cumulative impact exists. The California Hospital Tower Project is not using groundwater and would result in a net decrease in water usage due to building and design efficiency. The project would not increase groundwater demands or substantially change or interfere with groundwater recharge. Therefore, the California Hospital Tower Project would **not contribute to a cumulative impact** related to any changes in aquifer volume or groundwater table.

4.3.10 Land Use and Planning

The cumulative context for land use impacts includes existing and planned land uses surrounding the Sacramento Campus. UC Davis is the only agency with land use jurisdiction over Sacramento Campus projects; therefore, campus development that is consistent with the proposed 2020 Long Range Development Plan (LRDP) Update would have no land use impacts on campus. Likewise, the Sacramento Campus would evaluate projects for consistency with the 2020 LRDP Update and consider consistency with nearby land uses. The California Hospital Tower Project includes various components including the California Tower itself, which is located in the Hospital land use designation; Parking Structure 5 (PS5), which is located in the Parking Structure land use designation; and the Central Utility Plant (CUP), which is located in the Support land use designation. These uses are appropriate for the land use designations. The project also includes an amendment to the 2020 LRDP Update to increase the height restriction in the Hospital Land Use district, which would not contribute to any land use impact. There is **no cumulative impact** related to land use and planning.

4.3.11 Noise

The geographic scope of analysis for cumulative noise and vibration construction impacts, as well as stationary noise sources, encompasses cumulative projects within approximately 1,000 feet of the project site. Beyond 1,000 feet, the contributions of noise from other projects would be greatly attenuated through both distance and intervening structures, and their contribution would be expected to be minimal. The analysis considers vehicular traffic noise from cumulative growth as well as cumulative construction noise and vibration from other potential projects in the project area.

Short-Term Construction Noise

Construction noise is a localized impact that reduces as distance from the noise source increases. Therefore, projects would need to be in relatively close proximity to one another for noise levels to combine and to expose the same receptors to greater noise than they would be exposed to from one project alone. In addition, intervening features (e.g., buildings) between construction areas and nearby noise-sensitive land uses result in additional noise attenuation by providing barriers that break the line of sight between noise-generating equipment and sensitive receptors, further reducing the likelihood for noise from multiple construction projects to expose an individual receptor to greater noise levels.

The project-specific analysis determined that construction of the proposed project could result in significant construction noise impacts during both daytime and non-daytime hours. Implementation of Mitigation Measure NOI-1a and Mitigation Measure NOI-1b would reduce construction noise at nearby noise-sensitive land uses and would therefore reduce the severity of construction noise impacts. However, it is not possible to ensure that noise from construction would be reduced to less than significant levels for all project construction phases and in all locations.

For these reasons, it is possible that construction noise from development of the project could combine with construction noise from nearby cumulative projects (e.g., nearby on campus construction projects) to expose individual receptors to greater noise levels than would occur from the project alone. Cumulative construction noise impacts are considered **significant and unavoidable**. Since it may not be possible to reduce construction noise impacts from the project to less than significant levels, **the project contribution to this cumulative impact would be cumulatively considerable**.

Short-Term Construction Vibration

With regard to potential building damage, the potential for vibration-related damage to occur is assessed based on PPV. Because PPV is a measure of the instantaneous vibration level (rather than an average such as the vibration velocity level), worst-case ground-borne vibration levels from construction are generally determined by whichever individual piece of equipment generates the highest vibration levels at the affected building(s). Vibration from multiple construction sites, even if they are located close to one another, would not be expected to combine to raise the maximum PPV. For this reason, there would be no combined impact from multiple construction projects beyond the levels that would be assessed as direct impacts from each site. In addition, implementation of Mitigation Measure NOI-3 would ensure that vibration from project-related construction equipment would not result in vibration-related damage to adjacent on-campus structures, and there would be no vibration-related damage to off-site structures. Cumulative vibration-related damage impacts would be **less than significant**.

With regard to potential annoyance-related vibration effects from implementation of the project, nighttime construction activity would not occur within close enough distances to off-site uses to result in excessive vibration levels (e.g., in excess of applicable annoyance thresholds) at nearby residences. However, the project vibration analysis determined that construction activity may result in significant vibration-related annoyance effects to on-campus Category 1 and Category 2 uses. With implementation of Mitigation Measure NOI-3a, annoyance-related vibration impacts to on-site uses would be reduced to less than significant levels. In addition, vibration-related annoyance effects are also highly localized (e.g., limited to within a few hundred feet). Cumulative projects (e.g., other projects on the campus) are not expected to be located close enough to construction for projects to result in cumulative vibration effects at nearby on- or off-campus sensitive uses. Cumulative vibration-related annoyance impacts would be **less than significant**.

Long-Term Operation

Vehicular Traffic Noise

To determine the potential cumulative noise impacts in the campus area, vehicular traffic volumes from the Baseline 2019 scenario were compared to the Year 2040 Cumulative (with project) scenario. For vehicular traffic noise impacts, in places where the existing and resulting (under Year 2040 Cumulative conditions) noise levels do not exceed the “Normally Acceptable” land use compatibility standard, an increase of more than 5 dB from Baseline to Year 2040 Cumulative conditions is considered a significant cumulative traffic noise increase. In places where the existing or resulting noise levels do exceed the “Normally Acceptable” level based on the land use compatibility chart, a 3 dB or larger increase is considered a significant cumulative traffic noise increase.

As shown in Table 4-3, cumulative increases from Baseline 2019 to Year 2040 Cumulative conditions would be less than 3 dB for all analyzed segments except for 50th Street north of Broadway. No residential land uses are located along this segment; the most sensitive uses along this segment would be office or hospital uses, which are considered compatible with noise levels of up to 70 dBA. Because existing and future noise levels along this segment would be below 70 dBA, an up to 5 dB increase from existing to cumulative with project conditions could occur before a cumulative noise impact would be significant. Therefore, because a greater than 5 dB increase from existing to cumulative with project conditions would not occur along any analyzed segment, there would be no cumulative traffic noise impacts. Since there are no cumulative traffic noise impacts, the project contribution to a cumulative traffic noise impact need not be assessed. Nevertheless, traffic noise modeling for Year 2040 with- and without-project conditions demonstrated that the project would result in relatively minor noise increases (no more than 0.1 dB) along all analyzed segments. Cumulative traffic noise impacts would be **less than significant**.

Table 4-3. California Hospital Tower Project–Related Traffic Noise Increases

Segment		Baseline (2019) Noise	Year 2040 Without Project (dB L_{dn})	Year 2040 With Project (dB L_{dn})	Delta Baseline and 2040 LRDP	Cumulative Impact? [a]	Project-Related Increase[a]	Cumulatively Considerable Increase?
Stockton Boulevard	T Street to 39th Street/Miller Way	69.3	70.7	70.8	1.5	No	0.1	NA
Stockton Boulevard	39th Street/Miller Way to X Street	69.6	71.1	71.2	1.6	No	0.1	NA
Stockton Boulevard	X Street to 2nd Avenue	68.4	69.4	69.5	1.1	No	0.1	NA
Stockton Boulevard	2nd Avenue to 3rd Avenue	68.9	69.8	69.8	0.9	No	0.0	NA
Stockton Boulevard	3rd Avenue to Broadway	68.9	70.0	70.0	1.1	No	0.0	NA
Stockton Boulevard	South of Broadway	69.7	70.3	70.4	0.7	No	0.1	NA
Broadway	West of Stockton Boulevard	68.6	69.9	69.9	1.4	No	0.0	NA
Broadway	Stockton Boulevard to 49th Street	67.1	68.3	68.3	1.2	No	0.0	NA
Broadway	49th Street to 50th Street	65.9	66.4	66.4	0.5	No	0.0	NA
Broadway	50th Street to 59th Street	66.8	68.5	68.5	1.8	No	0.0	NA
Broadway	East of 59th Street	66.4	68.1	68.1	1.7	No	0.0	NA
V Street	West of 49th Street	58.3	59.6	59.6	1.3	No	0.0	NA
V Street	East of 49th Street	59.7	61.5	61.5	1.9	No	0.0	NA
50th Street	North of Broadway	62.3	65.6	65.7	3.3	No[b]	0.1	NA
2nd Avenue	West of Stockton Boulevard	61.3	62.7	62.7	1.4	No	0.0	NA
2nd Avenue	East of Stockton Boulevard	63.0	66.3	66.3	3.3	No	0.0	NA

dB L_{dn} = day night average level.

[a] As no cumulative impacts were identified, the project contribution to a cumulative traffic noise impact need not be assessed. However, traffic noise modeling results for Year 2040 with- and without-project conditions are included for informational purposes. The results demonstrate that the project would result in relatively minor noise increases (no more than 0.5 dB) in noise along all analyzed segments.

[b] Although this segment has a greater than 3 dB increase identified, no residential receptors are located along this roadway segment. In addition, the land use compatibility criterion for hospitals and office buildings, the uses along this segment, is 70 dBA. Therefore, an up to 5 dB increase could occur before a cumulative impact would be significant.

Siting of Noise-Generating Uses

Operational noise sources resulting from the implementation of the project would primarily include mechanical equipment at the CUP, emergency generator testing at the CUP, activity at the rooftop garden and emergency helicopter operations. Direct impacts from the addition of two new chillers and heat pump to the CUP were determined to be less than significant. Due to the location of this equipment on the campus and internal to the plant structure, this noise source would not be expected to combine with operational noise sources from other nearby projects to result in a cumulative noise impact. Similarly, noise from activity at the proposed rooftop garden, noise from increases in ambulance activity, noise from the partial rerouting of operational trucks, and noise from the proposed parking structure were all analyzed, and it was determined that these sources would result in less than significant noise increases. These noise sources would not be expected to combine with noise from nearby projects to result in cumulative noise impacts.

With regard to emergency generator testing noise, testing noise resulting from each project generator would be temporary and intermittent, occurring for a period of 30 minutes at a time approximately one time per month. However, project-related noise impacts from generator testing may exceed the quantitative criteria from the Sacramento City Code. Implementation of Mitigation Measure LRDP NOI-2a, which would require that emergency generators installed as a result of implementation of the project are oriented, located, and designed in such a way to reduces noise exposure during testing to below the applicable City of Sacramento criteria, would reduce project-related impacts from generator testing to less than significant levels. Although direct project impacts were conservatively considered to be significant before mitigation, it is unlikely that other nearby projects would involve emergency generator testing that would occur concurrently and in close proximity to emergency generator testing for generators installed under the project. Because testing of emergency generators would not be expected to occur concurrently and in close proximity to other generators associated with cumulative projects, cumulative impacts related to emergency generator testing would be considered less than significant. Therefore, cumulative impacts related to project operations would be ***less than significant***.

Helicopter Noise

Emergency helicopter operations would be expected to increase with the project as a result of the increases in hospital capacity, and the associated increase in the population served by the hospital expected by year 2030. In addition to the increase in operations with the project, the distribution of flight tracks would change with construction of the California Tower (which would block some existing flight tracks) and with the development of two new helipads. Under future conditions, approximately 15 percent of helicopters would be expected to land at the existing Davis Tower; 85 percent of helicopters would be expected to land at the California Tower.

Overall, the CNEL noise contours under future conditions would actually be further from the nearest residential land uses (e.g., residences north of V Street) than they would be under existing conditions even with the modest (9.2 percent) increase in helicopter activity. This is because the number of helicopters at each of the two towers would be less than the total that occurs at the Davis helicopter tower under existing conditions and because the distance between residences and the new California Tower helipads would be greater than the distance between residences and the existing Davis Tower helipads (because the new helipads would be located farther south). Therefore, residences that are not included within the existing 65 CNEL contours would not be included in the future with-project 65 CNEL helicopter noise contours, and impacts related to CNEL noise exposure were determined to be less than significant.

With regard to the 95 SEL contours, which are used to estimate sleep disturbance effects, the changes in flight tracks would result in residences that are not currently located within the 95 SEL sleep disturbance contours to be located within these contours under future conditions. Impacts related to the 95 SEL noise contours were determined to be significant in the direct project analysis. Implementation of Mitigation Measure NOI-4a requires the development of Helicopter Operations Plan, which would help reduce noise impacts related to sleep disturbance. Implementation of Mitigation Measure NOI-4b includes the development of a residential noise control program for helicopter noise, which would help improve the noise attenuation provided by individual residential structures to residents within. However, these mitigation measures may not, in all instances and for all residential receptors, reduce noise impacts to less than significant levels.

Although direct project impacts related to helicopter noise are considered significant, other nearby projects would not result in additional increases to helicopter activity beyond that which was analyzed in the direct project analysis. This is because the changes to helicopter activity associated with the project were estimated based on the growth in the population served by the overall campus. Because additional helicopter noise increases would not be expected to occur as a result of cumulative projects, cumulative impacts related to emergency helicopter activity would be considered ***less than significant***.

4.3.12 Population and Housing

The Sacramento Area Council of Governments (SACOG) predicts that the six-county regional population will be approximately 3 million people by 2040, which is an increase of approximately 620,000 people from 2016 to 2040. Because population in the region continues to expand, there is a cumulative impact related to population growth. In addition, there is a cumulative impact related to gentrification and displacement in the project vicinity due to high housing costs and low affordable housing stock.

The California Hospital Tower Project would increase the onsite daily population of the Sacramento Campus and would accommodate 250 more patients and 250 new part-time and full-time employees. The average daily patient-related population increase of 250 persons would occur as an element of the region's population growth regardless of the project. It is likely that many of these new employees already live in the Sacramento metropolitan region, but some could relocate as a result of new opportunities at the California Hospital Tower Project. This population growth is included in the overall planning horizon envisioned in the 2020 LRDP Update, as well as SACOG's *Metropolitan Transportation Plan/Sustainable Communities Strategy* (MTP/SCS). These new employees constitute a small portion of the population growth that is expected in the Sacramento metropolitan region.

Because population growth associated with the California Hospital Tower Project would represent a small fraction of both the region's projected growth and population growth in individual communities, and because this growth is included in the 2020 LRDP Update and SACOG's MTP/SCS, the project's contribution to cumulative population growth impact would **not be cumulatively considerable**.

4.3.13 Public Services

Demand for all public services in the Sacramento region could increase as a result of expected cumulative growth and therefore a cumulative impact exists. The California Hospital Tower Project would add 250 new part-time and full-time employees. These employees are included in the planned population growth of the UC Davis Sacramento Campus and the overall growth expected for the Sacramento metropolitan region. It is assumed that many of these new employees already live in the Sacramento metropolitan region and are already served by public services such as police and fire protection and schools, but some could relocate as a result of new opportunities at the California Hospital Tower Project. These new employees could relocate anywhere within the Sacramento metropolitan region and would not be concentrated in any one area. Therefore, it is unlikely that the minimal number of new employees would contribute to a cumulative impact on public services. Therefore, there would be **no cumulative impact**.

4.3.14 Recreation

Population growth related to the proposed project and other projects would result in demands on recreation facilities in the area. New developments within the city are required to pay fees to mitigate increased park demands in accordance with the Quimby Act (California Government Code Section 66477), which offsets the cost of maintenance and construction of recreational facilities in response to population increases. The California Hospital Tower Project would result in a slight increase in the daily onsite population of the Sacramento Campus, but this would be a small increase compared to projected regional population growth. The increase in population associated with the California Hospital Tower Project would not result in a substantial increase in demand for recreational facilities and would not exceed planned recreational facility capacity. Therefore, there would be **no cumulative impact**.

4.3.15 Transportation and Circulation

As described in Impacts TRA-1 through TRA-5, most project-specific transportation impacts associated with the project would be less than significant, except transit impacts.

The findings related to transportation hazards (Impact TRA-3) and emergency vehicle access (Impact TRA-4) focus on the physical design of the on-campus roadway and transportation network connections to the project during construction and operations of the project, including PS5. Since these physical design characteristics would not be affected by changes in the cumulative scenario, there would no significant cumulative impact. Similarly, the impact statement and associated mitigation for construction impacts (Impact TRA-5) address the cumulative effect of multiple construction activities; therefore, the findings in Impact TRA-5 would also apply to the cumulative impact. Therefore, cumulative impacts related to hazards, emergency access, and construction would be **less than significant**.

It is anticipated that reasonably foreseeable future land use and transportation changes would result in background growth in bicycle, pedestrian, vehicle, and transit travel in the region, in accordance with the SACOG 2020 MTP/SCS (Sacramento Area Council of Governments 2019). With regard to bicycle and pedestrian travel, the project’s effect on existing and planned facilities would not change with cumulative changes; therefore, the findings from the project-specific impact analysis (Impact TRA-1) would still apply. Impact TRA-1 addresses near-term projects along Stockton Boulevard that would address existing off-campus gaps in the bicycle network. Although the timing for these improvements is not clearly established, Mitigation Measures TRA-1a and TRA-1b would reduce impacts related to access points and potential bicycle and pedestrian conflicts. The project's contribution to cumulative impacts on bicycle and pedestrian facilities would be **less than cumulatively considerable**.

Background vehicle travel conditions will likely change when reasonably foreseeable future land use and transportation changes are considered. Therefore, the remainder of this cumulative transportation impact analysis focuses on cumulative vehicle miles traveled (VMT) impacts and cumulative transit impacts.

Cumulative Vehicle Miles Traveled Impact

As described in Impact TRA-2, the California Hospital Tower Project would have a less-than-significant impact on VMT based on the recommended screening analysis methodology presented in the State CEQA Guidelines and the Technical Advisory. The California Hospital Tower Project proposes development that is similar to existing characteristics of the study area (i.e., density, mix of uses, and transit accessibility). The California Hospital Tower Project primarily consists of medical and employment uses that would complement existing uses on the Sacramento Campus. The project site is within an area of the Sacramento region where the existing VMT per employee is more than 15 percent below the regional VMT thresholds and would meet the screening criteria for a low-VMT area. Moreover, the project site meets the proximity to major transit stop screening criteria, which also indicates that the proposed project would not cause substantial additional VMT. Therefore, there would be a **less-than-significant cumulative impact** on VMT.

Cumulative Transit Impact

The project would increase automobile, transit, bicycle, and pedestrian trips to and from the Sacramento Campus, which could result in the competition for physical space between the modes, as noted in Impact TRA-1. Increases to transit travel times caused by the project as well as reasonably foreseeable land use growth would adversely affect the on-time performance and service quality of transit services under cumulative conditions. Therefore, this impact would be a **significant cumulative impact to which the project would make a cumulatively considerable contribution**.

There are no immediate planned changes to transit service in the study area. Therefore, it is speculative to assume that transit service and/or facilities would be expanded to accommodate additional transit demand. Furthermore, background traffic growth under cumulative conditions would likely result in increased vehicle delay along transit corridors, potentially further exacerbating service reliability issues for SacRT bus services operating on roadways surrounding the Sacramento Campus.

An exceedance of established transit service standards would cause transit services to operate below acceptable service level, quality, and/or performance targets, which would be deleterious to the transit customer experience (i.e., unreliability, chronic overcrowding issues) and potentially deter existing and prospective riders from using transit.

Implementation of Mitigation Measures TRA-1d, TRA-1e, TRA-1f, and TRA-1g would reduce the significance of this impact. However, the service improvements that are necessary to improve transit performance identified in Mitigation Measure TRA-1g would require implementation by SacRT, the City of Sacramento, and the California Department of Transportation. Because UC Davis cannot guarantee that these service improvements would be implemented, this cumulative impact would remain **significant and unavoidable** and the project's contribution to it would be **cumulatively considerable**.

4.3.16 Utilities and Service Systems

The cumulative context for water treatment/distribution, wastewater collection/treatment, and chilled water and steam infrastructure impacts is the Sacramento Campus. The UC owns and operates two onsite wells, which supply irrigation water to the Sacramento Campus grounds and can be used for emergency purposes. The cumulative context for water supply is the City of Sacramento service area for surface water. The cumulative context for solid waste is Sacramento County. The Sacramento Campus CUP provides electricity and natural gas to the campus and is the cumulative context for these resources.

As discussed in Section 3.16, *Utilities and Service Systems*, water is provided by the City of Sacramento. The City's *2015 Urban Water Management Plan* (UWMP) projected increases in overall water demand through 2040 due to increases in population but decreases in per capita water use as the result of the City's continued and expanded water conservation efforts (City of Sacramento 2016). Growth projections used in the City's UWMP were based on the City's land use designations and land use acreages. While expansion of the Sacramento Campus as proposed in the 2020 LRDP Update was not specifically identified in the 2015 UWMP, the City found that, with the continued and expanded water conservation efforts described in the UWMP, the City has sufficient water supplies to meet projected water demands during a normal water year with the use of both surface and groundwater entitlements (City of Sacramento 2016).

Design and operation of the California Hospital Tower Project would implement sustainability strategies consistent with the UC Policy on Sustainable Practices (University of California 2020) and the *2009–2010 Climate Action Plan* (CAP) (University of California, Davis 2010). The CAP lists strategies to minimize campus water consumption, including water-efficient landscaping, fixture retrofits, efficient fixtures in new buildings, education, and energy conservation initiatives that would minimize water use.

The project would increase the volume of wastewater conveyed to the City of Sacramento combined sewer and storm water facilities, but there are planned upgrades to these facilities, and they have sufficient capacity to serve the increased demand that is planned for the Sacramento Campus under the 2020 LRDP Update, including the California Hospital Tower Project. The wastewater would be treated at the Sacramento Regional Wastewater Treatment Plant (SRWTP). The SRWTP 2020 Master Plan evaluates wastewater treatment needs based on planned growth, and includes plans for expansions to accommodate that growth. Therefore, the project would **not contribute to cumulative impacts** related to water supply and wastewater.

The California Hospital Tower Project would require additional utilities including natural gas from PG&E. The project would minimize energy demand to the extent feasible through exceedance of Title 24 CCR standards for energy efficiency in effect at time of construction. Design features and practices specified in the UC Davis Physical Design Framework and the UC Sustainable Practices Policy would further improve the project's energy efficiency and reduce energy demand through design features such as efficient lighting and energy efficient plumbing fixtures. Regarding electricity, the entire Sacramento Campus will start purchasing clean electricity from SMUD by the year 2025. Therefore, the project’s contribution to cumulative utility impacts would **not be cumulatively considerable**.

The quantity of municipal solid waste generated at the California Tower would increase compared to existing conditions. However, the UC has adopted the UC Policy on Sustainable Practices, which applies to the California Hospital Tower Project and sets waste diversion goals of 75 percent by June 2012 and zero waste by 2020 for UC campuses. The UC Policy on Sustainable Practices also encourages recycling of construction waste. Together, these policies would minimize the amount of solid waste that would go to the Forward Landfill in Manteca, which has forecast adequate capacity until 2036. After 2036, alternative landfills would be required. The City of Sacramento has committed to achieving zero waste to landfills by 2040 (City of Sacramento 2035 General Plan, Policy U.5.1.1). The Sacramento Campus is also committed to reducing solid waste. With the reduced contributions from this project and cumulative projects, and the planned use of Foothill Landfill after 2036, there would be **no cumulative impact**.

Chapter 5
Other CEQA Considerations

Section 15126 of the State CEQA Guidelines requires consideration of all project aspects when evaluating a project's impact on the environment, including planning, acquisition, development, and operation. As part of analysis, this EIR must also identify the following.

- Significant environmental impacts that cannot be avoided if the project is implemented.
- Significant irreversible changes that would result from implementation of the project.
- Growth-inducing impacts of the project.

Although growth inducement itself is not considered an environmental effect, it could potentially lead to foreseeable physical environmental effects, which are discussed in Section 5.3, *Growth-Inducing Impacts*.

5.1 Significant Unavoidable Impacts

Section 15126.2(c) of the State CEQA Guidelines requires that an EIR include a detailed statement setting forth, in a separate section, any significant effect on the environment that cannot be avoided if the project is implemented. Accordingly, this section summarizes the project's significant environmental impacts that cannot be mitigated to a less-than-significant level.

Chapter 3, *Existing Environmental Setting, Impacts, and Mitigation*, describes the potential environmental impacts of the California Hospital Tower Project and identifies mitigation measures to reduce impacts to the extent feasible. Chapter 4, *Cumulative Impacts*, determines whether the incremental effects of the project are significant when viewed in connection with the effects of past projects, other current projects, and reasonably foreseeable future projects. With implementation of the recommended mitigation measures, most of the impacts associated with the California Tower Hospital Project are reduced to a less-than-significant level.

The following impacts are considered significant and unavoidable as feasible mitigation is either unavailable or insufficient to reduce the impact to a less-than-significant level. The impacts listed below are analyzed and discussed in Chapter 3, *Existing Environmental Setting, Impacts, and Mitigation.*

Implementation of the California Hospital Tower Project would result in the following significant and unavoidable environmental impacts following implementation of all feasible mitigation measures.

- Impact AES-2: Introduction of a new source of substantial light or glare that would adversely affect daytime or nighttime views in the area
- Impact AQ-3: Exposure of sensitive receptors to substantial pollutant concentrations
- Impact NOI-1: Generation of increased ambient noise levels in the project vicinity in excess of applicable standards during project construction

- Impact NOI-4: Placement of project-related activities in the vicinity of a private airstrip or an airport land use plan or within 2 miles of a public airport or public use airport, resulting in exposure of people residing or working in the project area to excessive noise levels
- Impact TRA-1: Conflict with a program, plan, ordinance, or policy addressing the circulation system including transit, roadway, bicycle, and pedestrian facilities

5.2 Significant Irreversible Environmental Changes

Section 15126.2(d) of the State CEQA Guidelines requires discussion of any significant irreversible environmental changes that would occur due to the project. Section 15126.2(d) states the following.

> Uses of nonrenewable resources during the initial and continued phases of the project may be irreversible because a large commitment of such resources makes removal or nonuse thereafter unlikely. Primary impacts and, particularly, secondary impacts (such as highway improvement which provides access to a previously inaccessible area) generally commit future generations to similar uses. Also, irreversible damage can result from environmental accidents associated with the project. Irretrievable commitments of resources should be evaluated to assure that such current consumption is justified.

Generally, a project would result in significant irreversible environmental changes if any of the following were to occur.

- The primary and secondary impacts would generally commit future generations to similar uses.
- The project would involve uses in which irreversible damage could result from any potential environmental accidents associated with the project.
- The project would involve a large commitment of nonrenewable resources.
- The proposed consumption of resources is not justified (e.g., the project involves the wasteful use of energy).

Implementation of the project would result in the continued commitment of the project site to hospital, ambulatory care, and parking structure land uses that would irreversibly remove the project site from other potential uses on the Sacramento Campus. However, hospital and parking lot uses already exist at the project site and have been planned for in the 2010 Long Range Development Plan (LRDP) and 2020 LRDP Update. UC Davis's ownership and existing use of the larger Sacramento Campus as a whole represents a long-term commitment to these institutional uses. Restoring the project site to pre-developed conditions is not feasible given the high level of existing capital investment on campus, urbanization of the area surrounding the campus, and disturbance to the natural setting.

Resources that would be permanently and continually consumed via project implementation include water, electricity, natural gas, and fossil fuels. The quantity and rate of consumption of these resources would be reduced through continued and expanded implementation of the UC's Sustainable Practices Policy (University of California 2020) and the energy efficiency and conservation programs identified in this EIR. Accordingly, implementation of the project would not result in significant environmental impacts related to the unnecessary, inefficient, or wasteful use of resources.

Notwithstanding the project benefits discussed in this EIR, the project's construction and operational activities would result in the irretrievable commitment of nonrenewable energy resources, primarily in the form of fossil fuels such as diesel fuel, fuel oil, natural gas, and gasoline for automobiles and construction equipment. However, during operation, the project would comply with or exceed the requirements of applicable building codes (including Title 24 of the California Code of Regulations). It would also do the following.

- Implement energy efficiency, conservation, and sustainability policies.
- Implement project-specific mitigation measures.
- Ensure natural resources are conserved or recycled to the maximum extent feasible.

Additionally, it is possible that new technologies or systems would emerge or become more cost-effective and would be incorporated into the project's components. This would further reduce the project's reliance on nonrenewable natural resources.

In summary, despite these efforts, consumption of natural resources would incrementally increase with implementation of the project as the building square footage and daily employee and patient numbers would increase.

5.3 Growth-Inducing Impacts

Section 15126.2(e) of the State CEQA Guidelines states that an EIR shall discuss the ways that the project could foster economic or population growth or foster construction of additional housing, either directly or indirectly, in the surrounding environment. Analysis must include projects that would remove obstacles to population growth (e.g., expanding a wastewater treatment plant). Increases in population may put pressure on existing public facilities that would require expanded or new public facilities that could cause significant environmental effects. According to the State CEQA Guidelines, an EIR should also discuss the characteristics of a project that might encourage or facilitate other activities that could significantly affect the environment either individually or cumulatively. The State CEQA Guidelines also state growth in any area should not be assumed beneficial, detrimental, or of little significance to the environment.

Generally, direct growth inducement would result if a project involved constructing new housing. Indirect growth inducement would result if implementing a project resulted in any of the following.

- Substantial new permanent employment opportunities (e.g., commercial, industrial, or governmental enterprises).
- Substantial short-term employment opportunities (e.g., construction employment) that indirectly stimulates the need for additional housing and services to support the new temporary employment demand.
- Removing an obstacle to additional growth and development, such as removing a constraint on a required public utility or service (e.g., constructing a trunk sewer line with excess capacity through an undeveloped area).

The State CEQA Guidelines do not distinguish between planned and unplanned growth for purposes of considering whether a project would foster additional growth. Therefore, for purposes of this EIR, to reach the conclusion that a project is growth-inducing as defined by CEQA, the EIR must find that the project would foster (i.e., promote or encourage) growth in economic activity, population, or housing, regardless of whether the growth is already approved by and consistent with local plans, in this case the 2020 LRDP Update. The conclusion does not determine that induced growth is beneficial or detrimental, consistent with CEQA.

Environmental effects resulting from induced growth are defined in State CEQA Guidelines Section 15358(a)(2), in its definition of indirect effects. These indirect or secondary effects of growth may result in significant environmental impacts. The State CEQA Guidelines do not require that an EIR speculate about the precise location and site-specific characteristics of significant, indirect effects caused by induced growth, but the State CEQA Guidelines do require a good-faith effort to disclose what is feasible to assess. Potential secondary effects of growth could include consequences such as increased demand on community and public services and infrastructure, increased traffic and noise, degradation of air and water quality, or degradation or loss of plant and wildlife habitat that are the result of growth fostered by the project.

The following discussion analyzes potential growth-inducing impacts that might occur during implementation of the project in the following areas.

- Population growth
- Indirect effects resulting in the construction of new housing
- Economic growth
- Removal of obstacles to growth by expanding public facilities or infrastructure capacity

Implementation of the project would result in an increase in the on-campus number of employees (+250) and patients (+250) over existing conditions. This growth was included in the overall planning scenario of the 2020 LRDP Update, and thus is considered planned growth. The environmental impacts of the project's incremental growth are analyzed and addressed, both individually and cumulatively, in the relevant sections of this EIR.

The project's potential indirect increase in population growth would be partially offset by new on-campus student, faculty, and staff housing associated with other Sacramento Campus projects, although there is some potential for the project could induce a non-substantial amount of off-campus growth. In relationship to growth occurring in the region, this impact is minimal, and well within regional growth plans. Impacts from induced off-campus growth have been addressed in the *Sacramento 2035 General Plan* (City of Sacramento 2015), the Sacramento County *General Plan 2030* (County of Sacramento 2011), and will be addressed in the City of Sacramento's *2040 General Plan Update* (in progress). Chapter 4, *Cumulative Impacts*, of this EIR describes the cumulative impacts that are expected and foreseeable at this time. Therefore, while the project could result in growth-inducing impacts off-campus beyond those inherent to the project itself as analyzed here, those impacts are not substantial and adequately addressed throughout this EIR, including in Sections 3.12, *Population and Housing,* 3.13, *Public Services*, and 3.14, *Recreation*.

The project would be implemented within the existing Sacramento Campus boundaries, which contain established uses, land uses, and supporting infrastructure. Development proposed by the project would require modifying or replacing existing infrastructure on the project site. In addition, the project would include roadway improvements primarily in the northern portion of the Sacramento Campus. Project components proposed would occur in an urban setting that is already supplied with the necessary roadway and utility systems. No new systems or increased capacity, with the exception of the Central Utility Plant upgrades for natural gas, diesel, and electrical power, are proposed or required. Therefore, the project would not remove obstacles to growth in population through expanding public facilities or infrastructure capacity; the project does not anticipate growth beyond what was already anticipated to occur and does not anticipate growth beyond what is addressed in this EIR.

Chapter 6
Alternatives

6.1 Introduction

EIRs must consider alternatives to the proposed project that could substantially reduce or avoid significant environmental impacts. Section 15126.6(b) of the State CEQA Guidelines states the following.

> Because an EIR must identify ways to mitigate or avoid the significant effects that a project may have on the environment (Pub. Resources Code Section 21002.1), the discussion of alternatives shall focus on alternatives to the project or its location which are capable of avoiding or substantially lessening any significant effects of the project, even if these alternatives would impede to some degree the attainment of the project objectives, or would be more costly.

Section 15126.6(a) of the State CEQA Guidelines requires EIRs to describe the following.

> ... a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project and evaluate the comparative merits of the alternatives. An EIR need not consider every conceivable alternative to a project. Rather it must consider a reasonable range of potentially feasible alternatives that will foster informed decision-making and public participation. An EIR is not required to consider alternatives that are infeasible. The lead agency is responsible for selecting a range of project alternatives for examination and must publicly disclose its reasoning for selecting those alternatives. There is no ironclad rule governing the nature or scope of the alternatives to be discussed other than the rule of reason.

Also see State CEQA Guidelines Section 15126.6[f].

The State CEQA Guidelines require that an EIR include sufficient information about each alternative to allow meaningful evaluation, analysis, and comparison with the project. If an alternative would cause one or more significant effects in addition to those that would be caused by the project, the significant effects of the alternative must be discussed but in less detail than the significant effects of the project as proposed (CEQA Guidelines Section 15126.6[d]). The State CEQA Guidelines further require consideration of a "no project" alternative (per State CEQA Guidelines Section 15126.6[e]).

In defining "feasibility" (e.g., "... feasibly attain most of the basic objectives of the project ..."), State CEQA Guidelines Section 15126.6(f) (1) states, in part, the following.

> Among the factors that may be taken into account when addressing the feasibility of alternatives are site suitability, economic viability, availability of infrastructure, general plan consistency, other plans or regulatory limitations, jurisdictional boundaries (projects with a regionally significant impact should consider the regional context), and whether the proponent can reasonably acquire, control or otherwise have access to the alternative site (or the site is already owned by the proponent). No one of these factors establishes a fixed limit on the scope of reasonable alternatives.

6.2 Project Overview

The California Hospital Tower Project would provide a state-of-the-art hospital facility with additional patient beds and an interventional platform that supports new surgical techniques and technologies. It would include acuity adaptable (intensive care unit [ICU] adaptable) single-occupant inpatient rooms, procedure rooms, an interventional operating platform, support space (sterilization, pharmacy, diagnostic), public waiting space, and support spaces such as building maintenance, food service, and building facilities support. The California Tower would replace existing double-occupancy patient rooms and licensed and intensive care unit beds (currently located in the seismically deficient East Main Hospital Wing) with single-occupancy rooms and beds for patients with the highest severity of need, including patients suffering from trauma, stroke, and burn.

The facility would be designed to maximize operational efficiency and flexibility to accommodate future health care technologies. The size of the California Tower would allow UC Davis Health to provide acuity adaptable rooms, which provide flexibility for every room to be ICU-capable. Patients would be admitted based on their acuity level, and the rooms would be capable of being licensed as ICU or surgical depending on the needs of the patient population.

The project entails several other components including make-ready projects to prepare for construction, upgrades to the campus Central Utility Plant (CUP), construction of Parking Structure 5 (PS5), and renovation of the Surgery and Emergency Services Pavilion, which would connect the California Tower to the rest of the main hospital.

6.2.1 Project Objectives

When determining what alternatives should be considered in an EIR, project objectives must be considered; attainment of most of a project's basic objectives forms one of the tests of whether an alternative is feasible (see discussion above). UC Davis identified the following project objectives as previously described in Chapter 2, *Project Description*.

UC Davis has identified the following objectives for the proposed California Hospital Tower Project.

- Provide a patient-centered hospital of the future to keep pace with community healthcare needs and to support UC Davis Health's teaching, research, and community engagement missions in the most efficient manner, with the least amount of disruption to clinical care operations.
- Construct the new California Tower with maximum operational efficiency to optimize healthcare outcomes and create a space for increased patient and staff satisfaction.
- Provide single-occupancy patient rooms with acuity-adaptable beds.
- Address seismic and other code-related deficiencies in aging buildings and replace the hospital's East Wing with a new, state-of-the-art, seismically compliant facility that meets current codes and sustainability standards.
- Demolish outdated spaces to achieve seismic safety and to remove buildings that cannot be operated efficiently or renovated.
- Ensure the California Tower stands the test of time by providing adaptability and flexibility within building systems.
- Implement sustainable site design and building design practices to support ongoing implementation of UC's Sustainable Practices Policy.
- Provide adequate healthcare helicopter landing areas and reduce helicopter idling time by providing increased helipad capacity.

- Ensure appropriate facility adjacencies, provide convenient access, and improve pedestrian connections.
- Increase parking capacity near the hospital to meet future parking demand, thereby better serving patients, and to provide construction worker parking during project construction.
- Consolidate surface parking into structured parking near the Hospital and Ambulatory Care districts to ensure easy access by patients, visitors, staff, residents, and partners, while minimizing potential conflicts among pedestrians, cyclists, and motorists.

6.3 Significant and Unavoidable Impacts

According to State CEQA Guidelines Section 15126.6, an EIR must describe a range of reasonable alternatives to the project, or the location of the project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project, and evaluate the comparative merits of the alternatives.

The proposed project would result in significant and unavoidable environmental impacts related to aesthetics, air quality, noise, and traffic. The following impacts have been identified as significant and unavoidable following implementation of all feasible mitigation measures.

- Impact AES-2: Introduction of a new source of substantial light or glare that would adversely affect daytime or nighttime views in the area.
- Impact AQ-3: Exposure of sensitive receptors to substantial pollutant concentrations.
- Impact NOI-1: Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project from construction activities in excess of applicable standards during project construction.
- Impact NOI-4: Placement of project-related activities in the vicinity of a private airstrip or an airport land use plan or within 2 miles of a public airport or public use airport, resulting in exposure of people residing or working in the project area to excessive noise levels.
- Impact TRA-1: Conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities.

6.4 Alternatives Considered but Dismissed

In addition to factors described previously, the State CEQA Guidelines state that an EIR should also identify any alternatives that were considered by the lead agency but were rejected during the planning or scoping process and briefly explain the reasons underlying the lead agency's determination. UC Davis developed a range of alternatives and screened alternatives using a set of criteria incorporating feasibility criteria and consistency with the objectives of the project. The range of alternatives screened and the screening results are shown in Appendix I.

This section addresses alternatives considered but dismissed through the screening process.

6.4.1 Alternative B: No Net Increase in Beds

Under Alternative B, the number of beds would remain at 625. This would be accomplished through interior renovations of existing buildings, including the Davis and University Towers, to fit more beds in less space and maximize the use of the existing buildings. The East Wing would still be demolished as it does not meet seismic safety standards, and a new, smaller tower would be built in the location of the current East Wing, with the emergency department on the northeast side. PS5 and the make-ready projects would still be constructed. The helipads on the Davis Tower would continue to be used, and one could be replaced with a larger pad to accommodate heavier helicopters.

While this alternative would address some goals and objectives of the project, including increasing parking capacity and addressing seismic and other code-related deficiencies, it was rejected because it would not accomplish the objective of providing more hospital beds and providing single-occupancy patient rooms with acuity-adaptable beds, which would provide the flexibility and adaptability along with patient privacy that the hospital needs to serve the region. This alternative would not increase helipad capacity nor ensure appropriate facility adjacencies—both of which are key project elements needed to provide adequate response and capacity as a Level 1 trauma center that serves much of northern California.

6.4.2 Alternative D: Retrofit Existing East Wing

Under Alternative D, the existing hospital tower and other areas of the existing building proposed to be demolished would instead be retrofitted to bring them up to current codes and standards. The intent of this alternative is to reduce the impacts associated with construction of the California Tower and the subsequent demolition of the existing hospital tower. UC Davis determined that the cost to retrofit and renovate the structure to current codes would exceed the cost of replacement considering the temporary displacement of occupants and patient beds and phasing of work that would be involved to complete the project.

The age of the existing East Wing (1965) makes retrofitting the building to meet current seismic standards and other code requirements technically and financially challenging and potentially infeasible. Those challenges are exacerbated by the goals of the project objectives which are to increase operational and building efficiencies and to incorporate new technologies that improve healthcare outcomes and patient care. These objectives are more effectively met through new construction with a similar level of project impacts to this retrofitting alternative.

6.4.3 Alternative E: Alternative Site (Marriott Hotel)

Under Alternative E, the hotel site north of Aggie Square (Marriott Hotel) would be demolished, and the new hospital tower would be located on that site. This alternative aims to reduce aesthetic, air quality, and noise emissions related to construction and operation of the California Tower close to residences along V Street. While impacts related to shade and shadow, health risks, and construction and operational noise impacts would lessen for the residences along V Street, the commercial and residential uses along Stockton Boulevard (Oak Park) would experience increased air quality and noise impacts. Introducing a high-rise tower to this part of campus would not be as visually compatible as locating it adjacent to the main hospital and other towers. Locating hospital uses in the Support land use category would also conflict with the 2020 LRDP Update. Ultimately, this alternative was rejected because this location is physically separated from the rest of the hospital by approximately 600 feet, and constructing the tower at this location would not meet project objectives which are to increase operational and building efficiencies to improve healthcare outcomes and patient care.

6.4.4 Alternatives H and I: Helicopter Alternatives

Because the number of helicopter trips is related to emergency events in the region and not within the regulatory control of UC Davis, Alternative H could not reduce helicopter trips. However, in order to reduce noise impacts caused by helicopters, Alternative I would decommission the existing helipads on the Davis Tower, so that only two total helipads would be used at the hospital. This would meet the objective of providing adequate helicopter landing areas because the larger helipad could still be constructed to accommodate heavier helicopters. However, Alternative I would not reduce helicopter idling time because additional capacity would not be provided. The Davis Tower houses the pediatric intensive care unit (PICU), and removal of these helipads would increase the time it takes for a PICU patient to be transported from the new helipads to the Davis Tower, affecting patient care. Removal of the Davis Tower helipads would not reduce the noise impact to a less-than-significant level. Since this alternative would not reduce noise impacts to a less-than-significant level, would not meet project objectives, and would affect pediatric ICU patient care, Alternative I was not carried forward in the analysis.

6.4.5 Alternative J: No or Reduced Nighttime Construction

Alternative J would restrict nighttime construction in order to lessen noise impacts during nighttime hours, which is identified as a significant and unavoidable impact. Construction phases that may require nighttime work include the Surgery and Emergency Services Pavilion remodel, the utility tie-ins for offsite utilities (considered a make-ready component of the project), critical activities for site demolition and preparation, foundations, concrete and superstructure, and interior buildout. For the most part, nighttime construction would take place approximately 210 feet from the nearest residences. However, at times, the nighttime work for utility tie-ins could occur as close as 55 feet from the nearest residences. Although Mitigation Measure NOI-1b would reduce construction noise during nighttime hours, noise may not be reduced below significance thresholds.

As described in Chapter 2, *Project Description*, the construction period is anticipated to last approximately 10 years. Confining construction to daytime hours only would significantly prolong the construction period. This would result in additional air quality emissions, as well as prolonged noise impacts during daytime hours. Select concrete pours would need to occur during nighttime hours for safety reasons and to mitigate the impact on hospital operations, due to the number of trucks required. Nighttime pours are also logistically necessary because concrete has a limited working time once it is put in a truck before it needs to be poured. This alternative would be infeasible and was not carried forward.

6.4.6 Alternative K: Alternative Space Planning

This alternative would reconfigure the interior of the hospital tower so that building space on the north side of the tower be designed for areas that would not require nighttime lighting (i.e., not patient rooms). Reconfiguring the space so that no ICU rooms are located on the north side of the building would conflict with the project objectives of creating efficient spaces with appropriate adjacencies, as well as maximizing the number of single-occupancy patient rooms. Other regulatory constraints also render this alternative infeasible; ICU rooms are required to have a window and cannot have another building within 50 feet.

6.4.7 Alternative L: Connect New Tower to SMUD

The California Hospital Tower Project as proposed would be entirely served by the CUP, which uses natural gas to provide medium voltage normal and emergency power, chilled water, medium temperature hot water, and process steam. Under this alternative, the California Tower would not be connected to the CUP; instead, it would connect to the Sacramento Municipal Utility District (SMUD) and utilize SMUD's Green Energy Program. SMUD currently serves portions of the campus and provides power to the CUP during planned and unplanned outages. The CUP provides a reliable source of power to the hospital, with two backup systems in place (both SMUD and emergency generators). This alternative would reduce GHG emissions, as power for all uses would come from renewable sources. However, the project as proposed would have less-than-significant impacts related to GHG emissions, with mitigation, and this alternative would reduce the efficiencies inherent in connecting the California Tower to the existing CUP, which centralizes many processes and utilizes cogeneration, reducing waste. For these reasons, this alternative, which would affect only operational energy use, was not considered further in the EIR.

6.5 Alternatives Considered in Detail

Following screening, three alternatives were identified for consideration in the EIR.

- Alternative C, Reduced Building Height but Bigger Footprint.
- Alternative F, Alternate Site at Sacramento Campus (West Side of Hospital).
- Alternative G, Alternative Site Plan.

These alternatives, along with a No Project Alternative, were evaluated in this chapter and are renumbered as shown below.

6.5.1 Alternative 1: No Project

Under Alternative 1, the new California Tower would not be constructed, and the existing hospital tower would not be demolished. Other components of the project, such as the renovation of existing building space and the construction of a parking garage, would also not occur. The existing hospital tower would continue to operate at the current number of beds and level of staffing and would not meet seismic safety standards, other code requirements, and would not provide acuity-adaptable rooms with increased patient privacy. Upgrades to the CUP and utilities relocations would not be necessary and would not occur.

6.5.2 Alternative 2: Reduced Building Height but Bigger Footprint

Under Alternative 2, the project would extend across 45th Street and connect to the Cancer Center. The building heights would be reduced to eight stories, and the building footprint would be larger. The ambulance entrance would be on the north side of the building (similar to the proposed project). Two new helipads would still be constructed.

6.5.3 Alternative 3: Alternative Site Location (West of Main Hospital)

Alternative 3 would locate the proposed new hospital tower on the west side of the existing hospital rather than the east side. This alternative site location would take place on the site of upcoming North/South Wing demolition and adjacent areas.

6.5.4 Alternative 4: Alternative Site Plan

Alternative 4 would move the West Wing to the north/V Street side, so that the California Tower would be further away from the residences along V Street. The helipads would still be constructed on top of the California Tower and would be slightly farther away from residences compared to the proposed project.

6.5.5 Evaluation of Alternatives

6.5.5.1 Alternative 1: No Project

State CEQA Guidelines Section 15126.6(e)(1) requires describing and analyzing a no project alternative to allow decisionmakers to compare the impacts of approving the project with the impacts of not approving the project. The no project analysis is required to discuss existing conditions at the time the notice of preparation is published and what would be reasonably expected to occur if the project were not approved.

Aesthetics

The No Project Alternative assumes that the California Tower site and parking structure site would remain in their existing condition (as parking lots) and the East Wing would not be demolished. The aesthetic impacts of the project would not occur with the No Project Alternative. Views would not change from existing conditions. Therefore, visual impacts would not occur under Alternative 1. (Less impact)

Air Quality

The impacts related to air quality under the No Project Alternative would be less than those under the proposed project. There would be no ground-disturbing or construction activities and thus no potential to generate short-term emissions or expose receptors to substantial pollutant concentrations or health risks related to construction. Existing hospital and CUP operations would continue. Some aspects of the proposed project would result in lessened health risks (i.e., splitting helicopter activity between the Davis and California Towers, and the new travel route would be farther away from residences, resulting in a reduction in health risks), and under the No Project Alternative, health risks would remain as they are under existing conditions. Nevertheless, under Alternative 1, there would be no impacts on air quality. (Less impact)

Biological Resources

Under the No Project Alternative, the East Wing would not be demolished, and the new project components would not be constructed; therefore, there would be no potential for disturbing structure-roosting bats and structure-roosting birds. No trees or vegetation would be removed. (Less impact)

Archaeological, Historical, and Tribal Cultural Resources

Under the No Project Alternative, the California Hospital Tower Project would not be constructed, and the existing hospital tower would not be demolished. Other components of the project, such as the renovation of existing building space and the construction of a parking garage, would also not occur. There would be no ground disturbance or potential to find an unidentified buried archaeological resource. (Less impact)

Energy

The impacts related to energy under the No Project Alternative would be less than those under the project. There would be no ground-disturbing or construction activities and thus no new use of energy, including electricity and gas and diesel fuel, during construction. Existing operations at the project site (i.e., the East Wing and surface parking) would continue, and there would be no new building energy usage, although continued energy usage in existing buildings would be less efficient than usage in new project buildings. Operational energy increases that are expected from stationary sources at the CUP would not occur. Therefore, under the No Project Alternative, there would be no new energy impacts. (Less impact)

Geology, Soils, and Seismicity

Under the No Project Alternative, the California Tower would not be built, and the existing hospital would remain in place. The existing hospital does not meet current building code standards and is seismically deficient. By not reconstructing the building, delivery of patient care would continue to be challenging and the building would continue to not meet seismic standards. The impact related to potential discovery of paleontological resources would lessen, however, as there would be no ground disturbance. (Greater impact)

Greenhouse Gas Emissions

The impacts related to greenhouse gas (GHG) emissions under the No Project Alternative would be less than those under the proposed project. There would be no ground-disturbing or construction activities and thus no potential to generate short-term emissions. Existing hospital and CUP operations would continue, and impacts would be similar compared to existing conditions. (Similar impact)

Hazards and Hazardous Materials

The impacts related to hazards and hazardous materials under the No Project Alternative would be less than those under the project. There would be no ground-disturbing activities that would lead to fewer overall construction impacts related to the potential for hazardous material releases compared to the project. The risk to construction workers of exposure to soil and/or groundwater contaminants would be less under the No Project Alternative than under the proposed project because no construction is proposed. Also, no buildings would be demolished, thereby eliminating the potential for worker exposure to lead-based paint or asbestos-containing materials.

The No Project Alternative would not require temporary traffic controls, detours, or any change in flightpaths. (Less impact)

Hydrology and Water Quality

Under the No Project Alternative, the California Hospital Tower Project would not be constructed, and the existing hospital tower would not be demolished. Other components of the project, such as the renovation of existing building space would also not occur. The impervious surface area would remain about the same with or without the project, so no impacts related to stormwater drainage are projected. There would be no changes to hydrology or water quality with the No Project Alternative. (Less impact)

Land Use and Planning

Under the No Project Alternative, there would be no changes associated with existing land use and planning. This alternative would involve a continuation of the 2020 LRDP Update Land Use Plan, which calls for hospital land uses on the California Tower site. The potential for impacts would be non-existent under the No Project Alternative because the hospital and parking uses already exist. However, under this alternative the seismic safety mandates outlined in Sections 130000 through 130070 of the California Hospital Seismic Retrofit Program as added by Chapter 740 of the Statutes of 1994 Senate Bill (SB) 1953 would not be implemented and the East Wing would remain seismically deficient. The No Project Alternative would not meet the goals of the 2020 LRDP Update. (Greater impact)

Noise

Under the No Project Alternative, the East Wing would not be demolished, and the new California Tower would not be constructed; therefore, noise impacts related to construction and operations would not occur. Operational impacts related to helicopter noise would remain the same as existing conditions. Overall, the No Project Alternative would result in less severe noise and vibration impacts than the proposed project. (Less impact)

Population and Housing

Under the No Project Alternative, the California Hospital Tower Project would not be constructed; therefore, the population associated with the California Tower (patients, visitors, employees, and academic personnel) would not occur and there would be no increase above existing conditions. There would be no additional potential for new employees to relocate to the area, potentially causing impacts related to housing. (Less impact)

Public Services

Under the No Project Alternative, the California Hospital Tower Project would not be constructed; therefore, the population associated with the California Tower (patients, visitors, employees, and academic personnel) would not occur and there would be no increase above existing conditions. There would be no additional potential for new employees to relocate to the area, potentially resulting in the need for additional public services such as police and fire protection, schools, and libraries. (Less impact)

Recreation

Under the No Project Alternative, recreational uses on campus, which mainly contain passive recreation such as walking paths and benches, would remain the same. There would be no new population that would increase the use of recreational facilities. Some new amenities, including landscaping and seating areas that are part of the project would not be built. However, this would not represent a large change from existing conditions. (Similar impact)

Transportation and Circulation

The proposed project would result in potential conflicts between vehicles and bicycles/pedestrians, as well as potential conflicts with Sacramento Regional Transit. Under the No Project Alternative, these conflicts would not occur. There project would also increase the potential for delays and conflicts involving ambulances during construction activities. These impacts would not occur under the No Project Alternative. (Less impact)

Utilities and Service Systems

Under the No Project Alternative, the California Tower would not be constructed, and the site of the current hospital tower would continue to be used as it currently is. Water and energy use would not increase, and there would be no changes the existing stormwater drainage system. There would be no changes to existing utilities and service systems. (Less impact)

6.5.5.2 Alternative 2: Reduced Building Height but Bigger Footprint

This alternative would have a reduced building height but a larger project footprint. Under this alternative, the project would entail two eight-story buildings that are connected by a deck that extends across 45th Street; the eastern building would be connected to the Cancer Center building, and the western building would contain the ambulance entrance (on the north side). Two new helipads would still be constructed.

This alternative would reduce visual impacts of a 14-story tower, including shade and shadow impacts. It would also achieve the project objective of creating a new hospital building that can accommodate single-occupant acuity adaptable beds. However, this layout would be significantly less efficient than a single tower and would require trauma patients to travel further to get between locations of the hospital (i.e., from the helipad, to the elevator, to the emergency department and trauma patient beds).

Aesthetics

This alternative would lessen impacts related to the 14-story tower. Although aesthetic impacts related to shade and shadow would be reduced if a shorter tower were built, some shade and shadow impacts could occur along V Street from the two eight-story buildings. Therefore, the Reduced Building Height but Bigger Footprint Alternative would slightly reduce visual impacts related to visual quality and character and shade and shadow. Aesthetic impacts related to light and glare would be similar as new hospital uses would still be constructed adjacent to V Street. (Less impact)

Air Quality

The types of air quality impacts under this alternative would be similar to those described for the project. This alternative would include the same amount of gross square feet but split across two eight-story buildings and, accordingly, would emit a similar level of emissions during construction. Long-term operational emissions would likewise be similar to the project because stationary sources, building square footage (and thus energy consumption), and vehicle trips would be the same. With the same amount of population increase as compared to the proposed project, emissions and associated vehicle miles traveled (VMT) would be similar. Because the overall level of population and development would be about the same under this alternative, the types and overall magnitude of emissions would be similar. (Similar impact)

Biological Resources

Under this alternative, impacts on vegetation-nesting migratory birds and raptors trees could be greater than those anticipated for the project because additional trees would be removed during construction due to the larger project footprint. The extent of demolition under this alternative would be the same as the project, and therefore impacts related to structure-roosting bats and migratory birds would be similar. No additional impacts on sensitive biological resources would be anticipated under this alternative. (Greater impact)

Archaeological, Historical, and Tribal Cultural Resources

Earth-moving activities have the potential to disturb archaeological, tribal cultural, or historical resources, or result in accidental discovery of human remains. Ground-disturbing activities (e.g., grading, excavation) could also result in the discovery of archaeological resources, tribal cultural resources, or human remains. Because the project footprint would be greater under the Reduced Building Height but Bigger Footprint Alternative, the area required for development and associated excavation and other construction activities would likely result in greater potential for impacts on archaeological, historical, and tribal cultural resources. (Greater impact)

Energy

Under the Reduced Building Height but Bigger Footprint Alternative, there would be the same amount of building square footage developed. This would result in a similar amount of energy being used compared to the project. The population levels and associated energy demands would also be about the same. Therefore, impacts would result in a similar demand for energy generated by this alternative. (Similar impact)

Geology, Soils, and Seismicity

Earth-moving activities associated with construction have the potential to affect geology and soils, as well as paleontological resources. The types of impacts that could occur from construction of this alternative include geotechnical issues, increased erosion, and exposure of buildings and people to seismic hazards. Existing regulations and permitting requirements, such as California Building Code (CBC) requirements, National Pollutant Discharge Elimination System (NPDES) permit conditions, and best management practices (BMPs) would reduce potentially significant impacts to a less-than-significant level. Even though this alternative involves a larger project footprint, the general areas where development would occur would be subject to similar geologic impacts. This alternative would also result in the demolition of the seismically deficient East Wing and construction of two new and shorter towers that would be built to code and standards. Thus, impacts would be of similar type and magnitude compared to the proposed project. (Similar impact)

Greenhouse Gas Emissions

Due to the similar level of development on-campus under this alternative, there would be similar GHG emissions associated with this alternative during construction. With respect to operation, this alternative would result in similar gross square feet of development, which translates into operational emissions associated with building use including electricity, natural gas, and water. However, consistent with the UC Sustainable Practices Policy (University of California 2020), the Sacramento Campus emissions would be required to be net zero for Scopes 1 and 2 in 2025 and net zero for Scopes 1, 2, and 3 in 2050 under this alternative. Thus, this alternative would also result in lower emissions. (Similar impact)

Hazards and Hazardous Materials

Under this alternative, on-campus construction activities would entail the transport, use, and storage of hazardous materials and potential release of hazardous materials. In addition, disruption of area roadways during construction may hinder traffic flow and affect emergency response. However, required traffic control plans and feasible mitigation measures are available to reduce these impacts to a less-than-significant level. The types of hazards and hazardous materials impacts described for this alternative would be of similar type and magnitude as the proposed project. (Similar impact)

Hydrology and Water Quality

Earth-moving activities associated with construction have the potential to affect hydrology and water quality on the project site. The types of impacts that could occur include adverse effects on water quality, reduced groundwater recharge, and alterations to existing drainage systems. Under this alternative, impervious surfaces would increase slightly, although the majority of the project site is paved, and trees would be replanted at a 1:1 ratio. Existing regulations and permitting requirement, such as NPDES permit conditions and a stormwater pollution prevention plan (SWPPP) would reduce potentially significant impacts to a less-than-significant level. Impacts under this alternative would be similar to the proposed project. (Similar impact)

Land Use and Planning

Under this alternative, the height of the buildings would be reduced, and an LRDP amendment would not be required to increase height limits in the Hospital district. Development would comply with the applicable land use categories defined in the 2020 LRDP Update, as the hospital would be built in the Hospital district, CUP improvements would continue to take place in the Support district, and PS5 would be constructed in an area designated for parking. As a result, overall the potential for land use conflicts would be less. (Less impact)

Noise

The types of noise and vibration impacts related to construction of this alternative would be similar to those described for the project, but to a lesser magnitude. While most phases of construction would be similar, the deck construction, which is a very noisy activity, would occur at lower elevations and the resulting noise would not travel as far at lower heights. The types and amounts of equipment required for individual construction projects and the types and amounts of operational stationary sources of noise installed would be similar to the project, resulting in similar noise and vibration impacts. However, noise impacts related to helicopter operations would be exacerbated because the lower building heights would bring helicopter landings closer to the ground and sensitive receptors, substantially increasing helicopter noise experienced by neighbors. (Greater impact)

Population and Housing

This alternative would result in the same amount of population growth at the project site in comparison to the project because there would be the same amount of building square footage and the same number of licensed beds. The impacts related to potential new employees relocating to the region would be the same. The impacts associated with population and housing would be similar compared to the proposed project. (Similar impact)

Public Services

This alternative would result in the same amount of population growth at the project site in comparison to the project because there would be the same amount of building square footage and the same number of beds. The impacts related to potential new population that could result in an increased need for public services such as police and fire protection, schools, and libraries, would be the same. The impacts associated with population and housing would be similar compared to the proposed project. (Similar impact)

Recreation

The Reduced Building Height but Bigger Footprint Alternative would result in the same increase population and therefore the same demand for recreational facilities. As with the project, this impact would be less than significant. This alterative would include similar amenities including pedestrian walkways and benches. (Similar impact)

Transportation and Circulation

Under this alternative, there would be a similar level of on-campus activity and associated vehicle commute trips compared to the project because the population would be the same. This would result in similar impacts related to potential conflicts between automobiles and bicycles/pedestrians, as well as potential conflicts with transit. Because population would be similar to what was analyzed under the project, impacts on transit ridership and VMT would also be similar. (Similar impact)

Utilities and Service Systems

Under this alternative, there would be a similar amount of building square footage developed. This would equate to similar water and energy use compared to the project. In addition, there would be a similar level of solid waste because the population increase would be the same. Therefore, impacts would be the same because the overall demand for utilities generated by this alternative would be the same as for the proposed project. (Similar impact)

6.5.5.3 Alternative 3: Alternative Site (West of Main Hospital)

Under Alternative 3, the tower component of the project would be located at the west side of the existing hospital at the approximate location of the North/South demolition. The intent of this alternative is to move the tower and associated impacts further from residences.

Aesthetics

The Alternative Site Alternative would relocate the tower component of the project to the west side of the hospital. The North/South Wing would be located closer to residences along V Street than the site for the tower under the proposed project. While there would be lessened visual impacts including shade and shadow for the residents east of 45th Street, there would be greater impacts on residences between Stockton and 45th Street as the tower would be closer. (Similar impact)

Air Quality

The types of air quality impacts under the Alternative Site Alternative would be similar to those described under the proposed project in terms of construction because the building square footage would be the same. Health risks would decrease compared to the project at the hospital site because this site is farther from residences, and they would increase compared to the project at the west side of the hospital which is located closer to residences. Emissions related to construction of PS5, the make-ready projects, and CUP improvements would still occur. Overall, air quality impacts would be similar compared to the proposed project. (Similar impact)

Biological Resources

Under the Alternative Site Alternative, impacts on vegetation-nesting migratory birds and raptors trees would be similar to the proposed project. Demolition of the East Wing would still occur, and therefore impacts related to structure-roosting bats and migratory birds would be similar. Trees would still be replanted at a 1:1 ratio under these alternatives. No additional impacts on sensitive biological resources would be anticipated under this alternative. (Similar impact)

Archaeological, Historical, and Tribal Cultural Resources

Earth-moving activities have the potential to disturb archaeological, tribal cultural, or historical resources, or result in accidental discovery of human remains. The area affected by construction of new facilities under the Alternative Site Alternative would have a similar size footprint as the proposed project; therefore, potential to discover unidentified archaeological resources would be similar. (Similar impact)

Energy

Under the Alternative Site Alternative, a similar level of development would occur, including development of a more energy efficient tower. The overall level of energy consumption would be the same as the proposed project. Energy use at the alternate site, including electricity and natural gas use, would not result in the wasteful or inefficient use of energy in a manner inconsistent with applicable plans, policies, and regulations pertaining to energy efficiency. Overall, impacts would be similar. (Similar impact)

Geology, Soils, and Seismicity

Earth-moving activities associated with construction of this alternative would have the potential to affect geology and soils. The types of impacts that could occur include geotechnical issues, increased erosion, and exposure of buildings and people to seismic hazards. Existing regulations and permitting requirements, such as CBC requirements, NPDES permit conditions, and BMPs, would minimize potential effects, and the impacts would be less than significant. The existing East Wing would be demolished and a new tower would be constructed to meet codes and standards; existing impacts related to geologic and seismic hazards would be reduced but would have the same level of impact compared to the proposed project. Thus, impacts would be of similar type and magnitude. (Similar impact)

Greenhouse Gas Emissions

The types of GHG impacts under this alternative would be similar to those described under the proposed project in terms of construction because the building square footage would be the same. Emissions related to construction of PS5, the make-ready projects, and CUP improvements would still occur. Overall, air quality impacts would be similar compared to the proposed project. (Similar impact)

Hazards and Hazardous Materials

Under this alternative, on-campus construction activities would entail the transport, use, and storage of hazardous materials and potential release of hazardous materials. In addition, disruption of area roadways during construction may hinder traffic flow and affect emergency response. However, required traffic control plans and feasible mitigation measures are available to reduce these impacts to a less-than-significant level. The types of hazards and hazardous materials impacts described for this alternative would be of similar type and magnitude as the proposed project. (Similar impact)

Hydrology and Water Quality

Earth-moving activities associated with construction have the potential to affect hydrology and water quality on the project site. The types of impacts that could occur include adverse effects on water quality, reduced groundwater recharge, and alterations to existing drainage systems. Under this alternative, impervious surfaces would be the same; the majority of both project sites is paved, and trees would be replanted at a 1:1 ratio. Existing regulations and permitting requirement, such as NPDES permit conditions and an SWPPP would reduce potentially significant impacts to a less-than-significant level. Impacts under this alternative would be similar to the proposed project. (Similar impact)

Land Use and Planning

Under this alternative, the height of the tower would be the same. An LRDP amendment would still be required to increase height limits in the Hospital district at the project site. Development associated with other components of the project would comply with the applicable land use categories defined in the 2020 LRDP Update, as the CUP improvements would continue to take place in the Support district, and PS5 would be constructed in an area designated for parking. As a result, the potential for land use conflicts would be similar. (Similar impact)

Noise

The types of noise and vibration impacts related to construction of this alternative would be greater at the west side of the hospital. The alternative site west of the hospital is located closer to residences of V Street than the proposed project site. Therefore, construction noise impacts would take place closer to residences. Helicopter operations would also result in greater noise impacts as they would take off, land, and idle closer to residences. (Greater impact)

Population and Housing

The Alternative Site Alternative would result in the same amount of population growth at the project site in comparison to the project because there would be the same amount of building square footage and the same number of beds. The impacts related to potential new employees relocating to the region would be the same. The impacts associated with population and housing would be similar compared to the proposed project. (Similar impact)

Public Services

The Alternative Site Alternative would result in the same amount of population growth at the project site in comparison to the project because there would be the same amount of building square footage and the same number of beds. The impacts related to potential new population that could result in an increased need for public services such as police and fire protection, schools, and libraries, would be the same. The impacts associated with population and housing would be similar compared to the proposed project. (Similar impact)

Recreation

The Alternative Site Alternative would result in the same increase population and therefore the same demand for recreational facilities. As with the project, this impact would be less than significant. These alternatives would include similar amenities including pedestrian walkways and benches. (Similar impact)

Transportation and Circulation

The Alternative Site Alternative would result in a similar level of on-campus activity and associated vehicle commute trips compared to the project because the population would be the same. This would result in similar impacts related to potential conflicts between automobiles and bicycles/pedestrians, as well as potential conflicts with transit. Because population would be similar to what was analyzed under the project, impacts on transit ridership, and VMT would also be similar. (Similar impact)

Utilities and Service Systems

Under the Alternative Site Alternative, there would be a similar amount of building square footage developed. This would equate to similar water and energy use compared to the project. In addition, there would be a similar level of solid waste because the population increase would be the same. Therefore, impacts would be the same because the overall demand for utilities generated by these alternatives would be the same as for the proposed project. (Similar impact)

6.5.5.4 Alternative 4: Alternative Site Plan

This community-raised alternative would locate the five-story West Wing to the north to reduce visual impacts and locate the high-rise tower to the south to reduce visual impacts on residences and also move the helipads further south to reduce noise impacts. The ambulance entrance would move to the east side of the building off of 45th Street.

Aesthetics

The Alternative Site Plan Alternative would result in lessened visual impacts. Shade and shadow impacts would be lessened because the high-rise tower would be further from V Street. Light and glare impacts from the tower would be similar; however, relocating the ambulance entrance to the east would reduce potential light disturbances from ambulance traffic. While there would still be changes in views by introducing a high-rise tower to the visual environment, impacts on residents would be lessened, and impacts on other viewer groups would be similar compared to the proposed project. (Less impact)

Air Quality

Construction activity would be the same distance from residences during construction of the West Wing. However, during construction of the tower, which is the longest phase of construction would take place farther from residences and therefore health risks would be reduced. The types of air quality impacts under the Alternative Site Plan Alternative would be about the same as to those described under the proposed project in terms of operations because the building square footage would be the same. Mobile source emissions would be the same as for the proposed project. Emissions related to construction of PS5, the make-ready projects, and CUP improvements would still occur. Overall, air quality impacts would be slightly reduced compared to the proposed project due to the reduced health risks. (Less impact)

Biological Resources

Under the Alternative Site Plan Alternative, impacts on vegetation-nesting migratory birds and raptors trees would be similar to the proposed project. Demolition of the East Wing would still occur, and therefore impacts related to structure-roosting bats and migratory birds would be similar. The project footprint would be very similar and trees would still be replanted at a 1:1 ratio under these alternatives. No additional impacts on sensitive biological resources would be anticipated under this alternative. (Similar impact)

Archaeological, Historical, and Tribal Cultural Resources

Earth-moving activities have the potential to disturb archaeological, tribal cultural, or historical resources, or result in accidental discovery of human remains. The area affected by construction of new facilities under the Alternative Site Plan Alternative would have a similar size footprint as the proposed project and would be in the same location; therefore, potential to discover unidentified archaeological resources would be the same. (Similar impact)

Energy

Under the Alternative Site Plan Alternative, the same level of development would occur, including development of a more energy efficient tower. The overall level of energy consumption would be the same as the proposed project. Energy use at alternative sites, including electricity and natural gas use, would not result in the wasteful or inefficient use of energy in a manner inconsistent with applicable plans, policies, and regulations pertaining to energy efficiency. Overall, impacts would be similar. (Similar impact)

Geology, Soils, and Seismicity

Earth-moving activities associated with construction of the Alternative Site Plan Alternative would have the potential to affect geology and soils and paleontological resources. The types of impacts that could occur include geotechnical issues, increased erosion, exposure of buildings and people to seismic hazards, and discovery of unidentified paleontological resources. Existing regulations and permitting requirements, such as CBC requirements, NPDES permit conditions, and BMPs, would minimize potential effects and the impacts would be less than significant. The existing East Wing would be demolished and a new tower would be constructed to meet codes and standards; existing impacts related to geologic and seismic hazards would be reduced but would have the same level of impact compared to the proposed project. Thus, impacts would be of similar type and magnitude. (Similar impact)

Greenhouse Gas Emissions

The types of GHG impacts under the Alternative Site Plan Alternative would be similar to those described under the proposed project in terms of construction because the building square footage would be the same. Mobile source emissions would also be the same. Emissions related to construction of PS5, the make-ready projects, and CUP improvements would still occur. Overall, air quality impacts would be similar compared to the proposed project. (Similar impact)

Hazards and Hazardous Materials

Under this alternative, on-campus construction activities would entail the transport, use, and storage of hazardous materials and potential release of hazardous materials. In addition, disruption of area roadways during construction may hinder traffic flow and affect emergency response. However, required traffic control plans and feasible mitigation measures are available to reduce these impacts to a less-than-significant level. The types of hazards and hazardous materials impacts described for this alternative would be the same as for the proposed project. (Similar impact)

Hydrology and Water Quality

Earth-moving activities associated with construction have the potential to affect hydrology and water quality on the project site. The types of impacts that could occur include adverse effects on water quality, reduced groundwater recharge, and alterations to existing drainage systems. Under this alternative, impervious surfaces would be the same; the project footprint would be about the same and the majority of the project site is paved. Trees would be replanted at a 1:1 ratio. Existing regulations and permitting requirements, such as NPDES permit conditions and an SWPPP, would reduce potentially significant impacts to a less-than-significant level. Impacts under this alternative would be similar to the proposed project. (Similar impact)

Land Use and Planning

Under this alternative, the height of the tower would be the same but would be located further from V Street. An LRDP amendment would still be required to increase height limits in the Hospital district at the project site. Development associated with this alternative would comply with the applicable land use categories defined in the 2020 LRDP Update, as the CUP improvements would continue to take place in the Support district, and PS5 would be constructed in an area designated for parking. As a result, the potential for land use conflicts would be similar. (Similar impact)

Noise

The noise and vibration impacts related to construction of this alternative would be the same distance from residences as the proposed project during construction of the West Wing. However, construction of the high-rise tower would be located further from residences, and greater noise attenuation would occur. During project operations, helipads would be located further from residences, and thus operational noise impacts would be lessened. Locating the ambulance entrance to the east instead of the north would also reduce operational noise impacts. Overall, because noise sources would be further from the residences along V Street, noise impacts during construction and operations would be lessened. (Less impact)

Population and Housing

The Alternative Site Plan Alternative would result in the same amount of population growth at the project site in comparison to the proposed project because there would be the same amount of building square footage and the same number of beds. The impacts related to potential new employees relocating to the region would be the same. The impacts associated with population and housing would be similar compared to the proposed project. (Similar impact)

Public Services

The Alternative Site Plan Alternative would result in the same amount of population growth at the project site in comparison to the project because there would be the same amount of building square footage and the same number of beds. The impacts related to potential new population that could result in an increased need for public services such as police and fire protection, schools, and libraries, would be the same. The impacts associated with population and housing would be similar compared to the proposed project. (Similar impact)

Recreation

The Alternative Site Plan Alternative would result in the same increase in population and therefore the same demand for recreational facilities. As with the project, this impact would be less than significant. This alternative would include similar amenities including pedestrian walkways and benches. (Similar impact)

Transportation and Circulation

The Alternative Site Plan Alternative would result in a similar level of on-campus activity and associated vehicle commute trips compared to the project because the population would be the same, the location of the project would be the same, and PS5 would also be located in the same place. This would result in similar impacts related to potential conflicts between automobiles and bicycles/pedestrians, as well as potential conflicts with transit. Because population would be similar to what was analyzed under the project, impacts on transit ridership and VMT would also be similar. (Similar impact)

Utilities and Service Systems

Under the Alternative Site Plan Alternative, the same amount of building square footage would be developed. This would equate to similar water and energy use compared to the project. In addition, there would be a similar level of solid waste because the population increase would be the same. Therefore, impacts would be the same because the overall demand for utilities generated by these alternatives would be the same as for the proposed project. (Similar impact)

6.6 Comparison of Alternatives

Table 6-1 summarizes the environmental analyses provided above for the proposed project and alternatives.

Table 6-1. Comparison of the Environmental Impacts in Relation to the Project

Environmental Topic	California Hospital Tower Project	Alternative 1 No Project	Alternative 2 Reduced Building Height/Larger Footprint	Alternative 3 Alternative Site	Alternative 4 Alternative Site Plan
Aesthetics	SU	<	<	=	<
Air quality	SU	<	=	=	<
Biological resources	LTS/M	<	>	=	=
Cultural resources	LTS/M	<	>	=	=
Energy	LTS	<	=	=	=
Geology, soils, seismicity	LTS/M	>	=	=	=
Greenhouse gases	LTS/M	=	=	=	=
Hazards and hazardous materials	LTS/M	<	=	=	=
Hydrology and water quality	LTS/M	<	=	=	=
Land use and planning	NI	>	<	=	=
Noise	SU	<	>	>	<
Population and housing	LTS	<	=	=	=
Public services	LTS	<	=	=	=
Recreation	LTS	=	=	=	=
Transportation and circulation	SU	<	=	=	=
Utilities and service systems	LTS	<	=	=	=

Impact Status:
LTS = less-than-significant impact.
LTS/M = LTS with mitigation.
SU = Significant and Unavoidable.
= – Impacts would be similar to those of the project.
< – Impacts would be less than those of the project.
> – Impacts would be greater than those of the project.

6.7 Environmentally Superior Alternative

The State CEQA Guidelines Section 15126.6 states that an EIR should identify the "environmentally superior" alternative. "If the environmentally superior alternative is the 'no project' alternative, the EIR shall also identify an environmentally superior alternative among the other alternatives." As described above in Section 6.3, there would be significant impacts associated with the project that cannot be reduced to a less-than-significant level through mitigation and would therefore be unavoidable. These significant and unavoidable impacts are related to aesthetics, air quality, noise, and transportation. Alternative 1, the No Project Alternative, and Alternative 4, Alternative Site Plan, both reduce impacts compared to the proposed project. Alternative 2 would result in greater impacts, particularly related to operational noise. Under the No Project Alternative, the existing East Wing would not be demolished, and the building would remain seismically deficient. The new California Tower would not be constructed, and therefore the hospital would not provide single-occupancy acuity adaptable rooms and would not increase operational efficiency, ensure appropriate facility adjacencies, or provide adequate healthcare helicopter landing areas. Therefore, the No Project Alternative would not achieve the identified project objectives and would result in conflicts with the 2020 LRDP Update.

Alternative 4, Alternative Site Plan, would result in lesser impacts on aesthetics, air quality, and noise compared to the proposed project because the tower and the new helipads would be constructed further from residences. All other impacts would be similar to the proposed project. While locating the tower further from residences would reduce these impacts, aesthetic, air quality, and noise impacts would still be significant and unavoidable under this alternative. In addition, this alternative would not achieve several project objectives, particularly those related to increasing operational efficiency, incorporating building flexibility, and ensuring appropriate facility adjacencies.

Alternative 3, Alternative Site (West Side of Hospital), would generally have similar impacts to the proposed project. This alternative would enable UC Davis to demolish outdated spaces and address seismic and other code-related deficiencies, and to provide additional state-of-the-art inpatient capacity with single-occupancy rooms, but not in the most efficient manner. This alternative would fail to achieve project objectives of increasing operational efficiency and ensuring facility adjacencies, convenient access, and improved pedestrian connections.

Each of the alternatives considered would result in long-term significant and unavoidable environmental impacts. As described above and shown in Table 6-1, Alternative 4, Alternative Site Plan, would result in greater impact reductions from those of the proposed project compared to the other alternatives because the new tower would be farther from V Street. Therefore, Alternative 4 is considered to be the environmentally superior alternative. However, while this alternative would have lesser impacts than the proposed project, it would be less efficient than the proposed project, with the West Wing of the tower interrupting the flow between the main hospital and the new tower, as well as result in additional time to transport trauma patients from the helipad to the emergency department, surgery rooms, and ICU rooms.

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8.6 Chapter 6, Alternatives

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Chapter 9
Acronyms and Abbreviations

Term	Description
°C	degrees Celsius
°F	degrees Fahrenheit
2017 Scoping Plan	*California's 2017 Climate Change Scoping Plan*
2020 LRDP Update	2020 Long Range Development Plan Update
2020 MTP/SCS	*2020 Metropolitan Transportation Plan/Sustainable Communities Strategy*
2020 Physical Design Framework	*UC Davis Sacramento Campus 2020 Physical Design Framework*
AB	Assembly Bill
ABS	acrylonitrile butadiene styrene
ACM	asbestos-containing material
ADT	average daily traffic
AFV	alternative fuel vehicle
Alquist Act	Alfred E. Alquist Hospital Seismic Safety Act of 1983
Alquist-Priolo Act	Alquist-Priolo Earthquake Fault Zoning Act of 1972
ANSI	American National Standards Institute
AQMP	air quality management plan
AREAPOLY	area source
ASHRAE	American Society of Heating, Refrigerating and Air Conditioning Engineers
ATC	Authority to Construct
Audit Report	*California Air Resources Board Improved Program Measurement Would Help California Work More Strategically to Meet Its Climate Change Goals,* Auditor of the State of California, February 2021
AVE	area of visual effect
AV	automated vehicle
Basin Plan	*Water Quality Control Plan for the Sacramento River Basin and the San Joaquin River Basin*
basin plan	water quality control plan
BMP	best management practice
BPIP PRIME	Building Profile Input Program, PRIME
BRWL	blue-rich white light
BTU	British thermal units
CAA	Clean Air Act
CAAQS	California ambient air quality standards
CadnaA	Computer-Aided Noise Abatement
CAFE	Corporate Average Fuel Economy
CAL FIRE	California Department of Forestry and Fire Protection
CalARP	California Accidental Release Prevention
CalEEMod	California Emissions Estimator Model
Cal-EPA	California Environmental Protection Agency

Term	Description
CALGreen	2010 California Green Building Standards Code
Cal-OSHA	California Division of Occupational Safety and Health
CalRecycle	California Department of Resources Recycling and Recovery
Caltrans	California Department of Transportation
CAP	*2009–2010 Climate Action Plan*
CAR	Climate Action Reserve
CARB	California Air Resources Board
Carl Moyer Program	Carl Moyer Memorial Air Quality Standards Attainment Program
CBC	California Building Standards Code
CCAA	California Clean Air Act
CCR	California Code of Regulations
CCSP	Central City Specific Plan
CDFW	California Department of Fish and Wildlife
CDPH	California Department of Public Health
CEC	California Energy Commission
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CFC	California Fire Code
CFR	Code of Federal Regulations
CGS	California Geological Survey
CH_4	methane
CIWMA	California Integrated Waste Management Act
CNDDB	California Natural Diversity Database
CNEL	community noise equivalent level
CNPS	California Native Plant Society
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	CO_2 equivalent
Construction General Permit	NPDES General Permit for Construction Activities
CPUC	California Public Utilities Commission
CRHR	California Register of Historical Resources
CRPR	California Rare Plant Rank
CRT	Climate Reserve Tonnes
CSMP	Clinical Services Master Plan
CUP	Central Utility Plant
CUPA	certified uniform program agency
CVRWB	Central Valley Regional Water Board
CV	connected vehicle
CWA	Clean Water Act
dB	decibel
Design Guidelines	*UC Davis Health Campus Design Guidelines*
DNA	deoxyribonucleic acid

Term	Description
DOF	California Department of Finance
DPM	diesel particulate matter
DSH	diameter measured at standard height
DWR	California Department of Water Resources
EAP	*UC Davis Health Education & Research Emergency Action & Evacuation Plan*
East Wing	East Main Hospital Wing
EDF	Environmental Defense Fund
EIR	environmental impact report
EMD	Environmental Management Department
EO	Executive Order
EPA	U.S. Environmental Protection Agency
EPAct	Energy Policy Act of 1992
ESA	Endangered Species Act
EV	electric vehicle
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FIRM	Flood Insurance Rate Map
FOCA	Federal Office of Civil Aviation
Friant Ranch Decision	*Sierra Club v. County of Fresno* (6 Cal. 5th 502)
Friant Ranch Project	*Friant Ranch Specific Plan*
FTA	Federal Transit Administration
General Plan	*Sacramento 2035 General Plan*
GHG	greenhouse gas
GSAs	Groundwater Sustainability Agencies
gsf	gross square foot
GSP	groundwater sustainability plan
Guidelines	*Guidelines for Preserving, Rehabilitating, Restoring and Reconstructing Historic Buildings*
GWP	global warming potential
HAP	hazardous air pollutant
HFC	hydrofluorocarbons
HI	hazard index
HMBP	hazardous materials business plan
Hotspots Act	Air Toxics Hot Spots Information and Assessment Act
HP	horsepower
HPI	Healthy Places Index
HPMS	Highway Performance Monitory Systems
HRA	health risk assessment
HSWA	Hazardous and Solid Waste Amendments of 1984
HVAC	heating, ventilation, and air conditioning
HWCF	Healthcare Workers' Compensation Fund
I-	Interstate
ICU	intensive care unit

Term	Description
IEPR	*Integrated Energy Policy Report*
IPaC	Information, Planning, and Conservation System
IPCC	Intergovernmental Panel on Climate Change
K	Kelvin
K	kindergarten
KOP	key observation point
kWh	kilowatt hours
L_{dn}	day-night sound level
LED	light-emitting diode
LEED	Leadership in Energy and Environmental Design program
L_{eq}	equivalent sound level
L_{min} and L_{max}	minimum and maximum sound levels
LOS	level of service
LRDP	Long Range Development Plan
LTO	landing and take-off
MBTA	Migratory Bird Treaty Act
MERV	Minimum Efficiency Reporting Value
mgd	million gallons per day
MLD	Most Likely Descendant
MMBTU	million BTU
MMI	Modified Mercalli Intensity
MMRP	Mitigation Monitoring and Reporting Program
mph	miles per hour
MPO	metropolitan planning organization
MRI	Magnetic Resonance Imaging
MS4	Municipal Separate Storm Sewer Systems
MTIP	Metropolitan Transportation Improvement Program
MTP/SCS	*2020 Metropolitan Transportation Plan/Sustainable Communities Strategy*
MWh	megawatt-hour
N_2O	nitrous oxide
NAAQS	National Ambient Air Quality Standards
NAHC	Native American Heritage Commission
NEC	No Exposure Certification
NEHRP	National Earthquake Hazards Reduction Program
NESHAP	National Emission Standard for Hazardous Air Pollutants
NFIP	National Flood Insurance Program
NHPA	National Historic Preservation Act of 1966
NHTSA	National Highway Traffic Safety Administration
NMFS	National Oceanic and Atmospheric Administration, National Marine Fisheries Service
NO	nitric oxide
NO_2	nitrogen dioxide
NOA	naturally occurring asbestos

Term	Description
NOI	notice of intent
NOP	Notice of Preparation
NO_X	nitrogen oxides
NPDES	National Pollutant Discharge Elimination System
NPPA	Native Plant Protection Act
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
OEHHA	California Office of Environmental Health Hazard Assessment
OH	overhead
OPR	Governor's Office of Planning and Research
OSHA	Occupational Safety and Health Administration
PCBs	polychlorinated biphenyl
PFC	perfluorocarbons
PG&E	Pacific Gas and Electric Company
PICU	pediatric intensive care unit
PM	particulate matter
PO&M	Plant Operations and Maintenance
Porter-Cologne Act	Porter-Cologne Water Quality Control Act
PPV	peak particle velocity
PRC	Public Resources Code
Progress Report	*2018 Progress Report, California's Sustainable Communities and Climate Protection Act,* California Air Resources Board, November 2018
PS5	Parking Structure 5
PTO	Permit to Operate
PVC	polyvinyl chloride
RCRA	Resource Conservation and Recovery Act
RCx	retrocommissioning
RD	Reclamation District
Regional Water Board	Regional Water Quality Control Board
RMP	risk management plan
ROG	reactive organic gases
RPS	Renewables Portfolio Standard
RTP	regional transportation plan
SACOG	Sacramento Area Council of Governments
Sacramento Regional OAP	*2017 Sacramento Regional 8-Hour Ozone Attainment and Reasonable Further Progress Plan*
SacRT	Sacramento Regional Transit
SAF Plan	*State Alternative Fuels Plan*
SAFCA	Sacramento Area Flood Control Agency
SAFE	Safer Affordable Fuel-Efficient
Safety Guidance	Interim Local Development Intergovernmental Review Safety Review Practitioners Guidance
SB	Senate Bill

Term	Description
SCGA	Sacramento Central Groundwater Authority
Scoping Plan	*2017 Climate Change Scoping Plan*
SCS	sustainable communities strategy
SCUSD	Sacramento City Unified School District
Secretary's Standards	Secretary of the Interior's Standards for the Treatment of Historic Properties
SEL	Sound Equivalent Level
sf	square feet
SF_6	sulfur hexafluoride
SFA	Special Facilities Agreement
SFD	City of Sacramento Fire Department
SFNA	Sacramento Federal Nonattainment Area
SGMA	Sustainable Groundwater Management Act of 2014
SHS	State Highway System
SIP	State Implementation Plan
SJUSD	San Juan Unified School District
SJVAB	San Joaquin Valley Air Basin
SLCP	Short-Lived Climate Pollutants
SMAQMD	Sacramento Metropolitan Air Quality Management District
SMAQMD's CEQA Guide	*Guide to Air Quality Assessment in Sacramento County*
SMUD	Sacramento Municipal Utility District
SO_2	sulfur dioxide
SPC-2	Structural Performance Category 2
SPCC	spill prevention, control, and countermeasures
SPD	City of Sacramento Police Department
SQIP	stormwater quality improvement program
SR 99	State Route 99
SRWTP	Sacramento Regional Wastewater Treatment Plant
SSURGO	Soil Survey Geographic Database
State Water Board	State Water Resources Control Board
study area	environmental setting area evaluated
such as L_{10}, L_{20}	percentile-exceeded sound levels
SVAB	Sacramento Valley Air Basin
SVP	Society of Vertebrate Paleontology
SWMPs	stormwater management plans
SWPPP	storm water pollution prevention plan
TAC	toxic air contaminants
Tanner Act	Tanner Air Toxics Act
TAZ	traffic analysis zone
TCR	the Climate Registry
TDM	transportation demand management
Technical Advisory	*Technical Advisory on Evaluating Transportation Impacts in CEQA*
the Regents	Board of Regents of the University of California

Term	Description
TISG	*VMT-Focused Transportation Impact Study Guide*
TLOF	Touchdown and Liftoff
TMDL	total maximum daily load
TMP	Construction Traffic Management Plan
TNM	Traffic Noise Model
TPAs	transit priority areas
TSDFs	treatment, storage, and disposal facilities
UC	University of California
UC Davis EH&S	UC Davis Office of Environmental Health and Safety
UC Sustainable Practices Policy	*University of California Policy on Sustainable Practices*
UG	underground
UMP	Utility Master Plan
US 50	U.S. Route 50
USDOT	U.S. Department of Transportation
USFWS	U.S. Fish and Wildlife Service
UST	underground storage tank
VMT	vehicle miles traveled
VOC	volatile organic compound