APPENDIX J

SUPPLEMENTED VERSIONS OF CERTAIN SECTIONS OF THE PROPONENT'S ENVIRONMENTAL ASSESSMENT

2.0 UPDATED INTRODUCTION

LS Power Grid California, LLC ("LS Power"), a wholly owned subsidiary of LS Power Associates, L.P., established to own and operate transmission projects in the State of California, is proposing the Power the South Bay Project ("Proposed Project"). As required by the California Public Utilities Commission's (CPUC) Guidelines for Energy Project Applications Requiring California Environmental Quality Act (CEQA) Compliance Pre-filing and Proponent's Environmental Assessments (PEAs) and the CEQA Guidelines (14 Cal. Code of Regs. Section 15000 et seq.), this section defines the objectives, purpose, and need for the Proposed Project. Additional information regarding LS Power's Proposed Project's purpose and need is provided in LS Power's Certificate of Public Convenience and Necessity (CPCN) application to the CPUC in accordance with CPUC General Order (GO) 131-D.

2.1 PROJECT BACKGROUND

The Proposed Project was identified by the California Independent System Operator (CAISO) in its 2021-2022 Transmission Plan as the "Newark to Northern Receiving Station (NRS) HVDC Project~~"; as~~" and rescoped in the 2024-2025 planning cycle as the "Newark to NRS 230 kV Line Project"[1]. The Proposed Project is a "reliability driven" project that would address multiple near-term and long-term overloads on the San José area 115 kilovolt (kV) transmission system and would provide system reliability benefits for the Greater Bay Area.

2.1.1 PURPOSE AND NEED

The Proposed Project's purpose is to strengthen the electrical grid in the Greater Bay Area in the ~~County~~Counties of Alameda and Santa Clara, California. The Proposed Project would:

- Ensure the reliability of the South Bay sub-area of the Greater Bay Area of the CAISO-controlled grid;
- Provide better access to cost-effective, renewable energy and other electric transmission grid benefits;
- Support the provision of safe, reliable, and adequate electricity service to the Pacific Gas and Electric Company (PG&E) and Silicon Valley Power (SVP) service territories;
- ~~Provide voltage support to the existing PG&E and SVP transmission systems to support additional load growth; and~~
- Facilitate the importation and use of renewable electricity to fulfill the State of California's energy polices and goals by ensuring reliable operation of the grid.

~~These would be accomplished through the construction of two high-voltage direct current (HVDC) terminals and a new 320 kV direct current (DC) transmission line connecting the two terminals. The northern terminal site is the proposed Albrae terminal, which is located north of Weber Road and west of Boyce Road in the City of Fremont, approximately 0.2 mile northeast of the existing PG&E Newark substation, adjacent to PG&E-owned land. The southern terminal site is the proposed Baylands terminal, which is located south of Los Esteros Road, west of Zanker Road, and east of Disk Drive in the City of San José, approximately 1.8 miles northeast of the existing~~

[1] The Newark to NRS 230 kV Line Project is CAISO's identity for the Proposed Project's scope, which LS Power has named to be the Power the South Bay Project

~~SVP NRS substation. In addition to the proposed HVDC terminals, the following primary components are proposed:~~

- ~~One approximately 8.6-mile 320 kV DC transmission line, both overhead and underground, connecting the Albrae terminal and the Baylands terminal;~~

~~One approximately 0.4-mile~~These would be accomplished through the construction of the Proposed Project which would include the following:

- An approximately 12-mile Newark to NRS 230 kV alternating current (AC) transmission line, both overhead and underground, connecting the ~~Albrae terminal to the~~ existing PG&E Newark substation~~;~~
- ~~One approximately 3.5-mile 230 kV AC transmission line, both overhead and underground, connecting the Baylands terminal~~ to the existing SVP NRS substation;
- Modifications to the existing PG&E Newark substation; and
- Modifications to the existing SVP NRS substation.

While PG&E and SVP substation modifications are part of the overall scope of the Proposed Project being reviewed and evaluated by the CPUC under CEQA in this proceeding, PG&E and SVP would likely utilize the adopted CEQA document to separately comply with the CPUC's permitting requirements under G.O. 131-D (see, e.g., CAISO 2022; Gates 500 kV Dynamic Reactive Support Project (A.21-02-018), Final Initial Study/Mitigated Negative Declaration [8/4/2022] §2.4 ¶2).

California Independent System Operator Overview

CAISO is responsible for planning and managing the high-voltage transmission network (transmission grid) for approximately 80 percent of the State of California, including the service territories of PG&E and SVP, where the Proposed Project is located. CAISO undertakes an annual Transmission Planning Process (TPP) to identify reliability, public policy, and economic transmission solutions over a 10-year planning horizon. CAISO considers additional transmission facilities and/or changes in operation that would solve the problems, allowing the transmission grid to meet reliability objectives and criteria. In addition, CAISO evaluates the transmission grid's ability to help meet certain State of California government policy objectives, including the Renewables Portfolio Standard (RPS). Finally, CAISO transmission planners and economists also examine whether transmission upgrades could save ratepayers money by reducing electric grid transmission congestion and allowing the use of lower-cost generation (CAISO, 2022).

CAISO Transmission Planning

Each year, CAISO provides a comprehensive evaluation of its transmission grid to identify upgrades needed to successfully meet the State of California's policy goals, in addition to examining conventional grid reliability requirements and projects that can bring economic benefits to consumers. This transmission plan is updated annually and is prepared in the larger context of supporting the implementation of energy and environmental policies, while maintaining reliability through a resilient electric system (CAISO, 2023a).

In its 2021-2022 planning cycle, CAISO evaluated upgrades needed to successfully meet the State of California's policy goals, in addition to examining conventional grid reliability requirements and projects that can bring economic benefits to consumers. ~~CAISO's analysis, conducted through an open and stakeholder-inclusive planning process, led to the identification of the need for the Proposed Project as part of a comprehensive solution (relying in part on other upgrades already identified to meet reliability needs notwithstanding State policy objectives) to mitigate current and forecasted overloads in the San José area (CAISO, 2022).~~Transmission planning studies prepared by CAISO in the 2021-2022 planning cycle identified a long-term load forecast of approximately 2,100 megawatts (MW) in the San José area, including a significant load increase of approximately 500 MW in the SVP area, which would lead to several reliability concerns consisting of thermal overloads such as multiple near-term and long-term overloads in the San José area 115 kV system. While the San José/SVP area is primarily served from the existing Newark and Metcalf substations, the bulk of the power flows from the Newark side due to the electrical proximity of the bulk of the area load to the existing Newark substation, specifically the SVP area load where most of the load increase is. In order to address the reliability concerns in the San José area, CAISO identified the Newark to NRS HVDC Project and subsequently issued a Request for Proposal for the Project to be competitively bid in the 2020-2021 planning cycle. In March 2023, CAISO chose LS Power to be the Project Sponsor for the Newark to NRS HVDC Project.

~~The San José/SVP area is primarily served from the Newark 230/115 kV substation in the north and the Metcalf 500/230/115 kV substation in the south. Transmission planning studies prepared by CAISO included large load increases in the San José and SVP areas, including a significant load increase of approximately 500 megawatts (MW) in the SVP area. As a result, CAISO identified several reliability concerns, including multiple near-term and long-term overloads in the San José area 115 kV transmission system. Due to the electrical proximity of the bulk of the area load to the existing Newark substation, specifically the SVP area load where most of the load increase is, the bulk of the power flows from the Newark side. Given this imbalance between two sources in the AC connected network, the Proposed Project would result in better performance from a power flow perspective as a result of the controllability of the HVDC source. Additionally, the Proposed Project would provide benefits in reducing local capacity requirements in the San José sub-area and overall Greater Bay Area that reduces reliance on local gas-fired generation. As such, CAISO identified the need for a Voltage-Sourced Converter (VSC) HVDC link in the Greater Bay Area located near the existing PG&E Newark substation and the existing SVP NRS substation. The Proposed Project meets CAISO's originally approved technical specification for the identified need (CAISO, 2022).~~
As part of CAISO's 2024-2025 planning cycle, CAISO further evaluated the growing needs of the Greater Bay Area. CAISO's evaluation identified an increase in the long-term load forecast to approximately 3,400 MW in the base case and 4,200 MW in the sensitivity scenario in the San José area. This is significantly more than when CAISO originally identified the Newark to NRS HVDC Project. Due to this increased load forecast, CAISO reevaluated proposed projects in the area, including the Newark to NRS HVDC Project. Through its evaluation, CAISO adjusted the original Newark to NRS HVDC Project to be a high capacity 230 kV AC solution. The scope of the updated solution would be a new 1,000 MVA link between the existing PG&E Newark and SVP NRS substations, the Newark to NRS 230 kV Line Project. The Proposed Project meets CAISO's approved technical specification for the identified need (CAISO, 2024).

CAISO Competitive Bid Process

Following approval of the 2021-2022 Transmission Plan, in accordance with the Federal Energy Regulatory Commission's Order No. 1000 and the CAISO open-access transmission tariff, CAISO opened a competitive bid solicitation window in April 2022, which provided project sponsors the opportunity to submit proposals to finance, construct, own, operate, and maintain the Newark to NRS HVDC Project ~~(i.e., the Proposed Project).~~. CAISO specified a latest in-service date of June 1, 2028.

In March 2023, LS Power was selected by CAISO as the approved project sponsor for the Proposed Project. CAISO selected LS Power's proposal from a total of six validated proposals, all of which contained some form of cost containment to protect consumers from cost overruns. CAISO's selection report stated that LS Power's proposal provides "significantly greater cost certainty and lower projected overall costs than the cost containment proposals of the other project sponsors" (CAISO, 2023b).

During the 2024-2025 planning cycle, CAISO further evaluated the growing needs of the Greater Bay Area, ultimately adjusting the scope of the Newark to NRS HVDC Project to be the high capacity Newark to NRS 230 kV Line Project.

2.1.2 PROJECT OBJECTIVES

The Proposed Project was selected because it best meets all of the objectives identified by CAISO in the ~~2021-2022~~ Transmission ~~Plan~~Planning Process, and minimizes potential adverse environmental impacts. These objectives are as follows:

- Meet the CAISO's reliability-driven need by addressing multiple near-, mid-, and long-term reliability issues in the existing San José area 115 kV system.
- ~~Meet the technical specifications set forth by CAISO for a VSC-HVDC link in the Greater Bay Area located near or adjacent to the existing PG&E Newark substation and SVP NRS substation. Adjacency to the existing PG&E Newark and SVP NRS substations would reduce the length of the interconnection (230 kV) transmission lines, thereby reducing the right-of-way requirements and potential for significant environmental impacts.~~
- ~~Improve and maintain the reliability of the transmission grid by providing dynamic reactive power support and increase deliverability of renewable power, by building and operating a facility that would help keep transmission voltages within specified parameters, reduce transmission losses, increase reactive margin for the system bus, increase transmission capacity, provide a higher transient stability limit, increase damping of minor disturbances, and provide greater voltage control and stability.~~
- Meet the technical specifications set forth by CAISO.
- Facilitate deliverability of energy from existing and proposed renewable generation projects to the Greater Bay Area and corresponding progress toward achieving California's RPS goals in a timely and cost-effective manner by California utilities.
- Comply with and assist CAISO in meeting applicable Reliability Standards and Criteria developed by North American Electric Reliability Corporation, Western Electricity Coordinating Council, and CAISO.
- Design and construct the Proposed Project in conformance with LS Power's standards, the National Electric Safety Code, and other applicable national and State codes and regulations.

2.1.3 PROJECT APPLICANT

The Proposed Project is proposed by LS Power Grid California, LLC, a Delaware limited liability company established to own and operate transmission projects in California as a designated California Public Utility. LS Power Grid California, LLC is an indirect subsidiary of LS Power Associates, L.P. which, together with its subsidiaries and affiliates, is generally known as LS Power. Since it was founded in 1990, LS Power has developed or acquired more than 47,000 MW of competitive power generation and built over 780 miles of high-voltage transmission lines. Although PG&E and SVP are not applicants in LS Power's application for a CPCN, their scopes of work are needed to interconnect the Proposed Project to PG&E and SVP's electrical grids. PG&E and SVP's substation modifications would be included in the CPUC's CEQA analysis; however, PG&E and SVP would likely utilize the adopted CEQA document to separately comply with the CPUC's permitting requirements under GO 131-D.

The Proposed Project is LS Power's seventh competitive transmission selection by CAISO. The first was the 2016 selection of LS Power affiliate DesertLink, LLC for the Harry Allen to Eldorado 500 kV Transmission Project, a 60-mile transmission line that was placed in service in August 2020. In January 2020, CAISO selected LS Power in a competitive solicitation for the Gates 500 kV Dynamic Reactive Support Project in the County of Fresno. In February 2020, CAISO selected LS Power in a competitive solicitation for the Round Mountain 500 kV Area Dynamic Reactive Support Project in the County of Shasta. In January 2023, CAISO selected LS Power in a competitive solicitation for the Manning 500/230 kV Substation Project in the County of Fresno and the Collinsville 500/230 kV Substation Project in the East Bay area. Finally, in March 2023, CAISO selected LS Power in a competitive solicitation for the Metcalf to San Jose B HVDC Project to be constructed in the County of Santa Clara.

The Proposed Project would be remotely ~~operated~~monitored with no permanent workforce on-site during normal operations. The Proposed Project would be ~~operated~~monitored by LS Power's control center, which is staffed 24 hours per day, seven days per week, in Austin, Texas. Maintenance activities would be provided by LS Power's local maintenance/technical staff, utilizing existing internal LS Power staff and external resources for maintenance and emergency response. The Proposed Project would be incorporated into LS Power's existing operations, maintenance, and compliance programs using experienced staff and trusted contractors to provide operational and cost efficiencies with reduced risks. The Proposed Project would also be monitored by CAISO's control center in Folsom, California~~, and CAISO would have operational control of the HVDC terminals with authority to direct LS Power's control center~~.

2.2 PRE-FILING CONSULTATION AND PUBLIC OUTREACH

2.2.1 PROPOSED PROJECT PRE-FILING CONSULTATION AND PUBLIC OUTREACH

LS Power met with several regulatory agencies in the early planning stages of the Proposed Project to solicit input on Proposed Project design and potential resource and land use issues in the vicinity of the Proposed Project. **Table 2-1**, *Pre-filing Consultations* summarizes the meetings and public outreach that took place during the development of this PEA. Coordination with these agencies would continue through the Proposed Project's planning process with ministerial and discretionary permits applied for where necessary.

Table 2-1: Pre-filing Consultations[2]			
Agency	**Meeting Dates**	**Attendees**	**Summary of Discussions**
CPUC	March 28, 2023; August 7, 2023; November 2, 2023; January 17, 2024 Ongoing bi-weekly meetings starting in January 2024.	LS Power staff, and CPUC Staff and third-party consultant	Pre-filing coordination, introduction to the Proposed Project, permitting requirements, and schedule. Site visit to review Proposed Project.
CAISO	Approved Project Sponsor Agreement (APSA) Negotiations: May through August 2023. Quarterly Status Reports in July 2023, October 2023, December 2023, and March 2024. Project kickoff meeting with City of San José on April 7, 2023. February 6, 2024; March 5, 2024 April 15, 2024	LS Power staff, CAISO staff	APSA negotiations; Quarterly status reports; Participated in project kickoff meeting with the City of San José and LS Power staff regarding proposed routing and siting and preliminary engineering; Future expansion and ultimate HVDC development plan.
PG&E	Kickoff meeting on April 6, 2023. Ongoing bi-weekly meetings starting in July 2023. Various other coordination meetings.	LS Power staff, PG&E staff	Bi-weekly meetings to discuss interconnection to the existing PG&E Newark substation and GO 131-D coordination.
SVP, City of Santa Clara	March 15, 2023; Ongoing monthly meetings starting in March 2023. Various other coordination meetings.	LS Power staff, SVP staff, City of Santa Clara staff, AECOM staff	Monthly meetings to discuss interconnection to the existing SVP NRS substation, engineering updates, and data exchange; Coordination for siting the proposed Albrae to Baylands 320 kV DC and Baylands to NRS 230 kV transmission line routes and the proposed Baylands terminal, interconnection agreements, easement, licenses, and GO 131-D coordination.
City of Milpitas	March 22, 2023; September 19, 2023; April 30, 2024	LS Power staff, City of Milpitas staff	Proposed Project introduction and summary and high-level overview of Proposed Project route within the City of Milpitas.

[2] Consultations discussed in Table 2-1 took place prior to the initial PEA submittal in May 2024 and focused on the Newark to NRS HVDC Project Approved in CAISO's 2021-2022 Transmission Plan. While the Proposed Project scope no longer contains certain equipment, particularly DC elements, the references to such equipment remain in the summary of discussions.

Table 2-1: Pre-filing Consultations[2]			
Agency	**Meeting Dates**	**Attendees**	**Summary of Discussions**
City of Santa Clara	April 24, 2023; June 8, 2023; June 12, 2023; July 25, 2023; February 29, 2024	LS Power staff, City of Santa Clara staff, SVP staff, AECOM staff	Proposed Project overview, discussion of interconnection of the existing SVP NRS substation, location of Baylands terminal, boring permitting requirements, local area developments, utility coordination, facility layouts, permit requirements, schedule, cumulative projects in the City of Santa Clara, and coordination of traffic control plans on Lafayette Street.
City of Fremont	April 20, 2023; May 3, 2023; June 7, 2023; June 20, 2023; July 7, 2023; August 7, 2023; September 6, 2023; November 8, 2023; December 13, 2023; January 8, 2024; February 13, 2024; February 14, 2024; March 18, 2024; April 10, 2024	LS Power staff, City of Fremont staff	Proposed Project overview, monthly meetings to discuss overhead and underground transmission line routes, evaluation of transmission line route alternatives, transmission undergrounding requirements in the City of Fremont, addition of a two-inch fiber conduit in the City, access to Cushing Parkway bridge, stakeholder outreach, Albrae terminal site location, permit requirements, and utility easement.
City of San José	April 7, 2023; April 25, 2023; May 3, 2023; May 9, 2023; May 12, 2023; June 14, 2023; July 12, 2023; July 21, 2023; August 9, 2023; October 18, 2023; December 5, 2023; January 9, 2024; February 8, 2024; March 15, 2024; April 18, 2024; Various other coordination meetings	LS Power staff, City of San José staff	Coordination regarding transmission line routes, vault locations, City of San José infrastructure plans, proposed Baylands terminal location, monthly meetings to discuss siting within the San José-Santa Clara Regional Wastewater Facility (RWF), alternative terminal siting, sensitive habitat in Proposed Project area, PG&E and SVP interconnection, utility coordination, ground leasing, construction access coordination, stakeholder engagement, landowner outreach, staging area locations, cumulative projects, geotechnical permitting requirements, and public outreach.
Santa Clara Valley Water District (SCVWD or "Valley Water")	May 9, 2023; May 30, 2023; June 26, 2023; July 28, 2023; August 24, 2023; September 22, 2023;	LS Power staff, SCVWD staff	Proposed Project overview, discussion of proposed HVDC terminal location and siting alternatives, location of the proposed Albrae to Baylands 320 kV DC transmission line, Coyote

Table 2-1: Pre-filing Consultations[2]			
Agency	**Meeting Dates**	**Attendees**	**Summary of Discussions**
	October 18, 2023; November 16, 2023; December 6, 2023; January 9, 2024; February 13, 2024; April 10, 2024		Creek flood channel concerns, Guadalupe River crossing discussions, wetlands delineation survey, sensitive habitat in Proposed Project area, permitting/licensing/easement requirements, road crossings, environmental and mitigation requirements, routing for salt marsh harvest mouse, and responsible agency review of the PEA.
County of Santa Clara	May 12, 2023; July 6, 2023	LS Power staff, County of Santa Clara staff, BMWL Public Affairs staff	Proposed Project overview, stakeholder and public outreach, and proposed transmission line siting and routing.
County of Alameda	June 9, 2023	LS Power staff, County of Alameda staff	Proposed Project overview, construction scheduling, and stakeholder outreach.
City of San José, City of Santa Clara	September 12, 2023; September 21, 2023	LS Power staff, City of San José staff, City of Santa Clara staff	Siting of proposed Baylands terminal site and on-site discussion of site alternatives within RWF.
RWF	September 21, 2023; Various other Coordination Meetings	RWF Staff	Siting of proposed Baylands terminal site and on-site discussion of site alternatives within RWF. Coordination meetings regarding siting of Baylands terminal, siting of the Albrae to Baylands 320 kV transmission line, and other potential laydown areas for construction.
California State Lands Commission (CSLC)	January 3, 2024	LS Power staff, CSLC staff	Proposed Project overview, discussion of CSLC lease required for potential Proposed Project route crossing in State lands, and natural waterways and wetlands.
Alameda County Flood Control District (ACFCD)	January 3, 2024	LS Power staff, ACFCD staff	Proposed Project overview, discussion of routing and siting of proposed Albrae to Baylands 320 kV DC transmission line, ACFCD jurisdiction over Fremont canals, and ACFCD easements required.
Native American Heritage Commission (NAHC)	A Sacred Lands File (SLF) search request was submitted on May 16, 2023.	No meeting was held as the coordination with SLF was an email search request.	The SLF search was returned by the NAHC with positive results on June 14, 2023, with instructions to contact the North Valley Yokuts Tribe and the Ohlone Indian Tribe. The NAHC also provided a list of Native American contacts who may be able to supply information pertinent to the Proposed Project

Table 2-1: Pre-filing Consultations[2]			
Agency	**Meeting Dates**	**Attendees**	**Summary of Discussions**
			area. Each of the 19 individuals listed were contacted by email sent on January 10, 2024, with follow-up emails sent on January 24, 2024. To date, one contact has responded to outreach efforts, and their requests were taken in and included in the development of **Section 5.18**, *Tribal Cultural Resources*.
Santa Clara Valley Habitat Agency	October 17, 2023	LS Power staff, Santa Clara Valley Habitat Agency staff, City of San José staff	Proposed Project overview, coordination regarding adjacent Burrowing Owl Conservation Easement managed by the Santa Clara Valley Habitat Agency.
Santa Clara Valley Habitat Agency, United States Fish and Wildlife Service (USFWS), California Department of Fish and Wildlife (CDFW)	December 7, 2023; April 15, 2024	LS Power staff, Santa Clara Valley Habitat Agency staff, USFWS staff, CDFW staff, City of San José staff	Proposed Project overview, coordination regarding adjacent Burrowing Owl Conservation Easement managed by the Santa Clara Valley Habitat Agency.
California Department of Transportation	February 12, 2024	LS Power staff, California Department of Transportation staff	Proposed Project overview, coordination regarding required discretionary permits.
Bay Conservation and Development Commission (BCDC)	January 8, 2024	LS Power staff, BMWL Public Affairs staff, BCDC staff	Proposed Project overview, coordination regarding construction near Coyote Creek, review of potential jurisdictional conflicts, discretionary permits required, construction methods for stream crossings, and public access.
State of California Senate and Assembly; United States Congressional	August 29, 2023; September 20, 2023; September 28, 2023; November 1, 2023	LS Power staff, California Senators, California Assembly Members, California Congressional staff	Proposed Project summary, public outreach plan, and Proposed Project updates.

Significant Consultation Outcomes

During the consultation and outreach efforts that took place during the development of this PEA and the CPCN application, LS Power reviewed the Proposed Project's route ~~and terminal locations~~ with numerous stakeholders. Significant outcomes from the consultation and outreach efforts that were incorporated into the Proposed Project include:

- ~~Baylands Terminal~~

- ~~During the competitive solicitation process, the City of San José provided a location for the proposed Baylands terminal in their guidance memo titled *San José Interests in CAISO Transmission Lines*. Shortly after the Proposed Project was awarded, the City of San José informed LS Power that the site described in their guidance memo had instead been committed for the construction of a new dewatering facility onsite. LS Power has worked closely with the City of San José to identify the new location of the proposed Baylands terminal as described herein.~~

- Newark to ~~Albrae~~NRS 230 kV AC Transmission Line
  - ~~Selection~~Adjustment of the proposed ~~0.4-mile underground and overhead Newark to Albrae~~ 230 kV transmission line ~~instead of a 0.2 mile overhead~~ interconnection in the vicinity of the existing Newark substation, including an underground transmission ~~line~~segment and transition to overhead, to align with PG&E's proposed interconnection point and point of change of ownership.
- ~~Albrae to Baylands 320 kV DC Transmission Line~~
  - Shifting an approximately 0.75-mile proposed overhead portion of the ~~Albrae to Baylands 320 kV DC~~Proposed Project's 230 kV transmission line to be underground in the City of Fremont.
  - Inclusion of ~~an~~ additional 2-inch fiber ~~duct~~ducts within the Proposed Project's duct banks ~~throughout~~in the City of Fremont.
  - Siting of the ~~proposed~~Proposed Project's overhead 230 kV transmission line route ~~of the Albrae to Baylands 320 kV DC transmission line~~ on SCVWD-controlled property to avoid crossing a salt harvest mouse conservation easement managed by SCVWD.
- ~~Baylands to NRS 230 kV AC Transmission Line~~
  - ~~Selection of the proposed Baylands to NRS 230 kV underground route from the Baylands terminal into Los Esteros Road to Grand Boulevard to Disk Drive instead of the original proposed overhead route through the newly established burrowing owl habitat managed by the Santa Clara Valley Habitat Agency. The selected route includes two additional jack and bores under Union Pacific Railroad tracks.~~
  - ~~Proposal of Baylands to NRS Alternative 1, a horizontal directional drill (HDD) under the burrowing owl habitat managed by the Santa Clara Valley Habitat Agency.[3] Baylands to NRS Alternative 1 is described in detail in **Section 4.0**, *Description of Alternatives*, and evaluated in **Section 6.0**, *Evaluation of Alternatives*.~~
  - Proposal of Baylands to NRS Alternative 2, an alternative to the California Department of Transportation ("Caltrans") crossing east of Lafayette Street to avoid the siting of a utility longitudinal to Caltrans rights-of-way. Baylands to NRS Alternative 2 is described in detail in **Section 4.0**, *Description of Alternatives*, and evaluated in **Section 6.0**, *Evaluation of Alternatives*.

Development Projects that Could Conflict with Proposed Project

Appendix 7-A, *Cumulative Projects Table* shows additional development projects within an approximately two-mile radius of the Proposed Project, including project name, associated project

~~[3] LS Power has begun discussions with the Santa Clara Valley Habitat Agency, United States Fish and Wildlife Service, and California Department of Fish and Wildlife regarding the potential HDD through the burrowing owl habitat.~~

description, location, proximity to the Proposed Project, and status of the associated project. None of these projects are currently anticipated to directly conflict with the Proposed Project.

2.2.2 RECORDS OF CONSULTATION AND PUBLIC OUTREACH

A summary of LS Power's consultations is provided in **Table 2-1** above. To date, LS Power has not conducted any open houses or otherwise performed outreach to the public at large. Throughout the approval process, LS Power would keep area residents and property owners, government officials, Native American Tribes, and interested parties informed about the scope of the Proposed Project through printed materials, one-on-one meetings, and presentations to local organizations.

During construction, LS Power would work to minimize disruptions from construction traffic and limit dust and noise. LS Power would continually communicate with government agencies, including the CPUC, County of Alameda, County of Santa Clara, City of Fremont, City of Milpitas, City of San José, City of Santa Clara, local Native American Tribes, and any other applicable government officials, regarding construction plans.

2.3 ENVIRONMENTAL REVIEW PROCESS

2.3.1 PROPOSED PROJECT ENVIRONMENTAL REVIEW PROCESS

Public utilities are required to obtain a permit from the CPUC for construction of certain infrastructure listed under Public Utilities (PU) Code Section 1001. The CPUC's CPCN process includes two components: (1) an environmental review pursuant to the CEQA, and (2) the review of project need and costs pursuant to PU Code Section 1001 et seq.

For timing of the review process of all applicable permits, see **Table 3-10**, *Anticipated Permits and Approvals*, located in **Section 3.10.1**, *Anticipated Permits and Approvals.* No local discretionary (e.g., land use) permits are required because the CPUC has preemptive jurisdiction over the siting, construction, and operation and maintenance (O&M) of the Proposed Project. The CPUC's authority does not preempt special districts, such as Air Quality Management Districts (AQMDs), other state agencies, or the Federal government. LS Power would obtain all applicable ministerial permits, approvals, and licenses from local jurisdictions, including the Cities of Fremont, Milpitas, San José, and Santa Clara~~. LS Power would obtain ministerial permits, approvals, and licenses~~, and would participate in reviews and consultations as needed with federal and state agencies.

2.3.2 CEQA REVIEW

CEQA requires state and local agencies in California to assess and disclose the potential adverse environmental consequences of discretionary actions. The CPUC has exclusive jurisdiction over the siting of electrical infrastructure projects greater than 50 kV and proposed by regulated public utilities. The Proposed Project would include new 230 kV ~~and 320 kV~~ transmission lines. Furthermore, LS Power is a regulated public utility in the State of California and is subject to CPUC siting approval for applicable projects. As further outlined in **Table 3-10**, other agencies with potential ministerial authority over the Proposed Project include the Cities of Fremont, Milpitas, San José, ~~Milpitas,~~ and Santa Clara. For these reasons, the CPUC is the appropriate CEQA Lead Agency for the Proposed Project.

The CPUC conducts its environmental evaluation in accordance with both CEQA and with its own environmental rules. CEQA provides guidelines to ensure a thorough environmental evaluation. Specifically, it requires the examination of particular environmental issues, such as water and air quality, greenhouse gases, noise, land uses, agricultural, biological, cultural and Tribal resources, mineral resources, public services, utilities, wildfire, recreation, population and housing, hazards and hazardous materials, public safety, paleontological resources, transportation, and aesthetics.

According to Section 15002(g) of the CEQA Guidelines, "a significant effect on the environment is defined as a substantial adverse change in the physical conditions which exist in the area affected by the proposed project." The CEQA Guidelines further define three types of environmental effects (or impacts): direct or primary effects that are caused by a project and occur at the same time and place, indirect or secondary effects that are reasonably foreseeable and caused by a project but occur at a different time or place, and cumulative effects. If it is determined that a project would cause a significant direct, indirect, or cumulative impact (or contribute considerably to an existing cumulative impact), CEQA requires that the analysis disclose such impacts and identify feasible mitigation measures for each significant environmental effect identified. This PEA analyzes the potential environmental impacts associated with the construction and O&M of the Proposed Project.

2.3.3 PRE-FILING CEQA COORDINATION

LS Power and the CPUC held Pre-filing Consultation meetings on March 28, 2023, August 7, 2023, November 2, 2023, and January 17, 2024, to discuss the Proposed Project. The agenda for the meetings included: an introduction to the Proposed Project, location review, purpose and need overview, and schedule. During the meetings, LS Power shared a summary of the Proposed Project description and preliminary mapping. The Proposed Project's need to be in service by June 2028 was also discussed. Following the pre-filing consultation meeting, LS Power and CPUC have held additional meetings as summarized in **Table 2-1**.

LS Power submitted a Draft PEA for CPUC review on February 20, 2024, in compliance with the CPUC's pre-filing process as outlined in the CPUC's *Guidelines for Energy Project Applications Requiring CEQA Compliance: Pre-filing Proponent's Environmental Assessments*, updated November 2019.

In addition, on February 28, 2024, the CPUC and LS Power conducted a site visit of the Proposed Project. The site visit included a walking tour of the proposed Baylands terminal property, no longer part of the Proposed Project scope, as well as a driving tour of most of the proposed transmission line routes. The CPUC conducted a preliminary review of the Draft PEA and, following the site visit, provided comments on March 22, 2024, with recommendations to supplement the PEA in order for the CPCN application to be deemed complete in a timely manner. This PEA has been supplemented with additional information to address comments raised during the CPUC's preliminary review.

2.4 DOCUMENT ORGANIZATION

2.4.1 PEA ORGANIZATION

In accordance with the PEA Checklist, *Guidelines for Energy Project Applications Requiring CEQA Compliance: Pre-filing Proponent's Environmental Assessments*, updated November 2019, the Proposed Project PEA is divided into nine sections as summarized below. **Appendix 2-A**, *PEA Checklist Table*, provides references for the location of required PEA elements.

Section 1.0, *Executive Summary.* This section provides a Proposed Project summary, land ownership and rights-of-way requirements, areas of controversy, summary of impacts, summary of alternatives, and a pre-filling consultation and public outreach summary. All figures in the PEA are included in **Appendix 1-A**, *PEA Figures*.

Section 2.0, *Introduction.* This section provides a detailed description of the Proposed Project's background, pre-filling consultation and public outreach, environmental review process, and document organization.

Section 3.0, *Proposed Project Description.* This section provides a detailed description of the Proposed Project overview and components, existing and proposed system, land ownership, rights-of-way and easements, construction, construction workforce, equipment, traffic and schedule, post-construction, O&M, anticipated permits and approvals, Applicant Proposed Measures (APMs), and project description graphics, mapbook, and Geographic Information System (GIS) requirements.

Section 4.0, *Description of Alternatives.* This section describes the alternatives considered by LS Power during development of the Proposed Project.

Section 5.0, *Environmental Analysis*. This section includes a description of the environmental setting, regulatory setting, and impact analysis for each resource area. The following resource areas are discussed in **Section 5.0**:

- 5.1 Aesthetics
- 5.2 Agriculture and Forestry Resources
- 5.3 Air Quality
- 5.4 Biological Resources
- 5.5 Cultural Resources
- 5.6 Energy
- 5.7 Geology, Soils, and Paleontological Resources
- 5.8 Greenhouse Gas Emissions
- 5.9 Hazards, Hazardous Materials, and Public Safety
- 5.10 Hydrology and Water Quality
- 5.11 Land Use and Planning
- 5.12 Mineral Resources
- 5.13 Noise
- 5.14 Population and Housing
- 5.15 Public Services
- 5.16 Recreation
- 5.17 Transportation

- 5.18 Tribal Cultural Resources
- 5.19 Utilities and Service Systems
- 5.20 Wildfire
- 5.21 Mandatory Findings of Significance

Section 6.0, *Comparison of Alternatives.* This section includes a comparison of the alternatives described in **Section 4.0**.

Section 7.0, *Cumulative and Other CEQA Considerations.* This section discusses the cumulative and growth-inducing impacts from the Proposed Project.

Section 8.0, *List of Preparers.* This section provides a list of people, their organization, and their qualifications for all authors and reviewers of each section of the PEA.

Section 9.0, *References.* This section provides a full reference list for the PEA.

3.0 UPDATED PROPOSED PROJECT DESCRIPTION

This section defines the Power the South Bay Project's ("Proposed Project's") location and components; describes the existing electric system; and explains how the Proposed Project would be implemented and its place within California's electrical transmission system. The Proposed Project includes components to be constructed and operated by LS Power Grid California, LLC ("LS Power") as well as modification of the existing Pacific Gas and Electric Company (PG&E) Newark substation, to be constructed and operated by PG&E, and modification of the existing Silicon Valley Power (SVP) Northern Receiving Station (NRS) substation, to be constructed and operated by SVP. This section also describes construction and operation of the Proposed Project as well as identifies any permits or other approvals that may be needed to implement the Proposed Project. Finally, this section identifies any measures proposed by LS Power to avoid or minimize potential environmental impacts.

The Applicant Proposed Measures (APMs) and any mitigation measures ultimately imposed as part of this application proceeding would not apply to PG&E or SVP's scopes of work. Although PG&E and SVP's substations are part of the Proposed Project being evaluated under California Environmental Quality Act (CEQA), PG&E and SVP's construction would not be authorized under this specific California Public Utilities Commission (CPUC) decision. However, the PG&E substation modification would be subject to all applicable regulatory requirements, and PG&E's Best Management Practices (BMPs) are incorporated into this Proponent's Environmental Assessment (PEA) and considered by the CPUC in its environmental review of the Proposed Project. PG&E's proposed BMPs are also identified in **Section 3.11.2**, *PG&E Best Management Practices*. Similarly, the SVP substation modifications would be subject to all applicable regulatory requirements, and SVP would implement one Proposed Project APM.

3.1 PROJECT OVERVIEW

The Proposed Project was approved by the California Independent System Operator (CAISO) to ensure the reliability of the CAISO-controlled grid. ~~This~~The Proposed Project[1] would ~~be accomplished through the~~ consist of construction and operation of ~~two~~a new ~~high-voltage direct~~230 kilovolt (kV) alternating current (~~HVDC) terminals~~AC) transmission line, which would connect ~~to~~ the existing Newark 230 ~~kilovolt (~~kV~~)~~ substation and the existing NRS 230 kV substation~~, and new transmission lines~~. The Proposed Project is being proposed by LS Power, a Delaware limited liability company established to own and operate transmission projects in California as a designated California Public Utility.

Project Summary

The Proposed Project is located in the Cities of Fremont, Milpitas, San José, and Santa Clara, California~~ as shown on **Figure 3-1**, *Project Vicinity*, **Figure 3-2**, *Project Location,* and **Figure 3-3**, *Project Overview*.~~. To accompany this Updated Proposed Project Description, LS Power has provided an updated Proposed Project GIS Database, which contains updated Proposed Project

[1] The original project scope approved by CAISO, called the Newark to NRS HVDC Project, included the construction of two new high-voltage direct current (HVDC) terminals and a 320 kV direct current (DC) transmission line connecting the two HVDC terminals. LS Power had coined these the Albrae and Baylands terminals, and a few historic references to these originally proposed project components may remain throughout this Updated Proposed Project Description.

spatial data that can be used to create figures within the CPUC-prepared CEQA document[2]. The Proposed Project includes the following key elements:

- ~~Two new HVDC terminals:~~
    - ~~The new Albrae terminal interconnected to the existing PG&E Newark substation; and~~
    - ~~The new Baylands terminal interconnected to the existing SVP NRS substation.~~
- ~~One~~An approximately ~~8.6~~12-mile ~~Albrae~~Newark to ~~Baylands 320~~NRS 230 kV ~~direct current (DC)~~AC transmission line, both overhead and underground, connecting the ~~Albrae terminal to the Baylands terminal;~~
- ~~One approximately 0.4-mile Newark to Albrae 230 kV alternating current (AC) transmission line, both overhead and underground, connecting the new Albrae terminal to the~~ existing PG&E Newark substation~~;~~
- ~~One approximately 3.5-mile Baylands to NRS 230 kV AC transmission line, both overhead and underground, connecting the new Baylands terminal~~ to the existing SVP NRS substation; and
- Modifications to PG&E's Newark and SVP's NRS substations to accommodate connection of the new Newark to ~~Albrae and Baylands to~~ NRS 230 kV transmission ~~lines~~line. These modifications would be completed by PG&E and SVP, respectively, but are included in this Proposed Project description as they are part of the overall transmission upgrade project.

Project Location

~~The proposed Albrae terminal site is approximately 6.1 acres and is located approximately 0.8 mile west of Interstate (I)-880 and approximately 0.2 miles northeast of the existing PG&E Newark substation (see **Figure 3-4**, *Project Route Map*). The proposed Albrae terminal site is located in the City of Fremont and is zoned for General Industrial uses. Surrounding land uses consist of industrial facilities, including glass and concrete fabrication~~ Newark ~~to the north, an electric utilities distribution center to the east, and a car repair, storage, and auction lot to the south and west. The proposed Albrae terminal site is located within the northwest quarter of the Public Land Survey System (PLSS) Niles Quadrangle of Township 5 South and Range 1 West.~~

~~The proposed Baylands terminal site is approximately 9.2 acres and is located approximately 0.5 miles north of State Route (SR)-237, approximately 1.8 miles west of I-880, and approximately 1.8 miles northeast of the existing SVP NRS substation. The site is located within the City of San José and zoned for Planned Development Single-Family Residential uses. Surrounding land uses consist of Los Esteros Road and a recycling and trash center to the north, San José-Santa Clara Regional Wastewater Facility (RWF) to the east, and undeveloped land to the south and west. The proposed Baylands terminal site is located within the northwest quarter of the PLSS Milpitas Quadrangle Section 3 of Township 6 South and Range 1 West.~~

[2] LS Power has provided an updated GIS Database in lieu of updated figures because the CPUC is in the process of preparing the CEQA document, which will require new figures to be created. Therefore, certain PEA Proposed Project Description figures, such as Vicinity Maps, Overview Maps, and Route Maps, have not been updated. Figures which are not typically recreated by the CPUC during the CEQA process have been updated and included herein. Engineering-based figures, such as typical pole diagrams, duct banks schematics, and construction method diagrams, have been updated as part of the Updated Proposed Project Description.

~~The proposed Albrae to Baylands 320 kV DC~~ The proposed Newark to NRS 230 kV transmission line is located within the Cities of Fremont, Milpitas, ~~and~~ San José, and Santa Clara and would connect the existing PG&E-owned Newark substation to the existing SVP-owned NRS substation. ~~new Albrae terminal to the new Baylands terminal.~~ The underground portion of the ~~proposed Albrae to Baylands 320 kV DC transmission line~~ Proposed Project would be located primarily within existing roadways, such as Weber Road, Boyce Road, Cushing Parkway, Fremont Boulevard, McCarthy Boulevard, Los Esteros Road, Disk Drive, Nortech Parkway, Gold Street, and Lafayette Street, and the overhead portion of the Proposed Project would be located within the San José-Santa Clara Regional Wastewater Facility (RWF) (refer to the **Updated GIS Database**). ~~and Los Esteros Road (refer to **Figure 3-4**). The overhead portion of the proposed Albrae to Baylands 320 kV DC transmission line would traverse from North McCarthy Boulevard (approximately 0.1 mile south from its intersection with Dixon Landing Road) to its intersection with Los Esteros Road, spanning across existing wastewater drying ponds, and would include approximately 11 new transmission line support structures. The proposed Albrae to Baylands 320 kV DC transmission line would transition back underground at Los Esteros Road and turn southeast into the proposed Baylands terminal site, which is located southeast of Los Esteros Road. Approximately 5.5 miles of this proposed alignment are located in the City of Fremont, 0.2 mile is located in the City of Milpitas, and approximately 2.9 miles are located in the City of San José.~~

~~The proposed Newark to Albrae 230 kV transmission line would be constructed to connect the proposed Albrae terminal to the existing Newark substation. The proposed Newark to Albrae 230 kV transmission line would be approximately 0.4 mile of new underground and overhead alignment and located entirely within the City of Fremont. The proposed Newark to Albrae 230 kV transmission line would be located underground in Weber Road before transitioning aboveground for a short overhead span that would likely include approximately two new transmission support structures (refer to **Figure 3-4**). The structures are proposed to range in height from approximately 80 to 140 feet.~~

~~The proposed Baylands to~~ The proposed Newark to NRS 230 kV transmission line would ~~be constructed to connect the proposed Baylands terminal to the existing NRS substation. The proposed Baylands to~~ exit the Newark substation aboveground for a short overhead segment (approximately 0.1 mile) and would transition to an underground position located within Weber Road, where it would continue underground through Boyce Road, Cushing Parkway, Fremont Boulevard, and McCarthy Boulevard. The proposed Newark to NRS 230 kV transmission line would then leave McCarthy Boulevard, transition to overhead towards Los Esteros Road, spanning across existing wastewater drying ponds. This overhead segment would include approximately 11 new transmission line support structures. The proposed Newark to NRS 230 kV transmission line would ~~consist of approximately 3.3 miles of~~ then transition back underground ~~alignment in roadways such as Los Esteros Road,~~ near Los Esteros Road and would be underground for the remainder of the alignment until it reaches the NRS substation. This proposed underground segment would continue within Disk Drive~~,~~ and Nortech Parkway~~, and Lafayette Street. In the approximate middle of this line, the alignment would transition to an overhead position for approximately 0.2 mile at the~~ until leaving the public road right-of-way (ROW) onto private and public property, including an underground crossing of the Guadalupe River ~~(refer to **Figure 3-4**).~~ , and would re-enter public roads at Gold Street, and then proceed into Lafayette Street until reaching the existing NRS substation. Approximately ~~2.3~~5.9 miles of this proposed alignment are located in the City of Fremont, 0.2 mile is located in the City of Milpitas,

~~approximately 4.7 miles are located in the City of~~ San José, and approximately 1.2 miles are located in the City of Santa Clara~~.~~ (refer to the **Updated GIS Database**).

3.2 EXISTING AND PROPOSED SYSTEM

3.2.1 EXISTING SYSTEM

The Proposed Project is located within an existing regional transmission system that provides electricity to the Greater San Francisco Bay Area ("Greater Bay Area"). The Greater Bay Area is at the center of PG&E's service territory, serving five counties including the Counties of Santa Clara and Alameda. To better conduct performance ~~evaluation~~evaluations, the Greater Bay Area is divided into three sub-areas: East Bay, South Bay, and San Francisco Peninsula. The Proposed Project is located within both the East Bay and South Bay sub-areas. The East Bay sub-area includes the County of Alameda and the following Cities: Concord, Berkeley, Oakland, Hayward, Fremont, and Pittsburg. This area primarily relies on its internal generation to serve electricity customers.

The South Bay sub-area covers approximately 1,500 square miles and includes the County of Santa Clara. Some of the Cities in the South Bay sub-area include San José, Mountain View, Morgan Hill, and Gilroy. Los Esteros, Metcalf, Monta Vista, and Newark are the key substations that deliver power to this sub-area. The South Bay sub-area encompasses the De Anza and San José divisions and the City of Santa Clara. Generation facilities within this sub-area include Calpine's Metcalf Energy Center, Calpine's Los Esteros Energy Center, Calpine's Gilroy Power Units, and SVP's Donald Von Raesfeld Power Plant. In addition, this sub-area has key 500 kV and 230 kV interconnections to the Moss Landing and Tesla substations.

The San José/SVP area is generally served from the Newark 230/115 kV substation in the north and the Metcalf 500/230/115 kV substation in the south. The existing system in the Greater Bay Area includes numerous existing PG&E overhead and underground transmission and distribution circuits that serve load throughout the area. The existing transmission system is shown in **Updated** **Figure 3-5**, *Transmission System of Power the South Bay Project.*

There are currently three 115 kV lines and one 230 kV line that connect the existing PG&E Newark, Nortech, Los Esteros, and SVP NRS substations, with two 115 kV lines directly connecting the existing substations and one 115 kV and one 230 kV line having an intermediate stop at the SVP SSS substation ~~-~~and nearby Los Esteros substation.

The existing Newark substation is approximately 27.5 acres and is located in the City of Fremont, southwest of the intersection of Boyce Road and Weber Road. The existing NRS substation is approximately 13.5 acres and is located in the City of Santa Clara, south of the intersection of Tasman Drive and Lafayette Street. Due to the electrical proximity of the bulk of the area load to the existing Newark substation, the bulk of the power flows from the Newark side. There is an existing imbalance between two sources in the existing system and overloads on the San José area 115 kV system.

3.2.2 PROPOSED PROJECT SYSTEM

~~The main components~~The Proposed Project system consists of the ~~Proposed Project's system consist of two new HVDC terminals and three new~~proposed approximately 12-mile Newark to NRS 230 kV transmission ~~lines. One~~line. The proposed transmission line would connect two existing substations, the existing PG&E Newark substation and the existing SVP NRS substation (refer to the **Updated GIS Database**) ~~the HVDC terminals while the other two transmission lines would be independently connected to two existing substations (refer to **Figure 3-4**). The two new HVDC terminals would be independently connected to two separate~~ : ~~substations—the~~ PG&E Newark ~~and SVP NRS substations—creating an additional transmission connection between them. The new HVDC terminals—the Albrae and Baylands terminals—would each have a rated real power output of 1,044 megavolt amperes (MVA) or 1,000 megawatts (MW) with 300 megavolt amperes of reactive power (MVAR).~~ The Proposed Project would ~~initially~~ have a ~~rated~~ real power ~~output~~rating of ~~593~~ 1,000 megavolt amperes (MVA ~~measured at SVP's NRS 230 kV substation~~) and would support the regional transmission system ~~by providing voltage support in the San José area. The proposed HVDC terminal facilities would provide up to 593 MVA to~~. The Proposed Project would meet the increased demand for energy within the existing service area and would not serve any additional users beyond those already being served by the existing system. ~~The reactive power would support the regional transmission system by providing voltage support to the electrical grid in the vicinity of the proposed HVDC terminals, as discussed further in **Section 3.2.3**, *System Reliability*. Each new HVDC terminal would include Voltage Source Converter (VSC) HVDC equipment, an AC switchyard using gas-insulated switchgear (GIS) in a breaker-and-a-half (BAAH) configuration, and three single-phase converter transformers including space for an on-site spare. The VSC HVDC equipment and the GIS switchyards would be located within separate enclosures designed to protect the equipment from environmental and physical threats. Specific equipment and components for each proposed HVDC terminal is discussed further in **Section 3.3.4.1**, *HVDC Terminal Facilities*. See **Figure 3-5** and **Figure 3-6**, *Albrae Terminal to Baylands Terminal Schematic* for depictions of the existing and proposed systems affected by the Proposed Project.~~

~~The two new HVDC terminals and the proposed Albrae to Baylands 320 kV DC transmission line would interconnect with the existing transmission system via the new Newark to Albrae and Baylands to NRS 230 kV transmission lines. Specifically, the new Albrae terminal would be interconnected with the existing PG&E Newark substation via the new approximately 0.4-mile underground and overhead Newark to Albrae 230 kV transmission line that would transition aboveground to an LS Power-owned transition structure that would then connect to a future one-structure overhead line within PG&E-owned property to be built and owned by PG&E (see **Figure 3-4** and **Figure 3-7a**, *Albrae Terminal General Arrangement*). The new Baylands terminal would be interconnected with~~ The proposed Newark to NRS 230 kV transmission line would be an underground and overhead transmission line that would interconnect with the existing transmission system at the existing PG&E Newark substation in Fremont and the existing SVP NRS substation ~~via the new approximately 3.5-mile overhead and underground Baylands~~in Santa Clara. The Newark to NRS 230 kV transmission line ~~that would enter the substation~~would begin at the PG&E Newark substation in an overhead position at a PG&E-owned overhead structure within PG&E-owned property. The Proposed Project would terminate at the SVP NRS substation underground and transition aboveground at a steel substation ~~riser~~termination structure owned by SVP with the cable terminator stands to be owned by ~~SVP (see **Figure 3-7b**, *Baylands Terminal General Arrangement*).~~LS Power. To provide a new bay position for the new ~~Baylands~~Newark to NRS 230 kV transmission line connection, SVP would need to add new and modify existing~~,~~9 electrical infrastructure within the existing NRS substation. ~~The new HVDC terminals would be connected via the proposed approximately 8.6-mile Albrae to Baylands 320 kV DC overhead and underground transmission line.~~

Excavation and installation of the concrete-encased duct bank and associated splice vaults would require the relocation of certain third-party utilities in areas of conflict. Utilities would be avoided where practicable, but some utilities would require relocation. Utilities that would require relocation may include sanitary sewer, stormwater, gas, water, electric, and telecommunication. There are two aboveground electric distribution line spans on PG&E-owned property outside of the existing Newark substation that conflict with PG&E's plan for the proposed Newark to ~~Albrae~~NRS 230 kV transmission line that would need to be relocated underground. No other changes to the existing distribution system would occur.

All new facilities and interrelated activities associated with the Proposed Project are described in **Section 3.3**, *Project Components*~~, and schematic diagrams of the proposed HVDC terminal facilities are provided in **Figures 3-7a** and **3-7b**.~~. No capacities of existing lines are expected to change as part of the Proposed Project.

3.2.3 SYSTEM RELIABILITY

~~The San José/SVP area is primarily served from the existing Newark substation in the north and the existing Metcalf substation in the south.~~ Transmission planning studies prepared by CAISO in the 2021-202~~1~~2 planning cycle identified ~~several reliability concerns consisting of thermal overloads~~a long-term load forecast of approximately 2,100 megawatts (MW) in the San José area, including a significant load increase of approximately 500 MW in the SVP area, ~~resulting in~~which would lead to several reliability concerns consisting of thermal overloads such as multiple near-term and long-term overloads in the San José area 115 kV system. ~~The~~While the San José/SVP area is primarily served from the existing Newark ~~substation in the north and the existing~~and Metcalf ~~substation in the south. However~~substations, the bulk of the power flows from the Newark side due to the electrical proximity of the bulk of the area load to the existing Newark substation, specifically the SVP area load where most of the load increase is. ~~Due to this imbalance between two sources in the AC-connected network, the Proposed Project would result in better performance from the power flow perspective as a result of the controllability of the HVDC source. The Proposed Project would also~~CAISO identified the Newark to NRS HVDC Project and subsequently issued a Request for Proposal for the Project to be competitively bid in the 2021-2022 planning cycle. In March 2023, CAISO chose LS Power to be the Project Sponsor for the Newark to NRS HVDC Project.

As part of CAISO's 2024-2025 planning cycle, CAISO further evaluated the growing needs of the Greater Bay Area. CAISO's evaluation identified an increase in the long-term load forecast to approximately 3,400 MW in the base case and 4,200 MW in the sensitivity scenario in the San José area. This is significantly more than when CAISO originally identified the Newark to NRS HVDC Project. Due to this increased load forecast, CAISO reevaluated proposed projects in the area, including the Newark to NRS HVDC Project. Through its evaluation, CAISO adjusted original Newark to NRS HVDC Project to be a high capacity 230 kV AC solution. The scope of the updated solution would be a new 1,000 MVA link between the existing PG&E Newark and SVP NRS substations, the Newark to NRS 230 kV Line Project[3] ("Proposed Project"). The Proposed Project would provide benefits in reducing local capacity requirements in the San José sub-area and overall Greater Bay Area that reduces reliance on the local gas-fired generation. ~~As such, CAISO identified the need for the Proposed Project.~~

The Proposed Project would provide a new system tie between the existing Newark and NRS substations, increasing capacity ~~and controllability~~ between the SVP area and the existing Newark 230 kV substation.

[3] The Newark to NRS 230 kV Line Project is CAISO's identity for the Proposed Project's scope, which LS Power has named to be the Power the South Bay Project

The overall Proposed Project would ~~initially have a real power output of 593 MVA measured at the existing NRS 230 kV substation. The proposed HVDC terminals and associated Albrae to Baylands 320 kV DC transmission line would initially be capable of 1,044 MVA (or 1,000 MW with 300 MVAR). The reactive power would support the regional transmission system by providing voltage support to the electrical grid in the vicinity of the proposed HVDC terminals. This voltage support would be available independent of the real power flow on the DC transmission line. If the proposed Albrae to Baylands 320 kV DC transmission line was to go out of service, the proposed HVDC terminals would still be able to operate as a static synchronous compensator (STATCOM) to provide voltage support to the regional transmission system.~~have a real power rating of 1,000 MVA. The Proposed Project was developed in response to the CAISO-identified reliability issues and would provide ~~system stability and~~increased reliability for the Greater Bay Area.

3.2.4 PLANNING AREA

The Greater Bay Area is at the center of PG&E's service territory, serving five counties including the County of Santa Clara. The Greater Bay Area is a planning area that is divided into three sub-areas: East Bay, South Bay, and San Francisco Peninsula. The Proposed Project, in conjunction with the existing PG&E Newark and SVP NRS substations, would support the existing regional transmission system that provides electricity to the South Bay and East Bay sub-areas within the Greater Bay Area. Therefore, the system planning area served by the Proposed Project is identified as the "Greater Bay Area~~".~~." The term "regional transmission system" is used to describe the network that provides electricity to this planning area. The larger, regional system that provides electricity to all PG&E's and SVP's customers is identified as the "bulk PG&E transmission system."

3.3 PROJECT COMPONENTS

3.3.1 PRELIMINARY DESIGN AND ENGINEERING

The ~~main~~ Proposed Project ~~component~~ involves the development of ~~two new HVDC terminals (proposed Albrae~~an approximately 12-mile 230 kV underground and ~~Baylands terminals) that would be interconnected to the existing PG&E Newark and SVP NRS substations, respectively. A detailed~~overhead transmission line. Detailed Proposed Project ~~map~~mapping that identifies the locations of major Proposed Project components, as well as access roads and staging areas, is included ~~as **Figure 3-4**.~~in the provided **Updated GIS Database**. The individual components of the Proposed Project are discussed in greater detail in **Section 3.3.4**, *Proposed Facilities*.

LS Power has completed approximately 30 percent of the engineering design, PG&E has completed approximately five percent engineering design, and SVP has completed approximately ~~30~~60 percent engineering design for the Proposed Project. As such, the information in this document is based on preliminary engineering design and is subject to change based on additional and/or final engineering design, further studies and design to be performed by PG&E and SVP, regulatory requirements, conditions on the ground, and ongoing coordination discussions among LS Power, PG&E, SVP, CPUC, and CAISO.

3.3.2 SEGMENTS, COMPONENTS, AND PHASES

All components of the Proposed Project would be installed during a single phase of construction (i.e., continuous construction timeframe). The preliminary construction schedule is described in

Section 3.6.4, *Construction Schedule*. The primary components of the Proposed Project are as follows:

- ~~New Albrae terminal (~6.1 acres fenceline);~~
- ~~New Baylands terminal (~7.0 acres fenceline);~~
- ~~New Albrae to Baylands 320 kV DC transmission line (~8.6 miles);~~
- New Newark to ~~Albrae 230 kV AC transmission line (~0.4 mile);~~
- ~~New Baylands to~~ NRS 230 kV AC transmission line (~~~3.5~~12 miles);
- Modifications to the existing PG&E Newark substation (~0.5 acre); and
- Modifications to the existing SVP NRS substation (~13.5 acres).

These Proposed Project components are further described in the sections below.

3.3.3 EXISTING FACILITIES

The Proposed Project would include all new facilities and modifications to the existing PG&E Newark and SVP NRS substations to accommodate interconnection to the new facilities. Related existing facilities are described in the following subsections and include existing conditions at the ~~proposed HVDC terminal sites,~~ existing substations~~,~~ and existing transmission and distribution lines that would be affected by the Proposed Project.

~~3.3.3.1 Proposed HVDC Terminal Sites Existing Conditions~~

~~The proposed Albrae terminal site currently consists of an approximately 25.3-acre storage yard for an active precast building material manufacturing facility (Assessor Parcel Number [APN] 531-165-9-4). Approximately 6.1 acres of the southwestern portion of the site would be utilized for the proposed Albrae terminal. The existing storage structures on the southwestern corner of the property would be removed.~~

~~The proposed Baylands terminal is located on the San José-Santa Clara RWF property and is currently an approximately 9.2-acre highly disturbed, vacant, undeveloped lot, with no facilities or development on-site (APN-015-30-109).~~

~~3.3.3.2~~3.3.3.1 Existing Substations

The existing PG&E Newark substation is a 230/115 kV transmission substation that is currently connected to seven 230 kV transmission lines, twenty-one 115 kV transmission lines, two 60 kV transmission lines, and approximately ten distribution lines. The existing substation facility is approximately 27.5 acres in size. Existing facilities at the Newark substation range in height up to approximately 170 feet above-grade, while new facilities for the modification of the Newark substation would range in height up to approximately 130 feet above-grade. The new transmission lines that would be constructed for the proposed Newark to ~~Albrae~~NRS 230 kV transmission line would be self-supported, tubular steel poles with direct imbed or drilled pier foundations. The proposed facilities are discussed further in **Section 3.3.4.~~2~~1**, *Transmission Lines*. For security reasons, PG&E prefers not to identify specific substation components or provide detailed information on the location of substation facilities.

The existing SVP NRS substation is a 230/115/60 kV transmission substation that is currently connected to one 230 kV transmission line (SSS), five 115 kV transmission lines (PG&E Newark-two lines, Nortech-one line, SRS-two lines), and four sub-transmission lines (two short 60 kV gen-tie lines to Gianera [GIA] generating station, SRS-one line, KRS-~~on~~one line). The existing substation facility is approximately 13.5 acres in size. All existing 230 kV lines at the existing NRS substation are located underground with a maximum below-ground depth of 35 feet. Existing overhead facilities at the NRS substation range in height up to approximately 135 feet above-grade. To support the interconnection at NRS, SVP would construct a new bus within the existing NRS substation, which would include a new gantry (dead-end) structure within the NRS substation. The bus equipment would range in height up to approximately 60 feet above-grade.

The existing PG&E Newark and SVP NRS substations have a non-reflective finish and are gray in color. New substation facilities would generally also be gray and non-reflective. For the modifications to PG&E's Newark substation and SVP's NRS substation, new lighting would be installed per standard and would be determined during detailed design. Outdoor lighting additions would be in line with Institute of Electrical and Electronics Engineers (IEEE) C2 to provide two foot-candle intensity, and light emitting diode (LED) lighting would be used to meet the latest efficiency recommendations in California Title 24. Locations of the existing Newark and NRS substations are ~~depicted in **Figures 3-3** and **3-4**~~provided in the **Updated GIS Database**.

~~3.3.3.3~~3.3.3.2 Existing Transmission and Distribution Facilities

~~Twenty-eight~~Thirty existing aboveground transmission lines and approximately 10 aboveground distribution lines are connected to the existing Newark substation. Also, five existing aboveground transmission lines and four existing aboveground subtransmission lines are connected to the existing NRS substation. Existing distribution, subtransmission, and transmission structures can range in height from 30 feet to 170 feet, with structure height generally increasing with higher voltage. The Proposed Project would not directly affect any other existing transmission lines. However, two existing distribution lines would be relocated underground on PG&E-owned property to support PG&E's plan for their portion of the proposed Newark to ~~Albrae~~NRS 230 kV transmission line. As part of the modifications to both the existing PG&E Newark substation and existing SVP NRS substation, line connections (getaways) may be adjusted or rearranged. These changes are anticipated to affect the existing line(s) between the substation racks and the edge of the substation property. **Section 3.2.1**, *Existing System* provides additional details regarding existing transmission and distribution lines in the Proposed Project area.

3.3.4 PROPOSED FACILITIES

~~3.3.4.1 HVDC Terminal Facilities~~

~~The proposed new HVDC terminals' primary function would be to convert AC power to DC power at the sending terminal and to convert DC power back to AC power at the receiving terminal. To facilitate this conversion, each new HVDC terminal would include VSC HVDC equipment, an AC switchyard using GIS in a BAAH configuration, and converter transformers including space for an on-site spare. The VSC HVDC equipment and the GIS switchyards would be located within separate enclosures designed to protect the equipment from environmental and physical threats. Specific equipment and components for each proposed HVDC terminal are provided below.~~

~~Albrae Terminal~~

~~The proposed Albrae terminal site would be constructed northeast of the existing PG&E Newark substation within an approximate 6.1-acre site located on a larger parcel (part of APN 531-165-9-4). Construction of the proposed Albrae terminal would permanently disturb a total area of approximately 6.1 acres and would result in the removal of existing structures and asphalt. The final fenced terminal would be approximately 6.1 acres in size.~~ ~~**Figure 3-7a**~~ ~~depicts the proposed Albrae terminal layout and arrangement of major equipment and structures.~~

~~The proposed Albrae terminal would include aboveground facilities supported by a combination of deep, reinforced drilled shafts foundations and slab foundations with spread footings or piles. The tallest structures within the proposed Albrae terminal facility would be the approximately 100-foot-tall lightning shielding masts. The proposed Albrae terminal facility would include VSC HVDC equipment; three single-phase converter transformers, including space for an on-site spare; three 230 kV sulfur hexafluoride (~~SF_6~~) gas-insulated circuit breakers; and associated bus, disconnect switches, current transformers, voltage transformers, and termination/riser structures.~~

~~**Baylands Terminal**~~

~~The proposed Baylands terminal site would be constructed approximately 1.8 miles northeast of the existing SVP NRS substation, within a 9.2-acre site located on a larger parcel (part of APN 015-30-109). LS Power would negotiate a lease for the proposed Baylands terminal with the property owner (City of San José). Construction of the proposed Baylands terminal would permanently disturb a total area of approximately 9.2 acres, and the final fenced terminal would be approximately seven acres in size.~~ ~~**Figure 3-7b**~~ ~~depicts the proposed Baylands terminal layout and arrangement of major equipment and structures.~~

~~The proposed Baylands terminal would include aboveground facilities supported by a combination of deep, reinforced drilled shaft foundations and slab foundations with spread footings. The tallest structures within the proposed Baylands terminal facility would be the approximately 100-foot-tall lightning shielding masts. The proposed Baylands terminal facility would include VSC HVDC equipment; three single-phase converter transformers, including space for an on-site spare; three 230 kV~~ SF_6 ~~gas-insulated circuit breakers; and associated bus, disconnect switches, current transformers, voltage transformers, and termination/riser structures.~~

~~**Ancillary Terminal Components for Albrae and Baylands**~~

~~The Proposed Project includes AC switchyards at each proposed HVDC terminal that would use GIS in a BAAH configuration. Both GIS switchyards would be located within an enclosure designed to protect the equipment from environmental and physical threats (refer to~~ ~~**Figures 3-7a**~~ ~~and~~ ~~**3-7b**~~~~).~~

~~All major HVDC terminal equipment (e.g., VSC HVDC equipment, GIS, converter transformers, cooling equipment, etc.) would be installed on concrete foundations. Each transformer would have an oil containment system consisting of an impervious, lined, open, or stone-filled sump area around the transformer. The maximum amount of oil required for the transformers would be approximately 25,000 gallons for each of the three transformers. Transformer oil containment basins are designed to contain the oil volume of the transformers plus a 25-year, 24-hour storm event.~~

~~The general layout and arrangement of the major HVDC terminal equipment is shown in~~ ~~**Figures 3-7a**~~ ~~and~~ ~~**3-7b**~~~~.~~ ~~**Figure 3-8**~~~~,~~ ~~*HVDC Terminal Site Profile Drawings*~~ ~~provides a vertical depiction of~~

~~the proposed HVDC terminal sites and includes the approximate height of various terminal equipment. HVDC terminal facilities, like those included in the Proposed Project, are designed to meet project-specific requirements and specifications. Therefore, design drawings and simulations (refer to **Section 5.1**, *Aesthetics*) have been included with the PEA to depict the visual appearance of the proposed Albrae and Baylands terminals. Representative photographs have not been included as they would not accurately reflect the anticipated appearance of the proposed facilities as well as the simulations. Photographs of existing HVDC and substation facilities have also been excluded for security purposes for currently operating facilities.~~

~~Equipment and enclosures at the proposed HVDC terminal sites would be non-reflective as practicable and neutral gray or neutral earth-tone colors. Enclosure roofs would typically be white. Lighting would be installed at the proposed HVDC terminal locations and would conform to National Electric Safety Code (NESC) requirements and other applicable outdoor lighting codes. The proposed HVDC terminal facilities are not anticipated to require nighttime illumination. Terminal station lighting would be photocell and motion controlled to provide illumination for security. LED lights would be mounted on A-frames, H-frames, structures, poles, and enclosures as required. All lighting provided would be shielded and pointed down to minimize glare onto surrounding properties and habitats.~~

~~The proposed HVDC terminals would be primarily powered by a tertiary winding on a converter transformer at each terminal to step-down the energy from the transmission voltage level to the distribution voltage level. An electric distribution line would be installed to provide backup power for each proposed HVDC terminal from existing PG&E distribution lines that are near each proposed HVDC terminal site (refer to **Figures 3-4**, **3-7a**, and **3-7b**).~~

~~The new HVDC terminal facilities would also include a stormwater management system consisting of a stormwater drainage and conveyance system and a stormwater detention system. The size of the detention system would vary for each proposed HVDC terminal site, depending on site-specific conditions and may include a detention basin, underground detention vaults, or a combination thereof. The proposed HVDC terminal pads would be graded to drain towards the stormwater conveyance system to ultimately direct stormwater into the detention system. The stormwater detention system would not be lined, allowing for infiltration and groundwater recharge.~~

~~The stormwater detention system is designed to capture the runoff from a 100-year storm, 24-hour rainfall event and then release the captured water. Overflow from the detention system would be returned to sheet flow via a level spreader that would provide for sheet flow of the stormwater to the adjacent land surface during storms that exceed the system's design capacity. The level spreading approach would control erosion and prevent scouring at discharge locations.~~

~~No new impervious areas would be created as a result of the PG&E or SVP modifications to their existing substations. No additional stormwater management measures are anticipated to be required for these facilities.~~

3.3.4.1 Transmission Line

~~Disturbance area characteristics for the Proposed Project are discussed in **Section 3.5**, *Construction*. All facilities at the proposed HVDC terminal locations, including the associated access roads and stormwater drainage and conveyance system, would occur within the two proposed HVDC terminal sites to be secured by LS Power.~~

~~Belowground work for the proposed HVDC terminal facilities would include the construction of the foundations for the terminal equipment and enclosures, oil containment for transformers, ground grid, low voltage cable needed for terminal equipment, conduit, and underground transmission line, including duct banks and splice vaults. It is anticipated that ground disturbance depth would not exceed approximately 50 feet for terminal equipment drilled shaft foundations and approximately 200 feet for piles.~~

Newark to NRS 230 kV Transmission Line

~~**3.3.4.2 Transmission Lines**~~

~~3.3.4.3~~3.1.1.1 ~~Albrae to Baylands 320 kV DC Transmission Line~~

A new ~~Albrae~~Newark to ~~Baylands 320~~NRS 230 kV ~~DC~~ transmission line would be constructed to connect the ~~proposed Albrae terminal~~existing PG&E-owned Newark substation to the ~~proposed Baylands terminal.~~existing SVP-owned NRS substation. The proposed ~~Albrae~~Newark to ~~Baylands 320~~NRS 230 kV ~~DC~~ transmission line would be approximately ~~8.6~~12 miles in length, would be rated at 1,~~044~~000 MVA, and would be installed in a combination of underground and overhead positions (refer to ~~**Figures 3-3** and **3-4**~~the **Updated GIS Database**). The characteristics of the overhead and underground segments are further discussed below.

Underground Transmission Line Segments

The underground ~~portion~~portions of the proposed new ~~Albrae~~Newark to ~~Baylands 320~~NRS 230 kV ~~DC~~ transmission line~~,~~ would be approximately ~~6.7~~10 miles in length~~,~~ and would be a single-circuit ~~DC~~AC transmission line ~~consisting of two~~, utilizing six 2,500 square millimeter (mm^2) copper ~~320~~230 kV single core cross-linked polyethylene (XLPE) cables composed of a copper conductor, conductor binder and screen, XLPE insulation, insulation screen, water barrier, metallic sheath, and an outer jacket.

The underground transmission line would be encased within a duct bank proposed to have ~~five~~twelve smaller internal ducts: ~~three~~eight eight-inch ducts for conductor (with ~~two~~six ducts for the installed transmission cable and ~~one duct~~two ducts as ~~a spare)~~spares), four two-inch ducts for fiber optic cables, and two two-inch ducts for ~~fiber optic cables. An additional~~a ground continuity cable. Additional two-inch fiber optic cable ducts would be installed within the City of Fremont for their use as a condition of their franchise agreement. The minimum depth for the top of the duct bank would be approximately three feet, with the top of the duct bank typically varying between approximately ~~three~~3 to 10 feet beneath the surface. The typical width for the underground duct bank would be approximately 2.5 feet~~.~~ in a vertical configuration and 4.5 in a horizontal configuration. The trench excavation width would typically vary between three to ~~four~~six feet, based on the duct bank configuration and shoring requirements. A duct bank would generally be used everywhere, except where trenchless crossings are required. The Proposed Project includes 10 proposed trenchless crossings: ~~three~~ two horizontal bore (jack-and-bore or microtunnel) locations (under existing railroad lines) and ~~seven~~eight horizontal directional drill (HDD) locations (under waterways). These trenchless ~~crossings~~crossing locations are ~~shown on **Figure 3-4**.~~provided in the **Updated GIS Database**. Typical duct bank diagrams have been provided as **Updated Figure 3-9**, *Typical Duct Bank Configurations.*

Underground splice vaults would be located approximately every 1,500 to 3,000 feet with dimensions of approximately 30 feet long, ~~10~~12 feet wide, and 10 feet tall. The splice vault excavation would be approximately three feet wider on each side for installation of the splice vault. Splice vaults would be sited during detailed engineering design based on gathered utility data and cable supplier specifications. As practical, splice vaults would be sited to avoid interfering with existing access points and intersections to minimize disruptions to the public during construction and operation and maintenance (O&M). During construction, it is anticipated that up to three separate construction crews would be working on splice vault installations at different locations along the proposed underground transmission lines concurrently. Splice vaults would provide entry points for both conductor installation (during construction) and worker access (during O&M). The conductor cables would be installed in the duct bank following installation of the duct bank and splice vaults. Cable installation activities would occur at all splice vault locations and near the termination structures at the ~~proposed HVDC terminal~~existing substation sites. During operation, the vaults would provide access to the underground cables for maintenance inspections, repairs, and replacement, if needed. The vaults would be constructed of prefabricated (precast) or cast-in-place, steel-reinforced concrete. Each vault would typically have two manhole covers measuring approximately 39 inches in diameter. The bottom of the splice vaults would typically be located approximately 12 feet below ground level. Typical splice vault diagrams are provided in **Updated Figure 3-10**, *Typical Splice Vault Diagrams*.

The Proposed Project's Newark to NRS 230 kV transmission line would enter the existing NRS substation underground and transition aboveground at a steel substation termination/riser structure. The new 230 kV AC termination/riser structures would be approximately 25 feet tall and would have drilled pier foundations. ~~The Proposed Project's Albrae to Baylands 320 kV DC transmission line would enter the proposed HVDC terminals underground and transition aboveground at a steel substation termination/riser structure. The new termination/riser structures located at the proposed HVDC terminal sites would be approximately 25 feet tall.~~**Updated Figure 3-11**, *Typical Termination/Riser Structures* provides details and typical metrics for the proposed ~~320~~230 kV ~~DC~~AC termination/riser structures.

For the transition from overhead to underground ~~transmission lines~~within the segment and near the Newark substation end, tubular steel transmission cable riser poles would be required (see **Updated Figure 3-12**, *Typical Overhead Transmission Line Structures*). These overhead transmission structures would be a maximum of approximately 130 feet tall. The structures would be supported by deep, reinforced drilled shaft foundations with a maximum diameter of 12 feet and depth of 60 feet.

~~For the Albrae to Baylands 320 kV DC transmission line,~~ The Proposed Project's horizontal bore (jack-and-bore or microtunnel) crossings would include ~~a 36~~either one 44-inch casing pipe~~; three~~ containing eight eight-inch ducts with six for the installed cable and two ducts as a spare; two two-inch ducts for fiber optic cable; two two-inch ducts for ground continuity cable; a wheel assembly with spacers to keep the ducts properly spaced within the casing; and a thermal grout fill, or two 34-inch casing pipes; each containing four eight-inch ducts with three ducts for the installed cable and one duct as a spare; ~~two~~one two-inch ~~ducts~~duct for fiber optic cables; one two-inch duct for a ground continuity cable; a wheel assembly with spacers to keep the ducts properly spaced within the casing; and a ~~bentonite slurry~~thermal grout fill. **Updated Figure 3-13**, *Typical ~~320 kV DC Jack-and-~~Horizontal Bore Diagrams* depicts the typical horizontal bore (jack-and-bore or microtunnel) operation, components, and dimensions. Typical work areas for horizontal bore (jack-and-bore or microtunnel) crossings are discussed further in **Section 3.5.3.1**, *Construction*

Work Areas, and the horizontal bore (jack-and-bore or microtunnel) technique is also further discussed in **Section 3.5.6.2***, Trenchless Techniques.*

HDD crossings would include ~~three~~ either one 48-inch bore containing eight ten-inch ducts~~,~~ with six for the installed cable and two ducts as a spare; two four-inch ducts for fiber optic cable; two four-inch ducts for ground continuity cable; a wheel assembly with spacers to keep the ducts properly spaced within the casing; and a thermal grout fill, or two 34-inch bores, each with four ten-inch ducts, with three ducts for the installed cable and one duct as a spare, ~~and two~~one four-inch ~~ducts~~duct for the fiber optic ~~cables~~cable, and one two-inch duct for a ground continuity cable. The ducts would either be pulled through the unreinforced bore hole or ~~an approximately 30-inch~~a casing pipe would be installed. If a casing pipe is used, the ducts would be pulled through the casing and the remaining space backfilled with a thermal grout. **Updated Figure 3-14**, *Typical HDD Diagram* depicts the typical HDD operation, components, and dimensions. Typical work areas for HDD crossings are discussed further in **Section 3.5.3.1**, and the HDD technique is also further discussed in **Section 3.5.6.2**.

At the Cushing Parkway bridge crossing (refer to ~~**Figure 3-4**~~**Updated GIS Database**), the Proposed Project includes two options: attachment to the underside of the Cushing Parkway bridge or trench adjacent to the bridge within an existing 10-foot utility easement. Both options would utilize an existing 30-foot O&M easement located adjacent to the bridge structure for construction and operation.

Overhead Transmission Line Segments

~~For the~~The Proposed Project includes two separate overhead ~~portion~~segments. These portions of the proposed ~~Albrae~~Newark to ~~Baylands 320~~NRS 230 kV ~~DC~~ transmission line~~,~~ would be approximately two miles in total length and would include a total of 14 new overhead transmission line support structures. The primary overhead segment of transmission line would span across existing wastewater drying ponds and would be approximately 1.9 miles in length~~,~~ with 11 new overhead transmission line structures. The overhead structures would predominately utilize self-supported tubular steel monopoles with a ~~horizontal~~delta conductor configuration and two overhead optical ground wires (OPGW) (refer to **Updated Figure 3-12**). Dead-end structures would be self-supported tubular steel poles with a vertical conductor configuration. Tangents would be supported by direct embed foundations, while angles and dead-ends would be supported by deep, reinforced drilled shaft foundations. The maximum foundation depth is expected to be approximately 60 feet. The proposed overhead ~~320~~230 kV ~~DC~~ structures would range in height from approximately ~~95~~120 to ~~150~~135 feet. The proposed overhead ~~Albrae~~Newark to ~~Baylands 320~~NRS 230 kV ~~DC~~ transmission line structure spans ~~would~~ range from 250 to 1,300 feet.

The second overhead ~~portion of~~ segment is located at the ~~Albrae~~existing Newark substation. The Newark to ~~Baylands 320~~NRS 230 kV ~~DC~~ transmission line would ~~utilize~~leave the substation in an overhead position and is anticipated to include three new overhead transmission line structures, including one cable riser pole and one overhead switch structure, to be constructed and owned by LS Power, and one transmission structure, within PG&E-owned property, to be constructed and owned by PG&E. The new structures would be supported by deep, reinforced drilled shaft foundations with a ~~double bundled 320 kV 1351.5 thousand circular mils (kcmil) Aluminum Conductor Steel Supported (ACSS)/Trapezoidal Wire (TW) "Martin" conductor per phase~~maximum depth of approximately 60 feet.

A summary of overhead transmission line poles is presented in **Table 3-1**, *Proposed Project Pole Summary (Approximate Value)*. Structure locations are ~~shown on **Figure 3-4**.~~provided in the **Updated GIS Database.** The maximum pole height denotes the height of the pole only; foundations may add an additional two to three feet above ground level.

Table 3-1: Proposed Project Pole Summary (Approximate Value)				
Pole Type	**Approximate Quantity**	**Approximate Pole Height (feet)**	**Average Base Diameter at Grade (feet)**	**Average Tip Diameter (inches)**
~~Albrae~~Newark to ~~Baylands 320~~NRS 230 kV ~~DC~~AC Transmission Line				
Tubular Steel Tangent Poles	4	~~120~~140	~~8~~6	14
Tubular Steel Angle Poles	~~3~~4	~~150~~130	8	14
Tubular Steel Dead-end Poles	2	~~100~~125	8	32
~~Tubular Steel Cable Riser Poles~~	~~2~~	~~95~~	~~12~~	~~14~~
~~Newark to Albrae 230 kV Transmission Line~~				
Tubular Steel ~~Cable Riser Poles~~Switch Pole	1	~~110~~120	~~8~~10	32
~~Transmission Structures~~	~~2~~	~~140~~	~~8~~	~~32~~
~~Baylands to NRS 230 kV Transmission Line~~				
Tubular Steel Cable Riser Poles	~~2~~3	120	~~8~~12	32
Note: This table is preliminary and subject to change based on final engineering. Data from LS Power.				

~~Newark to Albrae 230 kV Transmission Line~~

~~The proposed Newark to Albrae 230 kV transmission line would be constructed to connect the proposed Albrae terminal to the existing PG&E Newark substation. The proposed Newark to Albrae 230 kV transmission line would be approximately 0.4 mile (2,000 feet) of overhead and underground alignment. The proposed Newark to Albrae 230 kV transmission line would include approximately two new overhead transmission line structures, including one cable riser pole, to be constructed and owned by LS Power, and one transmission structure, within PG&E-owned property, to be constructed and owned by PG&E. The structure heights are shown in **Table 3-1** above. The new structures would be supported by deep, reinforced drilled shaft foundations with a maximum depth of approximately 60 feet. Refer to **Figures 3-3** and **3-4** for the proposed location of the new Newark to Albrae 230 kV transmission line and **Figure 3-12** for diagrams of the proposed new overhead structures. The new overhead Newark to Albrae 230 kV transmission line would utilize two 230 kV Aluminum Conductor Composite Reinforced (ACCR) conductor. The new underground Newark to Albrae 230 kV transmission line would utilize a double bundled 2,500 mm^2 copper 230 kV single core XLPE cables per phase. Each cable would be composed of a copper conductor, conductor binder and screen, XLPE insulation, insulation screen, water barrier, metallic sheath, and an outer jacket.~~

~~Baylands to NRS 230 kV Transmission Line~~

~~The proposed Baylands to NRS 230 kV transmission line would be constructed to connect the proposed Baylands terminal to the existing SVP NRS substation. The proposed Baylands to NRS 230 kV transmission line would consist of approximately 3.3 miles of underground alignment and 0.2 mile of overhead alignment. For the transition from overhead to underground transmission lines, tubular steel transmission cable riser structures would be required (refer to **Figure 3-12**).~~

~~These overhead transmission structures would be a maximum of approximately 120 feet tall. The structures would be supported by deep, reinforced drilled shaft foundations with a maximum diameter of 12 feet and depth of 60 feet.~~

~~The underground portion of the proposed Baylands to NRS 230 kV transmission line would be encased in a duct bank with seven internal ducts, comprised of four eight-inch ducts (three for installing conductor and one as a spare), two two-inch ducts for fiber, and one two-inch duct for a ground wire (refer to **Figure 3-9**). The minimum depth for the top of the duct bank would be approximately three feet, with the top of the duct bank typically varying between approximately three to 10 feet beneath the surface. The typical width for the underground duct bank would be approximately 2.5 feet. The trench excavation width would typically vary between three to four feet, based on shoring requirements. A duct bank would generally be used everywhere, except where trenchless crossings are required. Underground splice vaults would be located approximately every 1,500 to 3,000 feet with dimensions of approximately 30 feet long, 10 feet wide, and 10 feet tall. The bottom of the splice vaults would typically be located approximately 12 feet below ground level. Splice vaults would be sited during detailed engineering design based on gathered utility data and cable supplier specifications. As practical, splice vaults would be sited to avoid interfering with existing access points and intersections to minimize disruptions to the public during construction and O&M. The proposed overhead Baylands to NRS 230 kV transmission line would utilize a single 230 kV 1351.5 kcmil ACSS/TW "Martin" conductor per phase. The proposed underground Baylands to NRS 230 kV transmission line would utilize a single 230 kV 2,500 mm^2 copper single core XLPE cable per phase. Each cable would be composed of a copper conductor, conductor binder and screen, XLPE insulation, insulation screen, water barrier, metallic sheath, and an outer jacket.~~

~~Depending on site conditions, existing utilities, and rating requirements, the Baylands to NRS 230 kV transmission line jack-and-bore crossings would either require one 48-inch casing pipe or three 18-inch casing pipes. The jack-and-bore crossings requiring one 48-inch casing pipe would include four 8-inch ducts with three ducts for the cables and one for a spare; three 4-inch ducts with two for fiber optic cables and one for a grounding cable; a wheel assembly with spacers to keep the ducts properly spaced within the casing; and a bentonite slurry fill. The jack-and-bore crossings requiring three 18-inch casing pipes would be spaced up to 15 feet apart and each casing would include two 8-inch ducts one for the cable and one for a spare; one 2-inch duct fiber optic cables or a grounding cable; a wheel assembly with spacers to keep the ducts properly spaced within the casing; and a bentonite slurry fill. **Figure 3-13** depicts the typical jack-and-bore operation, components, and dimensions. Typical work areas for jack-and bore crossings are discussed further in **Section 3.5.3.1**, and the jack-and-bore technique is also further discussed in **Section 3.5.6.2**.~~

~~HDD crossings would include three ten-inch ducts, with two ducts for the installed cable and one duct as a spare, and two four-inch ducts for the fiber optic cables. The ducts would either be pulled through the unreinforced bore hole, or an approximately 30-inch casing pipe would be installed. If a casing pipe is used, the ducts would be pulled through the casing and the remaining space backfilled with a thermal grout. **Figure 3-14** depicts the typical HDD operation, components, and dimensions. Typical work areas for HDD crossings are discussed further in **Section 3.5.3.1**, and the HDD technique is also further discussed in **Section 3.5.6.2**.~~

~~The proposed Baylands to NRS 230 kV transmission line would enter the existing NRS substation underground and transition aboveground at a steel substation termination/riser structure. The new~~

~~230 kV AC termination/riser structures would be approximately 25 feet tall and would have drilled pier foundations. **Figure 3-11** provides details and typical metrics for the proposed 230 kV AC termination/riser structures.~~

Transmission Line Avian Protection Design

Appropriate methods to reduce the risks of avian collisions would be incorporated into Proposed Project design, consistent with the Avian Power Line Interaction Committee (APLIC) recommendations (APLIC, 2012), where appropriate. Conductors and ground wires would be spaced sufficiently apart so that raptors cannot contact two conductors or one conductor and a ground wire, causing electrocution (APLIC, 2006).

~~3.3.4.4~~3.3.4.2 Access Roads

The existing and primary access to the Proposed Project locations for both construction and O&M would be from existing public roads.

Transmission Lines

The proposed underground transmission line segments would be almost exclusively within existing roads. Construction and operation access to these underground transmission lines would be via the roads where the transmission lines are located. One new temporary access road would be required to construct a small portion of the proposed ~~Baylands~~Newark to NRS 230 kV transmission line on State-owned land east of the Guadalupe River. An approximately 500-foot temporary access road would be constructed along the underground portion of the line ~~to AC-3, one~~until it approximately reaches the HDD crossing of the ~~two overhead structures for the~~ Guadalupe River~~ crossing~~. The road would be approximately 20 feet wide~~ and would be constructed utilizing crushed rock~~. No additional new or improved access roads would be required.

Access to the overhead portion of the proposed ~~Albrae~~Newark to ~~Baylands 320~~NRS 230 kV ~~DC~~ transmission line spanning across existing wastewater drying ponds would be on existing private access roads within the ~~San José-Santa Clara~~ RWF. These roads, ~~shown on **Figure 3-3** and pages 5 through 7 on **Figure 3-4**~~included in the **Updated GIS Database**, range from approximately 15 to 70 feet wide and are a combination of paved and unpaved, but they are regularly maintained. No improvements to these roads are anticipated as part of the Proposed Project. Additional details are provided in **Section 3.5.1.1**, *Existing Access Roads*.

~~**Albrae Terminal**~~

~~The existing and primary access to the proposed Albrae terminal for both construction and O&M would be from Weber Road via Boyce Road. Boyce Road is an existing four-lane minor arterial road, and Weber Road is an existing two-lane road owned by PG&E, approximately 22 feet wide. No improvements are expected to be required along Weber Road and Boyce Road.~~

~~A new access road for the proposed Albrae terminal would be constructed from Weber Road to provide ingress/egress to the site; the access road would be approximately 20 feet wide and approximately 50 feet long. Construction of this access road would include grading and rocking per the final Proposed Project design. The proposed Albrae terminal would not include dedicated permanent internal access roads. Rather, the entire new Albrae terminal facility would be capped~~

~~with crushed rock to provide access within and around the facility footprint. A new permanent gate would be installed at the proposed Albrae terminal driveway along the perimeter wall that would align with the proposed Albrae terminal access road. Additional details are provided in **Section 3.5.1.2**, *New Access Roads*.~~

~~**Baylands Terminal**~~

~~The existing and primary access to the proposed Baylands terminal for both construction and O&M would be from Los Esteros Road via Zanker Road. Zanker Road and Los Esteros Road are existing public, paved two-lane collector divided roads, approximately 26 feet wide. No improvements are expected to be required along Zanker Road and Los Esteros Road.~~

~~A new access road for the proposed Baylands terminal would be constructed from Los Esteros Road and would be approximately 20 feet wide and approximately 1,000 feet long. Construction of this access road would include grading and rocking per the final Proposed Project design. The proposed Baylands terminal would not include dedicated permanent internal access roads. Rather, the entire proposed Baylands terminal facility would be capped with crushed rock to provide access within and around the facility footprint. A permanent gate would be installed at the new Baylands terminal driveway along the perimeter wall that would align with the internal access road. Additional details are provided in **Section 3.5.1.2**.~~

3.3.5 OTHER POTENTIALLY REQUIRED FACILITIES

PG&E Substation Modifications

The ~~new Albrae terminal~~Proposed Project would be interconnected with the existing PG&E Newark substation via the new ~~approximately 0.4-mile-long overhead and underground~~ Newark to ~~Albrae~~NRS 230 kV transmission line. ~~The majority of the 0.4-mile overhead and underground line would be located on PG&E-owned property.~~ LS Power would construct ~~an approximately 0.2-mile underground line that would transition aboveground~~the Newark to ~~an LS Power-owned~~ NRS 230 kV transmission line along the PG&E-owned Weber Road to a transition structure on the east side of Weber Road~~.~~ , also on PG&E-owned property. PG&E would extend the conductor from the LS Power-owned transition structure ~~to a~~for approximately 0.2-mile, comprising an approximate two-structure overhead transmission line ~~that would~~, with a transition structure and switch to be owned by LS Power and a dead-end to be constructed and owned by PG&E. PG&E would extend the conductor from their last overhead structure to the new Newark 230 kV bus position within the existing Newark substation. The point of ownership demarcation for the conductor would be at a ~~transition~~switch structure to be owned by LS Power. PG&E would be responsible for bringing in the new circuit from that point to the termination within the existing Newark substation, the final configuration of which would be established through a Transmission Interconnection Agreement (TIA) with PG&E.

One open 230 kV bay at PG&E's existing Newark substation (refer to ~~**Figure 3-4**~~the **Updated GIS Database**) would be modified to accommodate interconnection of the Proposed Project. To accommodate the proposed Newark to ~~Albrae~~NRS 230 kV transmission line, PG&E would be responsible for installing a new transmission line segment from the Newark 230 kV bus up to the above-described point of ownership demarcation. Additional substation modifications include installation of new circuit breakers, disconnect switches, capacitive voltage transformers, a new dead-end structure, and typical substation equipment, such as structural steel, bus work, conduits, and grounds.

No new impervious areas would be created as a result of the PG&E modifications to their existing substation. No additional stormwater management measures are anticipated to be required for these facilities.

SVP Substation Modifications

LS Power's scope for the new 230 kV connection to the existing SVP NRS substation is proposed to cease at the SVP dead-end within the NRS property line. SVP would be responsible for bringing the new circuit from this point to the terminations, the final configuration of which would be established in the TIA with SVP.

LS Power would bring the proposed ~~Baylands~~Newark to NRS 230 kV transmission line into the existing NRS substation underground to a ~~transition~~terminator structure to be owned by LS Power ~~within the NRS substation~~that will connect to a dead-end structure to be owned by SVP. SVP would be responsible for installing a new gantry (dead-end) structure within the existing NRS substation, as well as CAISO metering. SVP would also be responsible for installing the new transmission line segment to the new dead-end structure and would install the jumpers between the ~~two~~ line terminations and through the CAISO meters. The new dead-end structure would be owned by SVP.

Preliminarily, the required SVP substation modifications, needed due to the increased load being served, include new line positions, transformer positions, installation of two new 230/115 kV transformers, working in parallel with one existing 230/115 kV transformer.

No new impervious areas would be created as a result of the SVP modifications to their existing substation. No additional stormwater management measures are anticipated to be required for these facilities.

Aerial Marking and Lighting

The addition of aviation lighting and/or marking (i.e., marker balls) is not anticipated for the Proposed Project.

3.3.6 FUTURE EXPANSIONS AND EQUIPMENT LIFESPANS

There are currently no definitive plans for future expansion of the Proposed Project. ~~CAISO's Appendix G: Description and Functional Specifications for Transmission Facilities Eligible for Competitive Solicitation in the Board Approved 2021-2022 Transmission Plan ("Functional Specification") conceptualizes certain future transmission upgrades that may follow the Proposed Project (CAISO, 2022). Specifically, the Functional Specification describes an ultimate HVDC development plan which would create a new HVDC link between the Proposed Project's Albrae terminal and a new HVDC terminal currently under development in the vicinity of the Metcalf 500/230/115 kV substation (part of the Power Santa Clara Valley Project), as well as a new 230 kV AC transmission line from the Baylands terminal to the existing PG&E Los Esteros 230 kV substation. At this time, CAISO has not definitively committed to approving the conceptualized ultimate HVDC development plan nor indicated the timing for its approval or the project's execution. If the CAISO Board were to approve such a plan in a future transmission planning process and LS Power were to be selected as the approved project sponsor, LS Power would~~

~~seek CEQA review and a Certificate of Public Convenience and Necessity (CPCN) for the ultimate HVDC development plan project, independent of this proceeding.~~

~~However, the Functional Specification provides that the Proposed Project should satisfy certain requirements to facilitate the ultimate HVDC development plan. These requirements would include providing adequate space at the proposed Albrae terminal site for the ultimate HVDC development plan, ensuring the proposed Albrae terminal can be made to operate in a multi-terminal configuration, and providing an additional bay in the Baylands 230 kV switchyard for the new 230 kV AC connection from the proposed Baylands terminal to the existing Los Esteros substation. As presented herein, the Proposed Project satisfies these requirements.~~

The Proposed Project would resolve several reliability concerns, including multiple near-term and long-term overloads in the San José area 115 kV transmission system. ~~The Proposed Project would provide voltage support to the existing PG&E and SVP transmission system and could potentially obviate additional voltage support upgrades elsewhere. The expected usable life of the proposed Albrae and Baylands terminals is expected to exceed 40 years, and the expected life of the transmission lines~~The expected life of the transmission line is expected to exceed 50 years.

3.3.7 BELOWGROUND CONDUCTOR/CABLE INSTALLATIONS

The Proposed Project would include construction of a new Newark to ~~Albrae~~NRS 230 kV transmission line utilizing a combination of underground and overhead configurations~~, a new Albrae to Baylands 320 kV DC transmission line utilizing a combination of underground and overhead configurations, and a new Baylands to NRS 230 kV transmission line primarily located in an underground configuration. The underground segment of the proposed~~ . The underground segments of the proposed Newark to ~~Albrae~~NRS 230 kV transmission line would include two 2,500 mm^2 copper 230 kV single core XLPE cables per phase, each composed of a copper conductor, conductor binder and screen, XLPE insulation, insulation screen, water barrier, metallic sheath, and an outer jacket. ~~The underground segments of the proposed Albrae to Baylands 320 kV DC transmission line would include one 2,500 mm^2 copper 230 kV single core XLPE cable per pole, each composed of a copper conductor, conductor binder and screen, XLPE insulation, insulation screen, water barrier, metallic sheath, and an outer jacket. The underground segments of the proposed Baylands to NRS 230 kV transmission line would include a single 2,500 mm^2 copper 230 kV single core XLPE cable per phase, each composed of a copper conductor, conductor binder and screen, XLPE insulation, insulation screen, water barrier, metallic sheath, and an outer jacket.~~

The minimum depth for the top of the underground transmission line duct bank would be approximately three feet, with the top of the duct bank typically varying between approximately ~~three~~3 to 10 feet beneath the surface (refer to **Updated Figure 3-9**). Splice vaults would generally be installed along the underground transmission line alignments approximately every 1,500 to 3,000 feet to facilitate installation of the underground cables and would extend approximately 12 feet deep (refer to **Updated Figure 3-10**). ~~The underground portion of the new Albrae to Baylands 320 kV DC transmission line would require approximately 20 vaults.~~ The underground portions of the new ~~Baylands~~Newark to NRS 230 kV transmission line would require approximately ~~10~~20 to 30 vaults.

Once the duct bank conduit is installed, the trench would be backfilled around the conduits with flowable thermal concrete to form the duct bank encasement. Additional fluidized backfill would be utilized to fill most of the remainder of the trench. When located within roads, a road base backfill, flowable backfill, or slurry concrete cap would be installed, and the road surface would be restored in compliance with local requirements.

3.3.8 ELECTRIC SUBSTATIONS AND SWITCHING STATIONS

~~As described above, the Proposed Project includes the construction of two new HVDC terminals (Albrae and Baylands) as well as modifications to two existing PG&E and SVP substations (Newark and NRS, respectively). The two new HVDC terminals would each contain converter transformers, including space for an on-site spare, and two distribution transformers, as well as GIS equipment. Both proposed HVDC terminal facilities would include an HVDC control and equipment enclosure as well as a GIS control and equipment enclosure. Protective relaying and control equipment as well as supervisory control and data acquisition (SCADA) equipment would be located in the equipment enclosure. Additionally, each HVDC control and equipment enclosure would have space allocated for spare parts and maintenance tool storage on-site. Larger spare parts would be stored within the terminal site. Both HVDC terminals would include SF_6 gas-insulated circuit breakers, associated bus, disconnect switches, current transformers, voltage transformers, and other associated GIS equipment. The proposed HVDC facilities would be remotely operated with no permanent workforce on-site. Additional O&M procedures are described in **Section 3.8**, *Operation and Maintenance*, below.~~

As described above, the Proposed Project includes modifications to two existing PG&E and SVP substations (Newark and NRS, respectively). These modifications would be completed by PG&E and SVP, respectively, but are included in this Proposed Project description as they are part of the overall transmission upgrade project.

3.3.9 TELECOMMUNICATION LINES

The Proposed Project includes telecommunications infrastructure that would connect the ~~new HVDC terminals to each other, connect the new HVDC terminals to the~~ existing PG&E and SVP substations~~, and connect each proposed HVDC terminal to local existing third-party internet providers.~~. It is anticipated that these telecommunication lines would all be co-located with the new transmission ~~lines~~line, and no separate overhead lines or wireless connections (e.g., antennas) would be included. Two ~~underground~~ telecommunication ~~paths~~fiber optic cables would be installed along the proposed transmission ~~lines to provide redundant communication paths. An additional~~line. The telecommunication ~~connection~~fibers would be ~~made at each new HVDC terminal location, connecting to existing third-party internet service providers. Each telecommunication path would consist~~installed underground along the underground portions of ~~fiber optic cables.~~the route and aboveground along the overhead portions of the route.

In underground segments, the two co-located telecommunication lines would typically be housed in two two-inch diameter polyvinyl chloride (PVC) conduits, which would be directly buried in the trench duct bank package (refer to **Updated Figure 3-9**). Typical depth of the telecommunications lines is four to ten feet below ground surface. For the telecommunication lines in the transmission line duct bank, fiber splices would be contained within separate underground fiber splice vaults or at the substation termination structures, and fiber splices would not be located within the proposed transmission line splice vaults.

In aboveground locations, telecommunication lines would be attached to overhead structures as OPGW. The overhead OPGW would be installed in a similar manner to the conductor. ~~The~~

~~splice~~Any splices between two reels of OPGW would be contained within a splice box mounted on a tubular structure.

~~The local third-party internet connections for the proposed HVDC terminal sites are anticipated to also be located underground and connect to existing telecommunication lines located adjacent to the proposed HVDC terminal sites.~~

3.4 LAND OWNERSHIP, RIGHTS-OF-WAY, AND EASEMENTS

Land entitlement issues are not part of this regulatory proceeding, in which the CPUC is considering whether to grant or deny LS Power's application for a ~~CPCN~~Certificate of Public Convenience and Necessity (CPCN) to construct new electrical facilities. Rather, any land rights issues would be resolved in subsequent negotiations and/or condemnation proceedings in the proper jurisdiction, following the decision by the CPUC on LS Power's application (see, for example, Jefferson-Martin 230 kV Transmission Project, A.02-04-043, D.04-08-046, p. 85).

3.4.1 LAND OWNERSHIP

3.4.1.1 LS Power Facilities

~~The parcel associated with the proposed Albrae terminal is under private ownership and the parcel associated with the proposed Baylands terminal is under municipal ownership. These parcels of land are adequate to accommodate all considerations of the Proposed Project, including site grading, fencing, staging areas, equipment, internal circulation, spill and stormwater management, and other operational considerations, as described below (see **Section 3.4.2**, *Existing Rights-of-Way or Easements*).~~

~~The parcel where the proposed Albrae terminal facility would be constructed (APN 531-165-9-4) is under private ownership. Prior to construction, for the proposed Albrae terminal, LS Power would secure up to 6.1 acres of an approximately 25.3-acre parcel of land. This area is adequate to accommodate the proposed Albrae terminal facility, including all considerations for site grading, fencing, staging areas, equipment, internal circulation, spill and stormwater management, and other operational considerations.~~

~~The proposed Baylands terminal facility is planned to be located within the San José-Santa Clara RWF property (APN-015-30-109) that is owned by the City of San José. The City of San José has agreed to work with LS Power to negotiate long-term ground leases for this space. LS Power would negotiate a lease for approximately 9.2 acres of APN 015-30-109. This area is adequate to accommodate the proposed Baylands terminal facility, including all considerations for site grading, fencing, staging areas, equipment, internal circulation, spill and stormwater management, and other operational considerations.~~

The Proposed Project would require a ~~right-of-way (~~ROW~~)~~ and an easement from private landowners for the transmission ~~lines~~line (see **Section 3.4.3**, *New or Modified Rights-of-Way or Easements*, below). LS Power would have to negotiate an easement with four private landowners for the transmission lines. LS Power would also obtain real estate rights from municipal-, state-, and regional agency-owned lands for the transmission lines including the following:

- Alameda County Flood Control;
- City of Fremont;

- City of San José;
- City of Santa Clara;
- Santa Clara Valley Water District (SCVWD or "Valley Water");
- Santa Clara Valley Transportation Authority (VTA);
- California State Lands Commission;
- California Department of Transportation ("Caltrans");
- PG&E; and
- SVP

~~Finally~~Additionally, LS Power would secure crossing and encroachment permits, authorizations, and agreements for existing linear infrastructure crossed by the Proposed Project.

3.4.1.2 PG&E Facilities

PG&E owns the parcel the existing Newark substation is located on.

3.4.1.3 SVP Facilities

The City of Santa Clara owns the parcel the existing NRS substation is located on.

3.4.2 Existing Rights-of-Way or Easements

3.4.2.1 LS Power Facilities

LS Power does not have any existing ROWs or easements within the Proposed Project area.

3.4.2.2 PG&E Facilities

PG&E's existing transmission, power, and distribution lines connecting to the Newark substation are located within existing ROWs or easements, of varying size and width. All substation modifications to be carried out by PG&E would be limited to existing utility-owned property (i.e., existing substation properties).

3.4.2.3 SVP Facilities

SVP's existing transmission, power, and distribution lines connecting to the NRS substation are located within existing ROWs or easements, of varying size and width. All substation modifications to be carried out by SVP would be limited to existing utility-owned property (i.e., existing substation properties).

3.4.3 New or Modified Rights-of-Way or Easements

3.4.3.1 LS Power Facilities

~~LS Power is in the process of acquiring rights to the two parcels of land proposed for development of the two new HVDC terminals. The proposed HVDC terminals would be sited on land owned or leased by LS Power and would not require a new or modified ROW or easement. The proposed~~

~~Albrae terminal is located in the General Industrial ("I-G") District in the City of Fremont. Within the I-G district, building heights are restricted to 75 feet, and setbacks from front yards and side streets is 15 feet. The HVDC converter enclosure would be less than 75 feet tall, and the appropriate setbacks would be met. The proposed Baylands terminal is located in the Single-Family Residence ("R-1") District in the City of San José. Building heights are restricted to 35 feet, and setbacks range from five to 20 feet in the R-1 district. The proposed Baylands terminal would exceed the height restrictions set forth by the City. However, the Proposed Project would be consistent with typical terminal building heights and would be consistent with CPUC regulations pursuant to CPUC General Order (GO) 131-D, Section XIV.B.~~

The proposed Newark to ~~Albrae 230 kV transmission line, Albrae to Baylands 320 kV DC transmission line, and Baylands to~~ NRS 230 kV transmission ~~lines~~line, duct banks, and splice boxes would require new ROWs/easements or franchise agreements.

The ~~Albrae~~Newark to ~~Baylands 320~~NRS 230 kV ~~DC~~ transmission line overhead alignment would require a ROW width of approximately 130 feet, and the underground alignment would generally require a ROW of approximately 15 feet. Within the City of San José, transmission structure heights are limited to 150 feet in areas with non-residential or non-urban land use designations. All proposed structures would be less than 150 feet.

The overhead portion of the ~~proposed Baylands to NRS 230 kV~~ transmission line ~~would~~located adjacent to the Newark substation would be located on PG&E property and would not require ~~a ROW width of 110 feet, and the ROW width for the underground transmission is generally approximately 15 feet. Within the City of San José, transmission structure heights are limited to 150 feet in areas with non-residential or non-urban~~additional land ~~use designations. All proposed structures would be less than 150 feet~~rights as PG&E would own and maintain this segment of transmission line.

The ROW for all underground portions of the proposed Newark ~~to Albrae 230 kV transmission line, Albrae to Baylands 320 kV DC transmission line, and Baylands~~ to NRS 230 kV transmission line would be expanded at vault locations. The specific width of necessary easements, ROWs, or franchise agreements along the Proposed Project transmission line alignments would be refined during the final engineering process. The Proposed Project is anticipated to require a total of approximately ~~38~~48 acres of new ROW, easement, or franchise agreement.

A portion of the new permanent easement/ROWs would be acquired by LS Power through negotiations with private landowners, SVP, PG&E, and municipal-, state-, and regional agency-owned lands discussed ~~in~~ above in **Section 3.4.1**. New permanent ROWs or licenses would also be acquired from each applicable public agency through that agency's designated process. LS Power would negotiate required ~~franchise~~ agreements with Alameda County Flood Control, the City of Fremont, City of San José, City of Santa Clara, SCVWD, VTA, the California State Lands Commission, Caltrans, PG&E, and SVP. The total number of land rights to be acquired would be finalized during final engineering. LS Power would also have the power of eminent domain to acquire any necessary land rights for construction of the Proposed Project.

Construction of the proposed transmission lines ~~or HVDC terminal units~~ would not require the relocation or demolition of any commercial or residential properties or structures.

3.4.3.2 PG&E Facilities

PG&E owns the parcel the existing Newark substation is located on, and no additional ROWs or easements would be required.

3.4.3.3 SVP Facilities

The City of Santa Clara owns the parcel the existing NRS substation is located on, and no additional ROWs or easements would be required.

3.4.4 TEMPORARY RIGHTS-OF-WAYS OR EASEMENTS

Temporary easements would be required for the Proposed Project's construction staging areas. ~~**Figure 3-4** highlights~~The **Updated GIS Database** includes the staging areas being considered for the Proposed Project. The majority of the staging areas would be accessed through public street ROWs. There is one potential staging area that would require access beyond public street ROW. If this staging area is utilized, LS Power would include temporary access in the temporary easement agreement. Temporary rights necessary for the installation of the proposed underground transmission lines would be included in the necessary ROW easement/franchise agreements. LS Power has already begun discussions with the private landowners on temporary construction easements.

3.5 CONSTRUCTION

This section includes an overview of the typical methods that would be used for construction of the Proposed Project, including the ~~two proposed HVDC terminals,~~ overhead and underground facilities, existing substation modifications, new access roads, construction equipment, and temporary work areas.

3.5.1 CONSTRUCTION ACCESS

3.5.1.1 Existing Access Roads

Existing access roads for the Proposed Project provide access to the overhead portion of the ~~Albrae~~Newark to ~~Baylands 320~~NRS 230 kV ~~DC~~ transmission line spanning across existing wastewater drying ponds ~~and~~ are shown ~~on~~ in the ~~pages 5 through 7 of **Figure 3-4**. As shown in **Figure 3-4**, the~~**Updated GIS Database**. The existing access road begins at the southern boundary of Staging Area ~~4~~6, off McCarthy Boulevard, at the location of overhead structure ~~DC-1~~Newark-NRS 4 (NN-4) and ends at Zanker Road. The approximate existing access road metrics are provided in **Table 3-2**, *Existing Access Roads*.

Table 3-2: Existing Access Roads			
Name of Road	**Type of Road/Improvement**	**Dimensions**	**Disturbance Area**
N/A – ~~Albrae~~Newark to ~~Baylands~~NRS Existing Access ~~Road~~Roads	Existing paved and unpaved access road. No improvements anticipated.	Average of 25 feet wide, 3.8 miles long (20,064 feet)	Approximately 11.5 acres

~~**HVDC Terminal Sites Access**~~

~~The existing and primary access to the proposed Albrae terminal site for both construction and O&M would be from Weber Road. Weber Road is an existing two-lane, approximately 30-foot-wide, private, paved road that turns into a two-lane, approximately 22-foot wide, paved road outside of the PG&E facility and the existing Newark substation. Access to Weber Road is from Boyce Road. No improvements are expected to be required along Weber Road or Boyce Road. However, upgrading the paved turning apron may be required at the entry into the proposed Albrae terminal (refer to **Figure 3-7a**).~~

~~The existing and primary access to the proposed Baylands terminal site for both construction and O&M would be from Los Esteros Road. Los Esteros Road is an existing two-lane, approximately 23 feet wide, public, paved road providing access to the site via Zanker Road from SR-237. No improvements are expected to be required to Los Esteros Road or Zanker Road for the proposed access to the proposed Baylands terminal site. However, upgrading the paved turning apron may be required (refer to **Figure 3-7b**).~~

Transmission Line Access

The Proposed Project includes underground transmission lines that are sited almost exclusively within existing public roads. Therefore, the roads where the Proposed Project is located and adjoining roads would be utilized for construction and operations access.

As discussed above, access for the overhead portion of the proposed ~~Albrae~~Newark to ~~Baylands 320~~NRS 230 kV ~~DC~~ transmission line spanning across existing wastewater drying ponds would be obtained mainly through utilization of the existing access road network on the San José-Santa Clara RWF. These existing access roads are paved and unpaved and vary in length and width. The San José-Santa Clara RWF access road network is connected on one end to Zanker Road (to the west) and to McCarthy Boulevard on the east.

Refer to **Table 3-2**, ~~**Figures 3-3** and **3-4**, as well as~~ **Section 5.17**~~,~~ *Transportation*, as well as the **Updated GIS Database** for listings and descriptions of the roads that would be utilized for transmission line access.

Existing Substation Site Access

Access to the existing Newark substation is from Weber Road and Nobel Drive via Auto Mall Parkway (refer to ~~**Figure 3-4** and **3-7**).~~**Updated GIS Database**). Access to the existing NRS substation is from ~~Lafayette Street~~Stars and Stripes Boulevard (refer to ~~**Figure 3-4** and **3-7**~~the **Updated GIS Database**).

Incidental Road Damage

No incidental road damage is anticipated to result from Proposed Project operational activities. As discussed above, the Proposed Project would be primarily accessed through paved public roadways. LS Power would work with the appropriate department of transportation or applicable agency to identify any incidental road damage caused by construction and an appropriate way to restore roads damaged by the Proposed Project to preconstruction conditions (refer to **APM TRA-3**, *Repair Infrastructure*). LS Power would also comply with all permit conditions (e.g., encroachment permits), as required, related to roadway usage and repair. Anticipated potentially required permits and approvals are discussed in **Section 3.10**, *Anticipated Permits and Approvals*.

3.5.1.2 New Access Roads

~~The Proposed Project includes three new permanent access roads, two of which would provide access to each proposed HVDC terminal (Albrae and Baylands) during construction and O&M and one that would provide access to the new Baylands to NRS 230 kV transmission line overhead structure AC-3 during construction and O&M. The new access road at the proposed Albrae terminal site would be approximately 20 feet wide and approximately 50 feet long, and the new access road at the proposed Baylands terminal would be approximately 1,000 feet long. Construction of these proposed terminal access roads would include grading and rocking or paving per the final Proposed Project design. Permanent gates would be installed at both proposed HVDC terminal driveways along the perimeter wall at the newly constructed site entrance. The proposed HVDC terminals would not include dedicated permanent internal access roads. Rather, the entire proposed terminal facilities would be capped with crushed rock to provide access within and around the facility footprint. The new access roads are depicted in **Figures 3-4** and **3-7**. In addition, one new access road would be required at the new Baylands to NRS 230 kV transmission line overhead structure AC-3. The new access road would be constructed adjacent to the new Baylands to NRS 230 kV transmission line underground alignment. **Table 3-3**, *New Access Roads* provides additional access road details.~~
The Proposed Project includes no new permanent access roads.

Table 3-3: New Access Roads			
Name of Road	**Type of Road/ Improvement**	**Approximate Dimensions**	**Approximate Disturbance Area**
~~Albrae Terminal Access Road~~N/A	~~New access road, graded and topped with rock (e.g., class II base or similar)~~N/A	~~50 feet long 20 feet wide~~N/A	~~0.02 acre~~N/A
~~Baylands Terminal Access Road~~	~~New access road, graded and topped with rock (e.g., class II base or similar)~~	~~1,000 feet long 20 feet wide~~	~~0.46 acre~~
~~Access Road to AC-3~~	~~New access road, graded and topped with rock (e.g., class II base or similar)~~	~~500 feet long 20 feet wide~~	~~0.24 acre~~

3.5.1.3 Overland and Temporary Access Routes

One overland access route would be required during construction and O&M for the new Newark to ~~Albrae~~NRS 230 kV transmission line overhead structure ~~AC~~NN-1. The new overland access route would be approximately 20 feet wide and 750 feet long located on PG&E-owned property outside of the existing Newark substation.

3.5.1.4 Watercourse Crossings

The Proposed Project includes nine watercourse crossings~~, most of which occur along the proposed Albrae to Baylands 320 kV DC transmission line underground alignment (refer to **Figure**~~

~~3-4).~~ (refer to **Updated GIS Database**). At these crossings, HDD construction techniques would be employed, including along the following waterways:

- Coyote Creek near 4275 Cushing Parkway;
- Agua Caliente Creek near 46333 Fremont Boulevard;
- A creek offshoot of Coyote Creek that intercepts Fremont Boulevard near 46560 Fremont Boulevard;
- Coyote Creek Lagoon offshoot of Coyote Creek that intercepts Fremont Boulevard near 48401 Fremont Boulevard;
- A wetland just south of the Coyote Creek Lagoon crossing near 48700 Fremont Boulevard;
- Coyote Creek just north of San José-Santa Clara RWF lands near 1601 Dixon Landing Road; ~~and~~
- Grand Boulevard, near the intersection with Spreckles Avenue and Los Esteros Road~~, approximately 3,400 feet northwest of the proposed Baylands terminal.~~; and
- ~~In addition, there is an overhead crossing of the~~ Guadalupe River ~~along the proposed Baylands to NRS 230 kV transmission line route located~~ adjacent to SR-237 ~~and~~ .

In addition, there is another crossing underneath or adjacent to the Cushing Parkway bridge ~~that crosses~~which is adjacent to the Don Edwards San Francisco Bay National Wildlife Refuge.

3.5.1.5 Helicopter Access

A light-duty helicopter is anticipated to be required to string the overhead transmission line conductor~~. A helicopter is anticipated to be used during conductor stringing operations~~ for the proposed ~~Albrae to Baylands 320 kV DC transmission line and Baylands~~Newark to NRS 230 kV transmission line. The helicopter~~-~~ is not anticipated to be used to transport heavy materials over or within areas of development. During conductor stringing operations, helicopter takeoff and landing areas may include nearby staging areas, such as Staging Areas 5, 6, 7, or 8. The helicopter may temporarily land on existing or proposed access roads as needed. It is also anticipated that local airfields would be utilized for takeoff and landing, fueling, maintenance, and long-term helicopter parking. Fueling would occur at local airfields and would be in compliance with applicable rules and regulations. No fueling is anticipated to take place on Proposed Project ROWs or staging areas. The conductor stringing operations that would utilize the helicopter would be completed in ~~no more than a week.~~approximately 4 weeks. A Congested Area Plan would not be required. Proposed Project helicopter usage would comply with applicable rules and regulations. As necessary, LS Power would develop a Helicopter Plan to set forth all safety and operations procedures.

3.5.2 STAGING AREAS

3.5.2.1 Staging Area Locations

The Proposed Project includes ~~11~~12 potential temporary construction staging areas located along the Proposed Project alignment, resulting in a total area of approximately ~~117~~142.7 acres. ~~This does not include proposed staging that would occur at each new HVDC terminal site.~~ LS Power anticipates utilizing approximately three to four ~~to six~~ staging areas during construction~~, including~~

~~the proposed HVDC terminal sites.~~. The ~~11~~12 staging area sites have been included because site availability during the construction window years in the future is uncertain at this stage. In addition, limited construction staging and equipment parking may occur on City streets along the underground transmission line alignment, where approved by the local agency (e.g., the Cities of San José, Santa Clara, and Fremont). This is a common practice during construction projects within or along public roadways. The final staging areas utilized would be based on site availability at the time of construction. The proposed potential staging area locations are ~~depicted~~provided in ~~**Figure 3-4**~~the **Updated GIS Database** and are summarized in **Table 3-4**, *Staging Areas*.

~~*The remainder of this page is intentionally kept blank.*~~

Table 3-4: Staging Areas

No.	Location	Approximate Size (Acres)
1	Located off Boyce Road, approximately 0.~~2~~5 mile northwest of the ~~proposed Albrae terminal~~existing Newark substation	5.4
2	Located off Weber Road, adjacent to the proposed Newark to NRS 230 kV transmission line alignment and the Newark Substation	24.6
~~2~~3	Located off Boyce Road, adjacent to the proposed Newark to NRS 230 kV transmission line and approximately 0.~~3~~1 mile ~~southeast~~east of the ~~proposed Albrae terminal~~existing Newark substation	7.8
~~3~~4	Located off Fremont Boulevard, adjacent to the proposed ~~Albrae~~Newark to ~~Baylands 320~~NRS 230 kV ~~DC~~ transmission line alignment	3.1
~~4~~5	Located off North McCarthy Boulevard, adjacent to the proposed ~~Albrae~~Newark to ~~Baylands 320~~NRS 230 kV ~~DC~~ transmission line alignment	2.6
~~5~~6	Located off North McCarthy Boulevard, adjacent to the proposed ~~Albrae~~Newark to ~~Baylands 320~~NRS 230 kV ~~DC~~ transmission line alignment	1.8
~~6~~7	Located off Los Esteros Road, ~~approximately 0.3 mile northeast of the~~ adjacent to the proposed ~~Baylands terminal~~Newark to NRS 230 kV transmission line alignment, north of the RWF	16.7
~~7~~8	Located off Zanker Road, approximately 0.~~6~~8 mile ~~southeast~~south of the proposed ~~Baylands terminal~~Newark to NRS 230 kV transmission line alignment	51.6
~~8~~9	Located off Los Esteros Road, adjacent to the proposed ~~Baylands terminal and adjacent~~Newark to ~~the proposed Albrae to Baylands 320~~NRS 230 kV ~~DC~~ transmission line~~ alignment~~, southwest of the RWF	~~6.8~~7.7
~~9~~10	Located off First Street, west of the intersection of Tony P. Santos Way and First Street, approximately 0.2 mile northwest of the proposed ~~Baylands~~Newark to NRS 230 kV transmission line alignment	3.4
~~10~~11	Located off First Street, adjacent to the proposed ~~Baylands~~Newark to NRS 230 kV transmission line alignment	12.0
~~11~~12	Located off Nortech Court, adjacent to the proposed ~~Baylands~~Newark to NRS 230 kV transmission line alignment	6.0
	TOTAL	**~~117.1~~142.7**

3.5.2.2 Staging Area Preparation

Preparation of the staging areas would involve clearing, grubbing, and limited grading, as needed, to establish a level working surface. Where staging areas would be located on existing paved areas, such as Staging Area ~~11~~12, site preparation would not be required. Staging areas may be used as a refueling area for vehicles and construction equipment; as an equipment wash station; for assemblage; for storage of material and equipment, storage containers, construction trailers, and portable restrooms; and for parking and lighting. Transmission line ~~and HVDC terminal equipment~~materials required for the Proposed Project, such as conduit, cables~~, HVDC equipment, GIS equipment, riser structures, bus, cable trench, rebar~~, etc., would be received and temporarily stored at a staging area prior to installation.

Helicopter takeoff and landing areas may include nearby staging areas, such as (but not necessarily limited to) Staging Areas 5, 6, 7, or 8, during conductor stringing operations. The helicopter may temporarily land on existing or proposed access roads as needed. It is anticipated that local airfields would be utilized for takeoff and landing, fueling, maintenance, and long-term helicopter parking.

Construction workers would typically meet at the staging areas each morning and park their vehicles. All construction equipment and vehicles associated with the Proposed Project construction would typically be parked within one of the staging areas while inactive.

Gravel may be used to line the ground at the staging areas to avoid the creation of unsafe surface conditions and unnecessary sediment transport off-site. Perimeter security fencing would be installed around the outer limits of the staging areas. Lighting would also be installed for security purposes and would be shielded to direct light downward and away from any nearby sensitive receptors. Temporary construction power would be provided via existing distribution line(s) near the Proposed Project staging areas. Temporary generators would be a contingency if distribution power is unavailable.

3.5.3 CONSTRUCTION WORK AREAS

All Proposed Project components would require construction work areas, and some Proposed Project components would require permanent work areas for the life of the Proposed Project. All construction work areas (i.e., limits of construction) are ~~depicted~~provided in ~~**Figure 3-4**~~the **Updated GIS Database**. Each component of the Proposed Project's construction (temporary) and O&M (permanent) work is described below and summarized in **Table 3-5**, *Work Area Disturbance Summary*. A detailed description of the work to be performed in the identified work areas is provided in **Section 3.5.4**, *Site Preparation*; **Section 3.5.5**, *Transmission Line Construction (Aboveground)*; **Section 3.5.6**, *Transmission Line Construction (Belowground)*; and **Section 3.5.7**, *Substations, Switching Stations, and Gas Compressor Stations*.

3.5.3.1 Construction Work Areas

~~General HVDC Terminal Site Staging~~

~~It is anticipated that all major electrical and terminal equipment for both the proposed Albrae and Baylands terminals, such as the converter transformers, would be delivered to the proposed HVDC terminal site and placed directly on previously constructed foundations. Other terminal equipment, such as HVDC equipment, riser structures, bus, conduit, cable trench, rebar, etc., would be received and temporarily stored at a staging area prior to installation. All construction~~

~~equipment and vehicles associated with proposed HVDC terminal construction would be parked within a staging area while inactive and at the completion of each workday, where practical.~~

~~Albrae Terminal~~

~~As discussed in **Section 3.5.2**, *Staging Areas*, the Proposed Project would utilize the proposed Albrae terminal site for construction staging. The construction of the proposed Albrae terminal would require grading, fill, and the installation of chain-link fencing that would extend beyond the proposed permanent impact area and around the outer limits of the staging area (property). The permanent footprint of the proposed Albrae terminal is approximately 6.1 acres, and the uplands in the remaining approximately 19.2 acres of the site may be temporarily impacted by construction staging and work area utilized for construction of the proposed Albrae terminal (refer to **Figure 3-7a**).~~

~~Baylands Terminal~~

~~As discussed in **Section 3.5.2**, the Proposed Project would utilize the proposed Baylands terminal site for construction staging. The construction of the proposed Baylands terminal would require grading, fill, and the installation of chain-link fencing that would extend beyond the proposed permanent impact area and around the outer limits of the staging area. In addition, work areas would be needed around the perimeter of the proposed Baylands terminal facility to facilitate construction and access. The permanent footprint of the proposed Baylands terminal and permanent access road is approximately 9.2 acres which would be the entirety of the site (refer to **Figure 3-7b**).~~

Transmission Lines

For underground segments, the Proposed Project's transmission line installation work areas would be primarily located ~~either~~ in existing roadways ~~or within proposed HVDC terminal sites~~ (refer to ~~**Figures 3-4**, **3-7a**, and **3-7b**). Work areas for~~ the ~~portions of~~ **Updated GIS Database**), where the transmission ~~lines within proposed HVDC terminal sites would be considered part of the proposed HVDC terminal work areas. The proposed underground transmission lines~~line would be installed~~ primarily within public roads~~. The exact location of the proposed underground transmission line alignment, including splice vaults, HDD pits, and horizontal bore (jack-and-bore or microtunnel) pits, are not known at this time; therefore, construction work area estimates include the entire area of the existing road ROW where the transmission lines would be installed. Final transmission line work areas would be much smaller than the estimates included herein. Typical work areas for transmission line components include, but are not limited to, the following:

- ~~Jack~~Horizontal bore (jack-and-bore or microtunnel) sending and receiving pits are typically approximately 15 feet by 50 feet.
- ~~Jack~~Horizontal bore (jack-and-bore or microtunnel) temporary workspace in line or adjacent to the pits is typically approximately 30 feet by ~~80~~100 feet.
- HDD sending and receiving pits are typically approximately six feet by 20 feet.
- HDD pull back area for staging and fusion would typically begin at the receiving pit and be longer than the proposed HDD's entire length.
- Pulling and splicing sites can vary in size depending on site-specific conditions and requirements but are typically approximately 30 feet wide and up to 200 feet long.

During underground construction within roadways, typically two lanes of traffic would be shut down where construction would be taking place. This area would represent the temporary construction work area and would typically be 15 to 30 feet in width depending on site-specific road conditions and City-approved traffic control plans (TCPs). All additional underground construction activities would occur within this area.

Following installation of the proposed underground transmission line, the road surface would be restored to the original condition or as otherwise in compliance with local requirements. All underground transmission not installed in roads (e.g., parking lots or sidewalks) would be restored to the original condition or as otherwise agreed to with the respective landowners.

For the proposed overhead transmission line segments, work pads (for foundation drilling and pole erection) and stringing sites would be needed along the transmission line. Work pads would be required at each pole location and would be approximately ~~100~~130 feet by 400 feet within the proposed transmission line ROW~~.~~ (refer to the **Updated GIS Database**). Work pads would first be graded and built up as necessary, utilizing construction mats where required. Work pads would be constructed to include space for foundation drilling, which would require space to set up a drill rig, as well as allow for ingress and egress for dump trucks and concrete trucks. Additionally, work pads would include space for pole erection sites, which would include space for the assembly of the structures, and a crane and boom trucks necessary to set the structure.

Stringing sites would include space to set up the trucks with the tensioning equipment as well as the trailers with reels of conductor. Each of these stringing sites would require clearing an area of approximately 200 by 400 feet and generally would coincide with the work pads constructed for the structures~~.~~, as shown in the **Updated GIS Database**.

The proposed transmission line construction process is further discussed below in **Section 3.5.5.1**, *Poles and Towers*.

Interconnections and Substation Modifications

PG&E Interconnections and Substation Modifications

The Proposed Project ~~HVDC terminal and transmission line connecting~~connection to the existing PG&E Newark substation would not require the expansion of the existing site. All work activities for the overhead portion of the proposed Newark to ~~Albrae~~NRS 230 kV transmission line to be installed by PG&E would be conducted within PG&E-owned property. Modifications required within the existing Newark substation to allow for the interconnection of the ~~proposed Albrae terminal~~Proposed Project to the PG&E system would occur within the existing Newark substation fence line. All staging areas for PG&E modifications would be located on existing PG&E-owned property.

SVP Interconnections and Substation Modifications

The Proposed Project ~~HVDC terminal and transmission line connecting~~connection to the existing SVP NRS substation would not require the expansion of the existing site. All work activities would be conducted within the property's existing fence lines.

Other Work Areas

Before stringing overhead transmission lines, temporary guard structures would be installed as described in **Section 3.5.5.4**, *Guard Structures*.

3.5.3.2 Work Area Disturbance

Implementation of the Proposed Project would result in both temporary and permanent work area disturbance. **Table 3-5** provides estimated work area totals (including both temporary and permanent footprints) for each Proposed Project component.

Table 3-5: Work Area Disturbance Summary

Work Area	Temporary or Permanent Disturbance	Disturbance Area (approximate metrics)
Staging Areas[1]	Temporary	~~117.1~~142.7 acres[2]
~~Albrae Terminal~~	~~Permanent~~	~~6.1 acres~~
~~Albrae Terminal~~	~~Temporary~~	~~19.3 acres~~
~~Baylands Terminal~~	~~Permanent~~	~~9.2 acres~~
Newark Substation Modifications	Permanent	0.5 acre
NRS Substation Modifications	Permanent	13.5 acres
Underground Transmission Lines[3]	Temporary	~~88.6~~89.3 acres
Overhead Transmission Lines	Temporary	14.~~7~~3 acres
~~Overhead Transmission Lines[4]~~	~~Permanent~~	~~0.3 acre~~
Total Temporary Work Area Disturbance[5]	Temporary	~~239.7~~246.3 acres
Total Permanent Work Area Disturbance	Permanent	~~29.6~~14 acres

Notes:
[1] Does not include staging at ~~terminal or~~ substation locations.
[2] Total area of ~~11~~12 potential staging areas is included herein. However, the Proposed Project would only utilize approximately three to four ~~to six~~ staging areas~~, not including the terminal and existing substation sites~~. Therefore, the actual total disturbance area for staging areas would be much less than the total area listed herein.
[3] Includes work areas within and adjacent to roads where underground transmission lines would be installed. ~~Transmission line work areas that occur within terminal site boundaries are accounted for within the terminal site work area totals.~~
~~[4] Includes new permanent access road to new structure AC-3.~~
[5] While permanent work areas, such as the ~~HVDC terminals and~~ substation modification areas, would also be used during construction, these areas are not included in the temporary impact areas. Each impact area is only counted once, as either permanent or temporary.

~~**Figure 3-4**~~The **Updated GIS Database** identifies the temporary and permanent disturbance areas associated with the Proposed Project. In total, the Proposed Project would result in approximately ~~29.6~~14 acres of permanent disturbance and approximately ~~239.7~~246.3 acres of temporary disturbance to mainly previously disturbed land, roads, and a paved parking lot.

3.5.3.3 Temporary Power

LS Power plans to have connections to existing overhead or underground distribution lines near the Proposed Project for supply of construction power. A temporary distribution line would be installed overhead on wood poles or underground to provide temporary power to the staging areas ~~and both proposed HVDC terminal sites~~ during construction. The use of temporary generators at the ~~proposed terminals and~~ staging areas would be a contingency if distribution power is not available in a timely manner prior to construction commencing. Temporary generators would be required during construction of the proposed underground transmission lines. While the exact location of temporary distribution lines is not yet-known, impacts from the temporary power would typically occur within existing road ROWs and the staging area boundaries.

3.5.4 SITE PREPARATION

3.5.4.1 Surveying and Staking

LS Power would survey and mark the centerline at line-of-sight intervals, at points of intersection (including offset stakes marking the edges of the access road ROW), and at all known overhead structure locations and known underground facilities. LS Power would also clearly mark environmentally sensitive areas (i.e., areas with sensitive biological, cultural, paleontological, or hydrological resources), where appropriate, to restrict construction activities and equipment from entering these areas.

3.5.4.2 Utilities

Prior to initiating construction, LS Power would contact Underground Service Alert (USA), also known as USA North 811, to identify underground utilities in the immediate area. Prior to excavating for proposed transmission line construction, LS Power would conduct exploratory excavations (i.e., potholing) in order to verify the locations of existing utility facilities in the ROW. It is anticipated that PG&E may need to reroute existing substation getaways at the existing Newark substation, including raising or lowering some existing transmission lines to provide space for the LS Power tie in at the existing Newark substation. It is also anticipated that SVP may need to reroute existing substation getaways at the existing NRS substation. In addition, as part of the Proposed Project construction, excavation and installation of the concrete-encased duct bank and associated splice vaults would require the relocation of certain third-party utilities in areas of conflict. In the event underground utilities are identified, LS Power would work with the owner of those utilities to determine if design changes can be made or if utility relocation is necessary. Utilities would be avoided where practicable, but some utilities would require relocation. Utilities that would require relocation may include sanitary sewer, stormwater, gas, water, electric, and telecommunication.

3.5.4.3 Vegetation Clearing

~~Construction and operation of the proposed Baylands terminal location would require the permanent clearing of approximately 8.6 acres of annual grassland. The proposed Albrae terminal site does not contain vegetation. Additionally, construction~~Construction and operation of the new transmission line poles and structures would require the permanent clearing of approximately 0.03 acre of annual grassland. General construction (underground, overhead, and staging areas) would require the temporary clearing of approximately 81.5 acres of annual grassland~~, ,~~ and less than 0.01 acre of riparian vegetation. Vegetation removal would be completed utilizing mechanized removal equipment, such as a bulldozer, mower, or disc tractor, or by hand using chain saws. Vegetation removal would not occur outside of approved work areas.

3.5.4.4 Tree Trimming and Removal

The Proposed Project site would be cleared of trees and vegetation as discussed in the above section, specifically for the permanent facilities and to facilitate construction of those facilities. Based on preliminary design, approximately ~~24~~16 trees would be removed ~~(approximately 14 trees~~ along the proposed ~~Albrae to Baylands 320 kV DC transmission line and approximately 10 along the proposed Baylands~~Newark to NRS 230 kV transmission line~~)~~ as a result of the Proposed Project. A majority of the trees are non-native landscaped trees, including conifers, Canary Island pine, and sweet gum. Tree removals would occur in the vicinity of proposed overhead structures (e.g., ~~DC-11 and AC-4~~NN-14) or along the underground transmission ~~lines~~line where ~~they enter or exit from substation and terminal sites, including the entrance to~~it enters the NRS substation~~, Newark substation (along Weber Road), and the Baylands terminal~~.

If needed, tree removal would be completed utilizing mechanized removal equipment, such as a bulldozer or excavator, or by hand using chain saws. Tree removal would be limited as much as possible and would not occur outside of approved work areas.

Tree trimming as required pursuant to General Order (GO) 95-D would be performed as part of ongoing Proposed Project transmission line operation, if needed. Currently, no trees are present under the proposed overhead transmission line segments ~~such~~ that would require trimming ~~would be required~~. Any tree removal or trimming performed under the Proposed Project would be conducted to facilitate the safe construction of the Proposed Project and to reduce the fire hazard associated with construction.

3.5.4.5 Work Area Stabilization

Temporary work areas~~, terminal sites,~~ and substation ~~upgrade~~ modification areas, including drainage and detention basins and access roads, would be stabilized during construction with BMPs that would be outlined in the Proposed Project's Stormwater Pollution Prevention Plan (SWPPP), as discussed in more detail in **Section 5.10**, *Hydrology and Water Quality*. The SWPPP BMPs would remain in place and would be maintained until new vegetation is established or sites are otherwise stabilized.

3.5.4.6 Grading

~~Construction of the Proposed Project and associated improvements would require earthmoving activities at the two terminal sites. However, the proposed HVDC terminal sites were chosen with avoidance of major site grading in mind.~~ While earthmoving activities would be required for the proposed ~~terminal sites and~~ underground transmission ~~lines~~line, this is unlikely to be considered a substantial grading activity. ~~Encountering subsurface rock during construction of the proposed terminals is not anticipated.~~ Proposed underground transmission line construction would result in cut and fill of material. Overhead line construction for the Proposed Project would result in the excavation of the structure foundations (approximately ~~15~~14 foundations). Subsurface rock may be encountered during the overhead line foundation excavation. In addition, proposed underground transmission line construction would result in cut and fill of soil and fill material (see additional details in **Section 3.5.6**).

Grading, excavation, and material removal quantities anticipated for the Proposed Project based on current information are summarized in **Table 3-6**, *Proposed Project Grading, Excavation, and Material Removal Summary*.

Table 3-6: Proposed Project Grading, Excavation, and Material Removal Summary

Grading Description	Approximate Quantity (Cubic Yards [CY])	Activity Description
Underground Transmission Cut	~~60~~110,000	Trenching for installation of underground transmission duct banks and splice vaults. Also includes HDD and horizontal bore (jack-and-bore or microtunnel) pits.
Underground Transmission Fill	~~30~~50,000	Backfill in and around underground duct back and splice vaults.
Overhead Transmission Cut	~~2,000~~1,500	Excavation of structure foundations.
Overhead Transmission Fill	~~2,000~~1,500	Backfill and concrete for structure foundations.
~~Albrae Terminal Cut~~	~~15,000~~	~~Grading and excavations at Albrae terminal site.~~
~~Albrae Terminal Fill~~	~~37,000~~	~~Grading at Albrae terminal site.~~
~~Baylands Terminal Cut~~	~~53,000~~	~~Grading and excavations at Baylands terminal site.~~
~~Baylands Terminal Fill~~	~~31,000~~	~~Grading at Baylands terminal site.~~
Total Cut	~~130,000~~115,500	Total cut for Proposed Project.
Total Fill	~~100,000~~51,500	Total fill for Proposed Project.

Notes:
Cut and fill estimated quantities rounded to the nearest thousand CY.

As a result of the ~~proposed HVDC terminal site grading (e.g., cut and fill) and~~ Proposed Project excavations (e.g., trenching, structure foundations, vaults), approximately ~~130,000~~111,500 CY of material would be hauled off-site, stockpiled, or wasted, and approximately ~~100,000~~51,500 CY would be imported on-site. ~~In addition to general earthmoving quantities, approximately four to eight inches of surface gravel would be required to be imported and installed within the proposed Albrae and Baylands terminal sites. This material would be imported from a suitable, nearby aggregate source.~~ All clean spoils excavated by the Proposed Project would be used on-site to balance cut and fill, as feasible. All spoils that are not useable and/or contaminated would be sent to a properly licensed landfill facility or other site for reuse. Recyclables would be taken to a licensed recycling facility, and all refuse would be taken to a landfill or another suitable facility.

Generally, grading and excavation would be accomplished in a phased approach. Earthwork activities (e.g., grading, excavation) would be completed such that the site meets the Proposed Project's design specifications and matches proposed grades. During earthwork, soils and other surficial deposits that do not possess sufficient strength and stability to support structures would be removed from the work area. Removal would typically extend to competent materials with high mechanical strength and resistant to erosion and deformation. Material that requires processing would be mechanically processed on-site for placement as fill.

3.5.5 TRANSMISSION LINE CONSTRUCTION (ABOVEGROUND)

3.5.5.1 Poles and Towers

The Proposed Project's overhead transmission line construction would utilize tubular steel poles, which would either be installed on concrete pier foundations or directly embedded. Structure heights would vary, with a maximum height of approximately 150 feet. New poles would be composed of non-reflective, dull galvanized steel.

In order to facilitate the interconnection of the proposed Newark to ~~Albrae~~NRS 230 kV transmission line into the existing Newark substation, two existing distribution line spans on PG&E's property would need to be relocated underground. As part of this relocation, four poles would be removed and relocated underground by PG&E on PG&E property.

Structure Foundations

The Proposed Project structures would either be placed on drilled pier or direct embed foundations. Regardless of the foundation type, large augers or drill rigs would complete the required foundation excavations. For drilled pier foundations, a reinforcing steel rebar cage would then be lowered into the excavation. Concrete forms would be placed at the surface to allow for the final desired pier height above ground level. Each completed foundation would be left to cure until required strength is met, which may take up to approximately 28 days. After the concrete cures, the transmission structure would then be secured to the anchor bolts embedded into the finished foundation.

For locations suitable for direct embed foundations, the foundation hole would also be drilled using a large auger or drill rig. Then the space between the wall of the excavation and the tubular steel structure would be filled with native soil, gravel, or concrete.

If during drilling/excavation of a foundation hole, the excavation becomes unstable, the hole would be kept open by either inserting a permanent or temporary steel casing or by filling the hole with a drilling slurry. After a foundation is drilled to the desired depth using the drilling slurry, concrete would then be pumped to the bottom of the hole, displacing the slurry. Depending on site conditions, the slurry brought to the surface would typically be collected in a pit adjacent to the foundation or vacuumed directly into a truck to be reused or discarded at an appropriate off-site disposal facility.

Structure foundations would typically require an excavated hole about six to ten feet in diameter and about 15 to 60 feet deep, resulting in excavations ranging from about 16 to 175 CY per foundation. Tubular steel structures would require approximately 16 to 175 CY of concrete delivered per foundation. Concrete trucks would supply and pour concrete into drilled foundation holes. Cranes would be used to lift and place new poles into the newly installed holes or foundations. Cranes would also be utilized to lift rebar and anchor bolt cages into newly installed holes and suspend them during foundation pouring. Cranes and/or bucket trucks would lift workers into elevated positions to work on newly installed poles or towers. Crew cab and pickup trucks would be used to transport workers and tools to each installation site. Water trucks and portable water tanks would be used to minimize fugitive dust during excavation and restoration activities.

Structure Delivery and Assembly

The steel transmission structures would be delivered to each structure's temporary work pad in multiple sections using flatbed trucks. Depending on conditions at the time of construction, each structure may be assembled on the ground or aerially framed. To frame a structure on the ground, a crane would be utilized to move the structure sections into place, and forklifts would be utilized to assemble the arms. Hydraulic jacks may be temporarily mounted between structure sections in order to jack the structure sections together if they slip together, or the section would be bolted together. After assembly of the structure on the ground is complete, a crane would be used to lift the entire structure onto the anchor bolts protruding from the drilled pier foundation or into the open hole for direct embed foundations to be backfilled.

If a structure was to be aerially framed, a large crane would be used to lift the bottom section of the structure onto the anchor bolts protruding from the drilled pier foundation. When the bottom section was secured, the subsequent section(s) of the structure would be similarly slipped together and hydraulically jacked or bolted as required.

No pole topping is anticipated for the Proposed Project.

3.5.5.2 Aboveground Conductor and Underground Cable

Proposed Project transmission lines would be installed in a combination of overhead and underground positions.

Aboveground Conductor

~~Proposed Project transmission lines would be installed in a combination of underground and overhead positions. The proposed overhead Albrae to Baylands 320 kV DC transmission lines would utilize a double bundled 320 kV 1351.5 kcmil ACSS/TW "Martin" conductor per phase. The Newark to Albrae 230 kV transmission line would be developed by LS Power and PG&E. The proposed overhead PG&E Newark to Albrae 230 kV transmission line would utilize two 230 kV 1351.5 kcmil ACSS/TW "Martin" conductor per phase. The proposed overhead Baylands to NRS 230 kV transmission line would utilize a single 230 kV 1351.5 kcmil ACSS/TW "Martin" conductor per phase.~~

~~Conductor~~Overhead conductor stringing would begin with the installation of insulators and stringing blocks. Blocks are rollers, temporarily attached to the bottom of each of the insulators, that allow the conductor to be pulled, or "strung," through each structure until the entire line is ready to be pulled up to the final tension position. The initial stringing operation would consist of pulling a "sock line," which is a small rope or cable, through the blocks. Pulling the sock line is accomplished by either pulling it with a small helicopter or a vehicle traveling along the ROW. The sock line would then be attached to the hardline, which is a larger cable, and pulled through the blocks. The hardline would then be attached to the conductor which would then be pulled through the blocks and into place.

Each stringing site would be approximately 400 feet by ~~100~~130 feet. Stringing sites are typically located at dead-end structures but can also be located as required to match the length of conductor reels. Generally, stringing sites coincide with the work pads constructed for the structures and would be in direct line with the direction of the overhead conductors being installed. A typical stringing site's length is equal to approximately three times the height of the adjacent structure. The equipment that would be required at stringing sites includes a tensioner with a conductor reel at one end of a wire pull and a puller set-up positioned in a stringing site at the other end of a wire pull. It is anticipated that the stringing sites used for conductor installation would also be used for OPGW installation.

Prior to installing the new overhead conductor, LS Power would utilize temporary guard structures at road crossings, walking paths, waterways, utility crossings, and other locations where the new conductor could come in contact with existing electrical and communication facilities, or vehicular and/or pedestrian traffic, in the event the conductor accidentally falls during stringing operations.

Underground Conductor

Underground conductor cables would be installed into the duct banks once the duct bank and splice vaults are installed (see additional information on duct back construction in **Section 3.5.6** below). Each duct bank section between splice vaults would be treated as a separate segment in terms of conductor installation. The cables would be pulled into the duct banks by placing a pulling rig on one end of the duct bank segment and a cable reel on the other end of the duct bank segment. **Figure 3-15**, *Typical Underground Stringing Operation* depicts the underground conductor installation process.

Cable installation activities would occur at all splice vault locations and near the substation termination structures. Splice vaults would generally be installed along the proposed transmission line alignment approximately every 1,500 to 3,000 feet to facilitate installation of the underground cables.

After the cables are pulled through the ducts, construction crews would stage a splice trailer adjacent to the splice vault in order to complete the cable splicing per manufacturer's instructions and specifications. The cable sheath and insulation would be removed at each splice location from the XLPE cable prior to the copper conductors being spliced together. At the substation termination structures, the cable sheath and insulation would be removed from the XLPE cable to facilitate the installation of a terminator on the copper conductor. In order to reach the elevated terminators on the substation termination structures, temporary scaffolding may be required.

Splice vaults located within roads would be designed to accommodate all local and federal safety loading requirements, including the American Association of State Highway and Transportation Officials highway loading guidelines. Construction crews would excavate and place concrete splice vaults, that would be used initially to pull the cables through the duct bank and later to splice cables together (refer to **Section 3.5.6** below for additional information). During operation, the vaults would provide access to the underground cables for maintenance inspections, repairs, and replacement, if needed. The vaults would be constructed of prefabricated (precast) or cast-in-place, steel-reinforced concrete. Each vault would typically have two manhole covers measuring approximately 39 inches in diameter. The vaults would be delivered to the construction site utilizing a large flatbed semi-truck/trailer. Installation of each vault would generally entail excavation, shoring, and leveling of the splice vault pit using crushed gravel or flowable fill; followed by delivery and installation of the vault using a crane; filling, grouting, and compacting the backfill; and repaving the excavated area. Backfill for splice vaults would consist of either compacted native soil, slurry, or concrete.

As described in **Section 3.5.6.2** below, specialized underground conductor installation techniques would be used where surface or underground conditions preclude utilization of standard trenching techniques. Specifically, the Proposed Project would include approximately ~~three~~two locations where a horizontal bore (jack-and-bore or microtunnel) technique would be used for railway crossings and ~~seven~~eight locations where an HDD would be used for waterway and culvert crossings (locations ~~depicted on **Figure 3-4**~~provided in the **Updated GIS Database**). As discussed further in **Section 3.5.8.1**, *Public Safety*, for work associated with the proposed underground transmission lines in existing roads, temporary fences would be erected around open trenches and bore pits that are open for an extended period of time. Open trenches would be steel plated during non-working hours. Road barriers, signage, and flaggers would be utilized around construction areas in accordance with the TCP. The TCP would allow the transit of emergency response and maintenance vehicles.

3.5.5.3 Telecommunications

As described in **Section 3.3.9**, *Telecommunication Lines* above, the Proposed Project would include new telecommunication lines connecting the ~~two new HVDC terminals to each other, connecting the new HVDC terminals to the~~ existing Newark and NRS substations~~, and connecting the new HVDC terminals to local third-party internet providers~~. All new telecommunication lines are anticipated to be located underground or co-located on overhead tubular steel poles. No additional aboveground or wireless telecommunication (e.g., antennas) would be required. Where co-located with the proposed underground transmission lines, the telecommunication lines would be placed within the transmission line duct vaults, and fiber splices would be contained within separate underground fiber splice vaults or at the substation termination structures. Fiber splices would not be located within the proposed transmission line splice vaults.

3.5.5.4 Guard Structures

LS Power would utilize temporary guard structures at road crossings, walking paths, waterways, utility crossings, and other locations where the new overhead conductor could encounter existing electrical and communication facilities or vehicular and/or pedestrian traffic, in the event the conductor accidentally falls during wire pulling operations. Guard structures would typically require the temporary use of an area measuring up to 1,500 square feet, depending upon guard structure configuration and location. Guard structures would be constructed of wooden poles fashioned into a H-Frame or erected utilizing bucket trucks. All guard structures would be removed after the conductor is secured in place, typically taking less than two weeks. A total of up to approximately 15 guard structures would be installed at a total of five locations.

Traffic control would be required at all public roadway intersections regardless of the need for guard structures. In some instances, especially on small or private roads, LS Power may use flaggers to temporarily halt traffic for brief periods of time while the overhead line is installed over road crossings instead of using guard structures. Some guard structures may include netting between the guard structures to provide additional protection.

3.5.5.5 Blasting

Blasting is not anticipated to be required during construction or operation of the Proposed Project.

3.5.6 Transmission Line Construction (Belowground)

3.5.6.1 Trenching

Open-cut trenching techniques would be used for the majority of transmission duct bank installation. After the route is marked, the pavement within the trench would be removed. For the typical duct bank, the pavement would be cut with a wet saw or asphalt zipper and excavated with an excavator. Jackhammers may be used sparingly to break up sections of concrete that the saw cutting and pavement-breaking machines cannot reach. Excavators would be used to remove all spoils, with the spoils being loaded into dump trucks to be hauled off-site and be disposed of properly. If groundwater is encountered, dewatering may be required using a portable pump, and the water would be disposed of in accordance with applicable regulations and acquired permits. Dewatering procedures are described in **Section 3.5.10.2**, *Dewatering* below. Upon reaching final trench excavation depth, the trench walls would be secured via shoring as necessary. The typical width for the underground duct bank would be approximately 2.5 feet~~.~~ for a vertical duct bank and 4.5 feet for a horizontal duct bank. The trench excavation width would typically vary between three to ~~four~~six feet, based ~~on~~upon the duct bank configuration and shoring requirements. The typical trench dimensions for installation of the proposed underground transmission lines would be approximately three to ~~four~~six feet wide and ~~six~~eight feet deep (refer to **Updated Figure 3-9**). Depths may vary depending on soil stability and existing substructures. The trench would be widened and shored where necessary to meet California Occupational Safety and Health Administration ("Cal/OSHA") safety requirements.

Dewatering from Proposed Project excavations would be conducted in accordance with the provisions of Attachment J to the General Permit for Stormwater Discharges Associated with Construction and Land Disturbance Activities (Order WQ 2022-0057-DWQ). Dewatering would be conducted using a pump or well points. Groundwater encountered during underground construction would be pumped into water trucks for haul off or directly into containment tanks (e.g., Baker tanks) that allow acceptable de-sedimentation prior to discharge and tested for turbidity and pH, and other required parameters. The groundwater would be discharged into the storm sewer system when the water meets quality standards in accordance with applicable regulations and acquired permits or would be hauled off for disposal if parameters are detected in concentrations that prohibit discharge. Discharge may also be applied to flat, vegetated, upland areas, used for dust control, or used in other suitable construction operations if testing determines water is suitable for such use in accordance with applicable regulations and acquired permits. All hazardous materials and hazardous wastes would be handled, stored, and disposed of in accordance with all applicable regulations, by personnel qualified to handle hazardous materials. See **Section 3.5.11**, *Hazardous Materials and Management* for more discussion on hazardous materials and management.

LS Power would then install the conduits (separated by spacers) and backfill around the conduits with flowable thermal concrete to form the duct bank encasement. The ducts would typically consist of PVC conduits, which house the XLPE conductor cables. ~~Both the 320 kV and 230 kV~~The duct bank lines are anticipated to have eight eight-inch-diameter conduits. Additionally, four two-inch-diameter conduits for the telecommunications cable used for system protection and communication and ground wire(s) would be installed. Within the City of Fremont, ~~an~~ additional two-inch fiber conduit ~~would~~(s) may be installed within all duct banks for future use by the City of Fremont. Additional fluidized backfill would be utilized to fill most of the remainder of the trench. When located within roads, a road base backfill, flowable backfill, or slurry concrete cap would be installed, and the road surface would be restored in compliance with local requirements. While the duct bank is being installed and restored, an additional trench would be opened further down the alignment. This process would continue until all duct banks are installed. The trenching operation would progress such that only a maximum of approximately 1,000 feet of trench would be left open at any one time or as allowed by permit requirements. There would be multiple trenching crews working simultaneously along the route in different locations.

All trench backfilling material is anticipated to be flowable backfill. Trench backfill material would be evaluated for adequate thermal characteristics to dissipate heat to meet the design capacity of the new transmission lines. For a typical trench section, the duct bank would be encased in flowable thermal concrete, while the remainder of the upper trench section would be filled with fluidized backfill. Each duct bank would have a minimum of 36 inches of cover (refer to **Updated Figure 3-9**). The state of the ground after backfilling would be returned to preconstruction conditions. Where applicable, grading would be performed to restore the surface to preconstruction contours. In vegetated areas, the surface would be reseeded where appropriate. Disturbed roads would be reconstructed to the relevant local requirements. Reconstruction would include the restoration of all removed curbs, gutters, and sidewalks, as well as restoration of all removed or damaged paved surface, including the wear surface, stripping, and signage.

For the ~~proposed Albrae to Baylands 320 kV DC~~Proposed Project transmission line trenching, approximately ~~30~~110,000 CY of spoils would be removed from the trench. Minimal spoils are anticipated to be used as backfill, with flowable thermal concrete or flowable backfill anticipated to be used for the majority of backfilled material. ~~For the proposed Newark to Albrae 230 kV transmission line trenching, approximately 1,000 CY of spoils would be removed and disposed of or reused off-site. For the proposed Baylands to NRS 230 kV transmission line trenching, approximately 15,000 CY of spoils would be removed from the trench. As with the proposed Albrae to Baylands 320 kV DC transmission line trenching, minimal spoils are anticipated to be used as backfill, with flowable thermal concrete or flowable backfill anticipated to be used.~~ As such, almost all spoils would be removed and disposed of or reused off-site. Off-site disposal could occur at the Newby Island Sanitary Landfill, the Kirby Canyon Landfill, the Ox Mountain Landfill, the Guadalupe Landfill, or another approved facility. Refer to **Section 3.5.12.1**, *Solid Waste* for additional information regarding disposal of excavated materials, and **Section 3.5.12.3**, *Hazardous Waste* for processes specific to hazardous materials and potentially contaminated soils or groundwater.

LS Power would excavate and place concrete splice vaults that would be used initially to pull the cables through the duct bank and later to splice cables together. Installation of each vault would generally entail excavation, shoring, and leveling of the splice vault pit using crushed gravel or flowable fill; followed by delivery and installation of the vault using a crane; filling, grouting, and compacting the backfill; and repaving the excavated area. Backfill for splice vaults would consist of either compacted native soil, slurry, or concrete. Underground splice vaults for proposed transmission lines would be located approximately every 1,500 to 3,000 feet with dimensions of approximately 30 feet long, ~~10~~12 feet wide, and 10 feet tall. The splice vault excavation would be approximately three feet wider on each side for the shoring and installation of the splice vault. As practical, splice vaults would be sited to avoid interfering with existing access points and intersections to minimize disruptions to the public during construction and O&M. During construction, it is anticipated that up to three separate construction crews would be working on splice vault installations at different locations along the proposed transmission lines concurrently.

As further detailed in **Section 3.5.8.1**, LS Power would implement standard BMPs, including, but not limited to:

- The public would be restricted from entering construction work areas along the transmission lines.

- Public access restrictions would be maintained during the duration of construction activities at a given location.
- For work associated with the underground transmission lines in existing roads, temporary fences would be erected around open trenches and bore pits that are open for an extended period of time. Open trenches would be steel plated during non-working hours.
- All crossings of existing utilities would be done in a manner that ensures proper separations are maintained and proper supports are in place during the installation process.
- Road barriers, signage, and flaggers would be utilized around construction areas in accordance with the TCP. The TCP would allow the transit of emergency response and maintenance vehicles.
- As practicable, the crews would be located along the route in a manner that minimizes impacts.

3.5.6.2 Trenchless Techniques

In addition to open-cut trenching, LS Power would use horizontal ~~boring~~bore (jack-and-bore or microtunnel) or HDD construction techniques to install the conduit ducts where open-cut trenching is not feasible. Specifically, the Proposed Project includes ~~seven~~eight HDD locations and ~~three~~two jack-and-bore locations (refer to ~~**Figure 3-4**~~the **Updated GIS Database**). The jack-and-bore technique would involve concurrently pushing a casing pipe through the trenchless crossing and removing the spoil inside the casing with a rotating auger ~~(refer to~~. The microtunnel technique would utilize a microtunnel boring machine to create the bore hole. The spoil is removed from the cutting face in a slurry and the casing pipe is pushed in behind it. (refer to **Updated Figure 3-13**). The HDD installation would use a drill head on the end of a hollow drill pipe and spray nozzle on the end to bore under an obstruction (refer to **Updated Figure 3-14**). The trenchless crossings would be filled from end to end with a low strength fluidized backfill (e.g., thermal grout or bentonite slurry) to ensure consistent thermal contact between the conduits and the earth to promote heat dissipation.

The horizontal bore (jack-and-bore or microtunnel) sending and receiving pits would be located on either side of the features to be crossed. The sending and receiving pits would be excavated utilizing an excavator or backhoe. The sending and receiving pits for the horizontal bore (jack-and-bore or microtunnel) would be approximately 15 feet by 50 feet. The temporary workspace adjacent to the sending and receiving pits at the horizontal bore (jack~~-~~ and~~-~~ bore or microtunnel) site would be approximately 30 feet by ~~80~~100 feet. However, these dimensions may vary depending upon site-specific constraints and permit requirements. The standard depth of the pits would be approximately 10 feet below-grade, with the top of the casing pipe generally at least four feet below-grade. Depths may vary depending on soil stability, existing substructures, and permitting requirements. **Updated Figure 3-13** depicts the typical horizontal bore (jack-and-bore or microtunnel) operation, including typical dimensions and arrangements. The pits would be shored where necessary to meet Cal/OSHA requirements. A typical horizontal bore (jack~~-~~ and~~-~~ bore or microtunnel) sending and receiving pit would require the removal of approximately 350 CY of spoils. All pit spoils are anticipated to be hauled off-site, and a fluidized backfill would be used following the trenchless construction. When located within roads, a road base backfill, flowable backfill, or slurry concrete cap would be installed, and the road surface would be restored in compliance with local requirements.

The HDD sending and receiving pits would be located on either side of the features to be crossed. The sending and receiving pits would be excavated utilizing an excavator or backhoe. The sending and receiving pits for the HDD would be approximately ~~six~~6 feet by 20 feet. These pits would be used only for fluid containment before pumping the fluid to the control equipment for cleaning and recirculation. A typical HDD sending and receiving pit would require the removal of approximately 20 CY of spoils. When located within roads, all pit spoils are anticipated to be hauled off-site, and a fluidized backfill would be used following the trenchless construction and duct bank tie-in. A road base backfill, flowable backfill, or slurry concrete cap would be installed, and the road surface would be restored in compliance with local requirements. In non-roadway areas, a fluidized backfill would typically be used following the trenchless construction and duct bank tie-in. The flowable backfill would typically be stopped approximately one foot from the top of finish grade and native soils would be used for the remainder of the backfill. The typical temporary workspace around sending and receiving pits at the HDD site would be approximately 200 feet by 100 feet, but the temporary workspace dimensions may significantly vary to accommodate site-specific constraints at each setup location. Pull back area for pipe staging and fusion would typically begin at the receiving pit and be longer than the proposed HDD's entire length. The temporary workspace dimensions can vary given tight setup locations. **Updated Figure 3-14** depicts the typical HDD operation, including typical dimensions and arrangements. The pits would be shored where necessary to meet Cal/OSHA requirements.

Geotechnical and topographical survey data would be used to design an HDD path that is adequately beneath the stream bed to minimize the likelihood of fracturing-out. During construction, drilling conditions would be monitored during drilling activities to ensure adequate conditions. Drilling fluid return volume would be continuously monitored. A significant drop in return volume would signify fracturing-out, and drilling would be stopped. The bore alignment and any stream crossings would be visually monitored for fracturing-out at a 100-foot radius.

Dewatering and hazardous waste management are discussed further in **Section 3.5.10**, *Water Use and Dewatering,* **Section 3.5.11***,* and **Section 3.5.12***, Waste Generation and Management.* As discussed further in **Table 3-12**, *Applicant Proposed Measures*, **APMs HAZ-1** and **HAZ-2** have been included for a site-specific Spill Prevention, Control, and Countermeasures Plan (SPCCP) and a Hazardous Materials Management Plan (HMMP), and **APM WQ-1** describes dewatering procedures and measures. The following BMPs would be implemented during the construction of trenchless crossings:

- Drilling mud and bore lubricant control, monitoring, and containment measures would be established prior to trenchless construction activities commencing and remain in place until after trenchless construction activities are completed.
- Spoils would be stored at least 25 feet from any body of water and contained by a sediment barrier and plastic sheeting where practical.
- If using spoils as backfill, pits would be stabilized after backfilling is complete.
- Drilling fluid would be stored in water-tight containers when not in use.
- Emergency spill/fracturing out kits would be staged near trenchless construction equipment.

In the event that soils or groundwater suspected of being contaminated (on the basis of visual, olfactory, or other evidence) are removed during trenching operations, the excavated soils or groundwater would be tested, and, if contaminated above hazardous waste levels, the soils would be contained and disposed of at a licensed hazardous waste facility. All hazardous materials and hazardous wastes would be handled, stored, and disposed of in accordance with all applicable regulations, by personnel qualified to handle hazardous materials. See **Section 3.5.11** for more discussion on hazardous materials and management.

3.5.7 SUBSTATIONS, SWITCHING STATIONS, AND GAS COMPRESSOR STATIONS

The Proposed Project includes modifications at two existing substations. These modifications would be completed by PG&E and SVP but are included in this Proposed Project description as they are part of the overall transmission project. There are no switching stations or gas compressor stations being proposed otherwise included as part of the Proposed Project. ~~the construction of two new HVDC terminals as well as modifications at two existing substations. A GIS switching station would be constructed as part of each new HVDC terminal.~~

~~3.5.7.1 Facility Installation~~ or ~~Modification~~

~~Construction of the Proposed Project would occur in a phased approach, beginning with site preparation and grading of the site, then installation of foundations and underground equipment, and lastly installation and testing of electrical equipment. Prior to clearing activities associated with site development, all necessary surveys, marking, and installation of stormwater management features (e.g., silt fence, fiber rolls, etc.) would be completed. During site development, fencing, gates, and driveways would be installed (some on a temporary basis) to provide site security during construction activities.~~

~~Following site development, all necessary below-grade construction, including installation of structure and equipment foundations, underground ducts, and the ground grid would begin. Once earthwork and below-grade activities are completed, above-grade construction and equipment installation would take place. The enclosure would be erected, and major equipment and structures would be installed and anchored on their respective foundations. It is anticipated that all major electrical and terminal equipment, such as the converter transformers, would be delivered to the proposed HVDC terminal site and placed directly on their respective foundations. Other HVDC terminal equipment, such as HVDC equipment, GIS equipment, riser structures, bus, conduit, cable trench, rebar, etc., would be received and temporarily stored at a staging area prior to installation. Transmission interconnection line terminations and distribution connections would be installed primarily within public roads and inside the proposed HVDC terminal station facilities following the installation of the HVDC terminal structures and associated equipment. Following construction, temporary disturbance areas would typically be recontoured to match preconstruction grades.~~

~~3.5.7.2 Civil Works~~

~~The proposed HVDC terminal sites, including the drainage and detention basin, would be stabilized during construction with BMPs. These BMPs would be described in the SWPPP prepared for construction activities with the Proposed Project. The SWPPP would be prepared prior to construction and would be tailored to the final approved design of the Proposed Project. The BMPs included in the SWPPP would be monitored and revised throughout the construction process as needed to respond to field conditions. Grading and excavations are further described in **Section 3.5.4.6**, *Grading,* above.~~

3.5.8 PUBLIC SAFETY AND TRAFFIC CONTROL

3.5.8.1 Public Safety

~~The active HVDC terminal construction and staging areas would be fenced to restrict public access to the site.~~ All open holes or trenches associated with the underground transmission lines would be covered at the end of the day to protect the public and construction workers. Public access restrictions would be maintained during the duration of construction activities and would be coordinated with local agencies when affecting public ROWs. Public access restrictions would vary from a few days or weeks for trenching operations to many months or years for staging areas. ~~Public access restrictions for the proposed HVDC terminals would be the duration of construction (approximately two years) and operations.~~ Public safety, with regards to traffic controls on roadways and trails, is discussed below in **Section 3.5.8.2**, *Traffic Control*. The following BMPs would be implemented to ensure public and worker safety during construction on the Proposed Project site:

- The public would be restricted from entering construction work areas and staging areas~~, both~~ along the proposed transmission ~~lines and at the HVDC terminal sites~~line.
- Public access restrictions would be maintained during the duration of construction activities at a given location.
- Each construction contractor would submit safety plans to LS Power for review and approval prior to commencement of construction activities.
- All crossings of existing utilities would be done in a manner that ensures proper separations are maintained and proper supports are in place during the installation process.
- For work associated with the underground transmission lines in existing roads, temporary fences would be erected around open trenches and bore pits that are open for an extended period of time. Open trenches would be steel plated during non-working hours.
- Road barriers, signage, and flaggers would be utilized around construction areas in accordance with the TCP. The TCP would allow transit of emergency response and maintenance vehicles.
- Any spills or hazardous materials would be addressed according to the SWPPP, SPCCP (as defined in **Section 3.5.11.1**, *Hazardous Materials*), and HMMP (as defined in **Section 3.5.11.2**, *Hazardous Materials Management*) to ensure public safety.

3.5.8.2 Traffic Control

~~Traffic control procedures may be implemented intermittently along Boyce Road and Weber Road for the proposed Albrae terminal and Los Esteros Road for the proposed Baylands terminal during construction and deliveries. Lane closures may be necessary along these roads when equipment is being delivered to the Proposed Project site.~~ To facilitate the proposed underground transmission line construction, lane closures would be necessary to allow adequate work area for construction at any given time. These restrictions would be temporary and short-term~~ based on delivery schedules~~. To facilitate proposed underground transmission line construction, temporary closures of sidewalks, lanes, roads, trails, paths, and/or driveways may be necessary along the transmission line alignment where the proposed transmission lines are located within existing roads or trails to allow adequate work area for construction at any given time.

These restrictions would be temporary, and traffic detours could be necessary as part of construction. Temporary routes, timing, and processes for detour locations would be identified in the TCPs that LS Power would develop in consultation with the applicable local agencies (e.g., City of Fremont, City of San José, City of Santa Clara). While TCPs would govern underground transmission line construction within public roadways for the full duration of said construction, traffic control measures, such as lane closures and detours, would be temporary and short-term in any given location as underground construction moves along the alignment in a linear fashion.

Signage, flaggers, and/or other traffic control measures would be utilized to guide traffic around active work areas in a safe manner. All TCPs and encroachment permits would be reviewed and approved by the Cities of Fremont, Milpitas, San José, and Santa Clara and the Counties of Alameda and Santa Clara as appropriate and would be provided to the CPUC prior to implementation. TCPs are based on final approved Proposed Project design and are typically prepared immediately prior to construction when encroachment permit applications are submitted to the local agency.

3.5.8.3 Security

~~Physical security for the proposed HVDC terminal stations would be designed in accordance with North American Electric Reliability Corporation (NERC) Critical Infrastructure Protection (CIP) requirements with 24-hours-a-day, seven-days-a-week monitoring, response, and control through the LS Power control center and staff. Each proposed HVDC terminal would include an at least eight-foot-tall security wall to protect the facility from environmental and physical threats. The perimeter security wall would include an approximately 24-foot-wide gate. Access to the proposed HVDC terminal and enclosures would be restricted. The proposed HVDC terminal design would include indoor and outdoor physical security cameras placed throughout the site. Proposed HVDC terminal lighting would be photocell and motion controlled to provide illumination for security. LED lights would be mounted on A-frames, H-frames, structures, poles, and enclosures as required.~~

During construction, perimeter security fencing would be installed around the outer limits of the proposed ~~HVDC terminal work area and~~ staging areas. Lighting would also be installed for security purposes. A security professional may also monitor the construction sites where materials are stored, which may include the ~~proposed HVDC terminal sites,~~ staging areas~~,~~ and ROW during periods when construction personnel are not present.

3.5.8.4 Livestock

Livestock may be encountered during installation of the NN-2 and the switch at the Newark substation. This area is subject to cattle grazing and managed by PG&E This work would be conducted in coordination with PG&E. PG&E regularly conducts maintenance work on the site while grazing cattle are present and has developed procedures for excluding the cattle from work areas that would be implemented during construction. ~~are not anticipated to be encountered during construction or operation of the Proposed Project. Therefore, specific livestock fencing, guards, or other similar protective measures would not be required as part of LS Power's Proposed Project~~.

PG&E Substation Modifications

A portion of the proposed Newark to ~~Albrae~~NRS 230 kV transmission line is located in an area that is subject to cattle grazing. This work would be conducted by PG&E and would occur on PG&E property. PG&E regularly conducts maintenance work on the site while grazing cattle are present and has developed procedures for excluding the cattle from work areas that would be implemented during construction.

3.5.9 DUST, EROSION, AND RUNOFF CONTROLS

3.5.9.1 Dust

During construction, migration of dust from the construction sites would be limited by control measures set forth by the APMs outlined in **Section 5.3**, *Air Quality*. These measures may include the use of water trucks and other dust control measures, including the application of non-toxic soil binders.

3.5.9.2 Erosion

The Proposed Project would result in more than one acre of soil disturbance. As a result, the Proposed Project would be required to prepare, file, and implement a SWPPP in accordance with the State's General Permit for Stormwater Discharges Associated with Construction Activities (2009-009-DWQ, as amended by 2010-0014-DWQ and 2012-0006-DWQ). The SWPPP would include measures to prevent and minimize erosion and off-site transport of pollutants from construction activities. The SWPPP would designate BMPs that would be followed during construction to help stabilize disturbed areas and reduce erosion, sedimentation, and pollutant transport. While the SWPPP would designate specific BMPs based upon site conditions, BMPs that would be utilized may include, but are not limited to, silt fencing, straw waddles, erosion control blankets, riprap, etc.

3.5.9.3 Runoff

~~The Proposed Project would also include a stormwater management system consisting of a stormwater drainage and conveyance system and a stormwater detention system at each proposed HVDC terminal location. The size of the detention system would vary for each proposed HVDC terminal site, depending on site-specific conditions and may include a detention basin, underground detention vaults, or a combination thereof. The proposed HVDC terminal pads would be graded to drain towards the stormwater conveyance system to ultimately direct stormwater into the detention system. The stormwater detention system would not be lined, allowing for infiltration and groundwater recharge. The stormwater detention system would be designed to capture the runoff from the 100-year storm, 24-hour rainfall event and then release the captured water. Overflow from the detention system would be returned to sheet flow via a level spreader that would provide for sheet flow of the stormwater to the adjacent land surface during storms that exceed the system's design capacity. The level spreading approach would control erosion and prevent scouring at discharge locations.~~
The Proposed Project would not require a stormwater management system for runoff. Runoff from the Proposed Project will be handled according to the project specific SWPPP discussed above.

3.5.10 WATER USE AND DEWATERING

3.5.10.1 Water Use

The Proposed Project would minimize the amount of water required since a substantial amount of the required work would occur in paved roads. Water would regularly be used for dust control in the proposed staging areas ~~and terminal sites~~ but less frequently used for dust control during duct bank construction. Water used for construction activities, such as for dust suppression and compaction requirements, would be trucked in from a nearby off-site location. It is estimated that a total of up to approximately ~~15~~8,000,000 gallons of water would be used for construction purposes during an approximately 24-month portion of construction when the site development and below-grade construction phases occur~~ at the proposed terminal sites.~~. Water used during construction activities would be temporary and originate from a local source that has the existing capacity to service the Proposed Project's needs. In addition to the potential use of potable water, recycled, reclaimed water, or groundwater would be used in accordance with applicable regulations and acquired permits to meet the Proposed Project's construction needs. Construction crews would be responsible for providing their own drinking water during construction.

Minimal water would be necessary to facilitate restoration of temporarily impacted areas following the completion of construction. The Proposed Project would not require water sources for O&M activities~~, as the proposed HVDC terminal facilities would be remotely operated with no permanent workforce on-site~~. LS Power personnel would be responsible for providing their own drinking water during O&M activities.

3.5.10.2 Dewatering

Dewatering would be conducted using a pump or well points. Groundwater encountered during underground construction would be pumped into water trucks for haul off or directly into containment tanks (e.g., Baker tanks) that allow acceptable de-sedimentation prior to discharge and tested for turbidity and pH, and other required parameters. The groundwater would be discharged into the storm sewer system when the water meets quality standards in accordance with applicable regulations and acquired permits or would be hauled off for disposal if parameters are detected in concentrations that prohibit discharge. Discharge may also be applied to flat, vegetated, upland areas, used for dust control, or used in other suitable construction operations if testing determines water is suitable for such use in accordance with applicable regulations and acquired permits.

3.5.11 HAZARDOUS MATERIALS AND MANAGEMENT

3.5.11.1 Hazardous Materials

Hazards and hazardous materials are discussed in greater detail in **Section 5.9**, *Hazards, Hazardous Materials, and Public Safety*. Construction of the Proposed Project would require the limited use of hazardous materials, such as fuels, lubricants, cleaning solvents, and chemicals. All hazardous materials would be stored, handled, and used in accordance with applicable regulations. Safety Data Sheets (SDS) would be made available at the construction site(s) for all workers. Based on the anticipated volume of hazardous liquid materials, such as fuel, that would be stored and dispensed at a staging area, an SPCCP may be required (in accordance with applicable provisions of 40 C.F.R. Parts 112.1-112.7). ~~-~~If pre-existing hazardous waste is encountered on the Proposed Project site, it would be removed and disposed of in a manner consistent with all state and federal regulations. It is not anticipated that herbicides or pesticides would be used during construction. As discussed further in **Table 3-12**, **APMs HAZ-1** and **HAZ-2** have been included for a site-specific SPCCP and HMMP.

3.5.11.2 Hazardous Materials Management

Hazards and hazardous materials are discussed in greater detail in **Section 5.9**. Prior to construction, an SPCCP and HMMP would be prepared, describing hazardous materials use, transport, storage, management, and disposal protocols. Construction would not begin until these plans are complete. The plans would be prepared in accordance with relevant state and federal guidelines and regulations (e.g., Cal/OSHA). The HMMP would include the following information related to hazardous materials and waste, as applicable:

- A list of hazardous materials present on-site during construction and O&M to be updated as needed along with product SDS and other information regarding storage, application, transportation, and disposal requirements;
- A Hazardous Materials Communication (i.e., HAZCOM) Plan;
- Assignments and responsibilities of Proposed Project Health and Safety roles;
- Standards for any secondary containment and countermeasures that would be required for hazardous materials;
- Spill response procedures based on product and quantity. The procedures would include materials to be used, location of such materials within the Proposed Project area, and disposal protocols; and
- Protocols for the management, testing, reporting, and disposal of potentially contaminated soils or groundwater observed or discovered during construction. This would include termination of work within the area of suspected contamination sampling by an Occupational Safety and Health Administration (OSHA)-trained individual and testing at a certified laboratory.

3.5.12 Waste Generation and Management

3.5.12.1 Solid Waste

Solid wastes generated during construction would primarily be non-hazardous wastes, including wood, metal, paper, and plastic packaging. Construction debris volumes are estimated to total approximately ~~2,000~~1,500 CY. Solid waste generated during construction of the Proposed Project would typically be collected at the point of creation, transported to a staging area, and then temporarily stored at a staging area as the solid waste awaits salvage, recycling, and/or disposal. Solid wastes would be sorted, and recyclable and non-recyclable materials would be stored separately at the staging areas. During trenching excavations, the excavated material would be loaded onto trucks and transported to an approved disposal facility or location of reuse. Construction waste would be disposed of properly and in accordance with all applicable federal, state, and local laws regarding solid and hazardous waste, including, but not limited to, the California Integrated Waste Management Act of 1989 which has set reduction rates for the amount of solid waste sent to landfills. Construction waste that cannot be recycled would ultimately be disposed of at the Newby Island Sanitary Landfill, the Kirby Canyon Landfill, the Ox Mountain Landfill, the Guadalupe Landfill, or another approved facility (California Department of Resources, Recycling, and Recovery ["CalRecycle"], 2023a and 2023b). Additional information is provided in **Section 5.19**, *Utilities and Service Systems* and **Table 5.19-1**, *Waste Volume by Type*.

Earthwork associated with the Proposed Project would require cut and fill, and excess material after completion of grading and excavation would be approximately ~~130,000~~111,500 CY. During trenching excavations, minimal excavated material would be used to backfill, with most of the excavated material not being reused. Cut material from ~~terminal and~~ substation modification site grading would be used as fill on-site, where possible. In addition to the earthwork and trench spoils waste, construction debris volumes are estimated to result in a total of approximately ~~2,000~~1,500 CY. LS Power would transport excess soil to landfills that recycle excess soil materials as part of landfill operations (as opposed to disposing of the soils as waste), where possible. Landfills would determine their capacity for recycling in the future, closer to the time of disposal. Pavement waste produced from trench excavation is anticipated to be transported to an appropriate recycling facility in the area. Where possible, recyclable construction material would be transported to an approved recycling facility.

3.5.12.2 Liquid Waste

Liquid waste streams anticipated for the Proposed Project primarily include sanitary waste, dewatering effluent, drilling fluids, and stormwater runoff. Sanitary waste from self-contained portable toilets would be routinely pumped and would be transported by licensed sanitary waste services for off-site disposal at their contracted treatment, storage, and disposal facility. Sanitary waste would be generated at a rate of 50 to 100 gallons per week for every ten workers on-site.

Stormwater runoff would be managed according to a stormwater management plan and associated SWPPP to comply with any general construction permits and approved by the local Regional Water Quality Control Board (RWQCB). If groundwater is encountered, dewatering may be required using a portable pump, and the water would be disposed of in accordance with applicable regulations and acquired permits. Dewatering procedures are further described in **Section 3.5.10.2**, above. Drilling fluid is anticipated to be disposed of at the Altamont Pass Landfill or another approved facility.

3.5.12.3 Hazardous Waste

As discussed in **Section 3.5.11**, construction of the Proposed Project would require the limited use of hazardous materials, such as fuels, lubricants, cleaning solvents, and chemicals. ~~Additionally, the Proposed Project would include transformers containing mineral oil, which is considered a hazardous material in the State of California.~~ Additional potentially hazardous waste sources that could be encountered during construction include contaminated soils, incidental spill waste, and concrete washout.

Waste generated or encountered would be handled, contained, and disposed of according to local, state, and federal regulations. In addition, prior to construction, an HMMP would be prepared describing hazardous material use, transport, storage, management, and disposal protocols. This could include containerization in Department of Transportation approved vessels, review of relevant SDS, use of secondary containment, and training of material handlers to ensure worker safety and the reduction of cross contamination. Off-site disposal would occur at Clean Harbors San Jose Facility or another approved facility. It is not anticipated that herbicides or pesticides would be used during construction. Additional information and analysis are provided in **Section 5.9**.

Staging Areas and ~~Baylands~~Newark to NRS 230 kV Transmission Line Site Contamination

As further described in **Section 5.9**, Staging Areas ~~10,~~ 11, 12 and an underground portion of the proposed ~~Baylands~~Newark to NRS 230 kV transmission line are located within the Cisco Systems Site 6 (EnviroStor Case Number 43010027)/Syntax Court Disposal Site (GeoTracker Case Number T10000007316), which is an approximately 19-acre site with soil contaminated with heavy metals, including lead and arsenic, as well as volatile organic compounds (VOCs) in soil vapor and shallow groundwater. A Soil Management Plan (SMP) and Health and Safety Plan were prepared in 2001 to guide handling of potentially contaminated soil within the site, which was named Cisco Systems Site 6. Because the contaminated fill material was left in place, a "Covenant to Restrict Use of Property" was put in place on May 23, 2003, and includes the following restrictions and requirements for the site:

- No residence for use as human habitation;
- No hospital for humans;
- No schools for persons under 21 years of age or day care centers for children;
- DTSC access for inspection, monitoring or other activities necessary to protect public health and the environment;
- Written notice to DTSC at least 14 days prior to any activities that will disturb the soil at or below 1.5 feet below grade;
- Activities that disturb the soil at or below 1.5 feet below grade shall be conducted in accordance with procedures described in the SMP and Health and Safety Plan approved on April 27, 2001, by the DTSC;
- Contaminated soils brought to the surface will be managed in accordance with applicable provision of state and federal law;
- No notice is required for activities that disturb only the top 1.5 feet of soil below grade. However, upon conclusion of such activities, at least 1.5 feet of clean soil must be maintained above the contaminated fill layer; and
- No cultivation of food (cattle, food crops).

3.5.13 FIRE PREVENTION AND RESPONSE

3.5.13.1 Fire Prevention and Response

Section 5.20, *Wildfire* outlines the Proposed Project's fire risk. As described in that section, the Proposed Project is located within a low fire threat area, as identified by California Department of Forestry and Fire Protection ("CAL FIRE") or the CPUC. Impacts are not anticipated to occur, and no mitigation would be required. If required based on final design or permits, a Construction Fire Prevention Plan (or equivalent) would be prepared prior to construction based on final design and the approved Proposed Project footprint.

3.5.13.2 Fire Breaks

During construction activities that are considered "hot work" (e.g., welding, grinding, or any other activity that creates hot sparks), LS Power would implement a ten-foot buffer around that activity, and vegetation would be cleared to ensure sparks do not create a fire hazard. For activities that do not produce sparks but still have potential to produce a fire hazard, LS Power would implement a five-foot buffer to be cleared of vegetation, and additional details (i.e., handling sparks) would be provided in the Construction Fire Prevention Plan.

Under Section 35 of GO 95, the CPUC regulates all aspects of design, construction, and O&M of electrical power lines and fire safety hazards for utilities subject to their jurisdiction (CPUC, 2020). In addition, Fire Prevention Standards for Electric Utilities (California Code of Regulations [CCR] Title 14, sections 1250-1258) provide definitions, maps, specifications, and clearance standards for projects under the jurisdiction of California Public Resources Code (PRC) sections 4292 and 4293 in State Responsibility Areas (SRAs). LS Power would design and construct the ~~proposed HVDC terminals~~Proposed Project in accordance with all applicable state and federal regulations. The Proposed Project is not located within an SRA.

3.6 CONSTRUCTION WORKFORCE, EQUIPMENT, TRAFFIC, AND SCHEDULE

3.6.1 Construction Workforce

~~Construction of the proposed HVDC terminal facilities and transmission lines is expected to occur simultaneously.~~ The construction workforce and equipment deployed for the Proposed Project would be typical for similar transmission line ~~and terminal~~ construction projects of this size. It is anticipated that a maximum of approximately ~~60~~36 workers would be employed at a single construction site at one time. The peak employment is anticipated to be approximately ~~300~~200 workers, but, on average, the workforce on-site would be less. The workers would likely commute from the Greater Bay Area. For the proposed underground transmission line activities, multiple duct bank, splice vault, trenchless crossing, and cable installation crews would work simultaneously along the route in different locations. It is anticipated that up to ~~10~~12 crews could be working simultaneously to complete the proposed ~~underground~~ transmission line activities ~~mentioned above and the proposed terminal sites~~discussed above.

Updated Appendix 3-A, *Construction Equipment and Workforce Table* lists the expected equipment and personnel by construction activity as well as a brief construction work plan summary for each activity. It also lists the uses of the equipment for each construction phase. This information is preliminary, and not all equipment and personnel listed may be used during all portions of each specified activity. Additional personnel or other equipment may be identified during final Proposed Project design or implemented during construction as needed, based on site conditions.

3.6.2 Construction Equipment

The equipment that would be used to construct each Proposed Project component, along with its approximate duration of use, is provided in **Updated Appendix 3-A**. In addition, a full list of equipment that would be used during construction is outlined and provided in **Table 3-7**, *Anticipated Construction Equipment*.

Table 3-7: Anticipated Construction Equipment

Equipment Type	Equipment Use
Air compressor	Operate air tools
Asphalt grinder	Grind asphalt

Table 3-7: Anticipated Construction Equipment	
Equipment Type	**Equipment Use**
Asphalt paver	Restoration purposes
Backhoe	Excavate trenches
Bobcat	Excavate trenches
Boom truck	Access poles and other height-restricted items Lift/set steel
Boom truck with trailer	Deliver steel, disc, panels, and insulators
Bucket truck/manlift	Set steel Install equipment Use as guard structure
Bulldozer	Grade access roads~~ and terminal sites~~ Demolition Excavate and backfill walls
Cable dolly	Pull cable
Cable dolly (trailer)	Transport reels of cable (no engine; can be pulled by assist truck)
Compactor	Compact soil Clear/grub/finish
Concrete boom crane pump truck	Pour concrete at a distance away from the truck
Concrete truck	Transport and pour concrete
Crane	Lift/position equipment and materials
Diesel generator	Power for construction activities
~~Discing tractor and machine~~	~~Loosen soil for terminal sites~~
Drilling rig/truck-mounted augur	Excavate for direct-bury poles Excavate trenches
Dump truck	Haul excavated materials/import backfill, as needed
Excavating scraper	Grade pads and access roads
Excavator	Excavate soils/materials (trenching)
Forklift	Transport materials at construction sites and staging areas
Grader	Grading and soil movement Restoring original contours
HDD machine	Trenchless crossing installation
Heavy hauler moving truck	Transport large equipment to site
Helicopter	Stringing activities
Jack-and-bore machine	Trenchless crossing installation
Jackhammer	Break concrete and asphalt
Line truck	Install clearance structures Pull cables/connections
Loader	Demolition Load dump trucks
Microtunnelling Machine	Trenchless crossing installation
Pickup truck	Transport construction personnel and material
Portable generator	Operate power tools~~,~~ and work trailers~~, and terminal sites~~

Table 3-7: Anticipated Construction Equipment	
Equipment Type	**Equipment Use**
Potholing machine (hydro vacuum excavator)	Verify the locations of existing utilities
Pressure digger	Excavate for poles and foundations Excavate trenches
Pulling rig/wire puller	Pull cables into duct
Reel trailer/wire trailer	Feed new conductor to the wire puller
Relay/telecommunication van	Transport and support construction personnel
Roller	Repair streets and compact soil
Scraper	Grade pads and access roads
Security vehicle	Site security
Splice truck/trailer	Store splicing supplies
Street sweeper	Clean paved roads
Tensioner	Control conductor at pulling tension during pulling operation
Tool van/conex	Tool storage
Tractor/trailer unit	Transport materials to sites and staging areas
Trencher	Trench for underground lines
Water truck	Provide water for dust suppression and other construction needs
Welding truck	Equipment and materials for field welding
Wire truck	Hold spools of wire

In addition to the use of the equipment identified above, pickup trucks and construction worker vehicles are anticipated to travel daily to and from the work areas for each component of the Proposed Project.

3.6.3 CONSTRUCTION TRAFFIC

The types and quantity of equipment that would be used to construct each Proposed Project component, along with its approximate duration of use, is provided in ~~**Appendix 3-A**. For the proposed Albrae terminal, all construction vehicles and equipment would enter the Proposed Project area from Weber Road. For the proposed Baylands terminal, all construction vehicles and equipment would enter the site from Los Esteros Road.~~**Updated Appendix 3-A**. Although some disruption to traffic flow may occur when trucks ingress or egress from the access roads, such events would be periodic and temporary. Signage, flaggers, or other traffic control measures would be used to reduce potential disruptions to traffic flow and to maintain public safety during construction. Parking of worker vehicles would generally occur within one of the staging areas, though some worker vehicle parking may occur on-site during proposed underground transmission line construction within existing roads. Most of the transmission line crews would park at one of the proposed ~~terminal sites~~staging areas, and a worker would drive workers from the ~~terminal sites~~staging areas to the transmission line site. As construction would occur on public roadways, TCPs and encroachment permits may be required from the Cities of Fremont, Milpitas, San José, and Santa Clara. Implementation of a TCP (**APM TRA-1**, *Traffic Control Plan*) would further reduce impacts to traffic congestion. Pursuant to **APM TRA-1**, appropriate traffic controls would be implemented during the short-term closures necessary for activities such as duct bank trenching, construction of underground transmission lines, vault installations, and delivery of heavy equipment and materials. Traffic controls would include, but not be limited to, traffic control cones, candles, electronic and/or temporary signage, and/or barricades between work zones and transportation facilities.

The peak vehicle trips would be during ~~the~~periods when construction on the transmission line (overhead and underground) would overlap with substation modification construction. The duct bank excavation and installation portion of the Proposed Project ~~(e.g., site development and below-grade~~would have the highest number of trips for a single phase of construction~~ activities)~~ due to the number of crews and the hauling away or importation of fill. Total maximum daily vehicle trips (i.e., roundtrips) during ~~this time period~~periods of full construction overlap would be approximately ~~500~~584 trips per day, consisting of approximately ~~225~~301 truck trips and ~~275~~283 worker trips. Other periods of the construction would have lower average worker vehicle trips and would, therefore, have correspondingly lower impacts. **Table 3-8**, *Estimated Average Daily Construction Traffic* outlines the average daily truck and worker related vehicle trips, as well as the vehicles miles traveled (VMT) per construction phase.

Table 3-8: Estimated Average Daily Construction Traffic

Construction Phase	Average Daily Truck Trips	Average Daily Worker Trips	Average Daily Truck VMT	Average Daily Worker VMT	Total Daily Average VMT
~~Albrae Terminal~~					
~~Survey~~	~~4~~	~~2~~	~~160~~	~~54~~	~~214~~
~~Material Delivery~~	~~2~~	~~5~~	~~400~~	~~135~~	~~535~~
~~Road Work, Site and Staging preparation~~	~~10~~	~~18~~	~~300~~	~~540~~	~~840~~
~~Below-Grade Construction~~	~~10~~	~~27~~	~~300~~	~~810~~	~~1110~~
~~Above-Grade Construction and Equipment Installation~~	~~6~~	~~27~~	~~180~~	~~810~~	~~990~~
~~Baylands Terminal~~					
~~Survey~~	~~4~~	~~2~~	~~160~~	~~54~~	~~214~~
~~Material Delivery~~	~~2~~	~~5~~	~~400~~	~~135~~	~~535~~
~~Road Work, Site and Staging Preparation~~	~~10~~	~~18~~	~~300~~	~~540~~	~~840~~
~~Below-Grade Construction~~	~~10~~	~~27~~	~~300~~	~~810~~	~~1110~~
~~Above-Grade Construction and Equipment Installation~~	~~6~~	~~27~~	~~180~~	~~810~~	~~990~~
Newark to ~~Albrae~~NRS 230 kV Underground Transmission Line					
Surveying/Potholing	~~6~~18	~~6~~38	~~180~~540	~~189~~1134	~~369~~1674
Vaults	~~12~~36	~~7~~43	~~360~~1080	~~216~~1296	~~576~~2376
Duct Bank and Restoration	~~30~~120	~~10~~79	~~750~~3000	~~297~~2376	~~1047~~5376
~~Cable Install~~	~~12~~	~~7~~	~~360~~	~~216~~	~~576~~
~~Albrae to Baylands 320 kV DC Underground Transmission Line~~					
~~Surveying/Potholing~~	~~6~~	~~6~~	~~180~~	~~189~~	~~369~~
~~Vaults~~	~~24~~	~~14~~	~~720~~	~~9432~~	~~1152~~
~~Duct Bank and Restoration~~	~~60~~	~~20~~	~~1500~~	~~594~~	~~2094~~
HDD Crossings	~~12~~24	~~6~~25	~~240~~480	~~189~~756	~~429~~1236
Horizontal Bore (Jack-and-Bore or Microtunnel)	12	6	240	189	429
Cable Install	~~12~~24	~~7~~29	~~360~~720	~~216~~864	~~576~~1584
~~Baylands to NRS 230 kV Underground Transmission Line~~					
~~Surveying/Potholing~~	~~6~~	~~6~~	~~180~~	~~189~~	~~369~~

Table 3-8: Estimated Average Daily Construction Traffic					
Construction Phase	**Average Daily Truck Trips**	**Average Daily Worker Trips**	**Average Daily Truck VMT**	**Average Daily Worker VMT**	**Total Daily Average VMT**
~~Vaults~~	~~24~~	~~14~~	~~720~~	~~432~~	~~1152~~
~~Duct Bank and Restoration~~	~~60~~	~~20~~	~~1500~~	~~594~~	~~2094~~
~~HDD Crossings~~	~~12~~	~~6~~	~~240~~	~~189~~	~~429~~
~~Jack-and-Bore~~	~~12~~	~~6~~	~~240~~	~~189~~	~~429~~
~~Cable Install~~	~~12~~	~~7~~	~~360~~	~~216~~	~~576~~
Newark to ~~Albrae~~NRS 230 kV Overhead Transmission Line					
~~Surveying~~	~~2~~	~~1~~	~~80~~	~~27~~	~~214~~
~~Clearing/ROW/Access~~	~~5~~	~~8~~	~~150~~	~~243~~	~~393~~
~~Foundation/Structures/Wire~~	~~10~~	~~11~~	~~300~~	~~338~~	~~638~~
~~**Albrae to Baylands 320 kV DC Overhead Transmission Line**~~					
Surveying	4	2	160	54	214
Clearing/ROW/Access	~~10~~20	~~16~~32	~~300~~600	~~486~~972	~~786~~1572
~~Foundation/Structures/Wire~~	~~20~~	~~23~~	~~600~~	~~675~~	~~1275~~
~~**Baylands to NRS 230 kV Overhead Transmission Line**~~					
~~Surveying~~	~~4~~	~~2~~	~~160~~	~~54~~	~~214~~
~~Clearing/ROW/Access~~	~~10~~	~~16~~	~~300~~	~~486~~	~~786~~
Foundation/Structures/Wire	20	23	600	675	1275
Other Construction Activities					
Commissioning and Testing	6	18	180	540	720
PG&E Newark Substation Upgrades and Connection	10	18	400	540	940
SVP NRS Substation Upgrades and Connection	5	9	200	270	470
Staging Areas	30	~~14~~18	900	~~405~~540	~~1305~~1440

Notes:
- Table assumes workers live approximately 15 miles away from the work site. This is based on the suburb area and the proximity of RV parks.
- Worker trips are commute trips by workers.
- Truck trips are trips moving from one site to another site. This does not include miles traveled on the Proposed Project site.
- Truck trips include water trucks, dump trucks, traffic control trips, and equipment delivery trips.
- Table is based on the landfill locations in relation to the Proposed Project.

Vehicle trips generated by construction personnel would generally occur with workers arriving at the site in the morning and leaving the site at the end of the day, with limited worker-related trips to or from the worksite during the course of the day. Construction activities are anticipated to occur Monday through Saturday during daylight hours. However, given the large amount of construction proposed within existing roads, local municipalities may dictate that transmission line construction occur at nighttime within certain areas of the Proposed Project. The most likely areas for nighttime construction would be within commercial and industrial areas and not residential areas. To reduce the potential number of daily worker-related vehicle trips to and from the site, LS Power would encourage carpooling where practicable.

3.6.4 Construction Schedule

LS Power estimates that construction of the Proposed Project would take a total of approximately 24 months to complete, depending upon unforeseen/unpredictable factors such as weather. Rainfall is not likely to cause significant delays in schedule, and wildfire delays are not anticipated as the Proposed Project is in a low fire threat area. Biological resources concerns have the potential to delay schedule if special-status species are identified in the Proposed Project area. For example, if a special-status wildlife species is observed in the active construction area, a qualified biologist or monitor has the authority to stop work activities upon the discovery of live individuals and allow construction to proceed after the identification and implementation of steps required to avoid or minimize impacts to the species (see **Section 5.4** for the Proposed Project APMs for biological resources). Construction is anticipated to begin in ~~June~~March 2026 and run through May 2028. ~~Post energization performance testing would continue through approximately October 2028.~~ The complete construction schedule, outlined by task, is summarized in **Table 3-9**, *Proposed Preliminary Construction Schedule*. Refer to **Appendix 3-A** for additional information regarding the construction schedule for each Proposed Project component.

Table 3-9: Proposed Preliminary Construction Schedule

~~Terminal~~Proposed Project Component	Start Date	End Date	Approx. Number of Workdays
~~Albrae Terminal~~Transmission Lines			
Laydown Yard Site Development ~~(includes survey, road work, site and staging area preparation)~~	~~June~~March 2026	~~September~~June 2026	120
~~Below-Grade Construction~~	~~September 2026~~	~~January 2027~~	~~150~~
~~Above-Grade Construction and Equipment Installation~~	~~January 2027~~	~~March 2028~~	~~450~~
~~Commissioning and Testing~~	~~November 2027~~	~~May 2028~~	~~210~~
~~Post Energization and Performance Testing~~	~~June 2028~~	~~October 2028~~	~~150~~
~~Baylands Terminal~~			
~~Site Development (includes survey, access road work, site and staging area preparation)~~	~~June 2026~~	~~September 2026~~	~~120~~
~~Below-Grade Construction~~	~~September 2026~~	~~January 2027~~	~~150~~
~~Above-Grade Construction and Equipment Installation~~	~~January 2027~~	~~March 2028~~	~~450~~
~~Commissioning and Testing~~	~~November 2027~~	~~May 2028~~	~~210~~
~~Post Energization and Performance Testing~~	~~June 2028~~	~~October 2028~~	~~150~~
~~Transmission Lines~~			
~~Underground~~ Construction Contractor Mobilization ~~and~~& Surveying	~~June~~March 2026	~~February 2027~~December 2026	270
~~Albrae to Baylands 320 kV DC~~ Underground Transmission Line Construction	~~July~~April 2026	~~October 2027~~January 2028	~~480~~630
~~Newark to Albrae 230 kV Underground Transmission Line Construction~~	~~November 2026~~	~~March 2027~~	~~150~~
~~Baylands to NRS 230 kV Underground Transmission Line~~	~~July 2026~~	~~June 2027~~	~~360~~
~~Albrae to Baylands 320 kV DC~~ Overhead Transmission Line Construction	June 2026	~~March~~February 2027	~~300~~270

Table 3-9: Proposed Preliminary Construction Schedule			
~~Terminal~~Proposed Project Component	**Start Date**	**End Date**	**Approx. Number of Workdays**
~~Newark to Albrae 230 kV Overhead Transmission Line Construction~~	~~November 2026~~	~~March 2027~~	~~150~~
~~Baylands to NRS 230 kV Overhead Transmission Line Construction~~	~~November 2026~~	~~March 2027~~	~~150~~
Commissioning and Testing	March 2028	May 2028	90
Existing Substation Modifications[1]			
PG&E Newark Substation Modifications	December 2026	February 2028	450
SVP NRS Substation Modifications	September ~~2025~~2026	February 2028	540

Notes:
[1] LS Power is not responsible for PG&E's or SVP's project components.

~~Construction of the proposed Albrae and Baylands terminals would occur concurrently and would begin with site development, which would include surveying, access road work, and site and staging area preparation. Below-grade construction at the proposed terminal sites would begin after site development is complete, followed by above-grade construction and equipment installation.~~ Construction of the proposed transmission lines would ~~begin at the same time as site development of the proposed terminals and would~~ generally occur in a linear fashion, with underground and overhead segments being constructed concurrently. ~~It is anticipated that construction of the overhead portions of the proposed transmission lines would conclude prior to construction of the underground portions.~~

3.6.5 WORK SCHEDULE

Construction activities on the Proposed Project would generally be scheduled to occur during daylight hours six days per week (Monday through Saturday). However, given the large amount of construction proposed within existing roads, local municipalities may dictate that transmission line construction occur at nighttime within certain areas of the Proposed Project to reduce traffic impacts and construction duration. The most likely areas for nighttime construction would be within commercial and industrial areas and not residential areas. Night work may be required during portions of the trenchless construction (e.g., during jacking and pullback operations) to allow for continuous operation. All work hours for the proposed underground transmission lines and trenchless crossings would be coordinated with the applicable municipalities. For the duct bank and vaults, work would occur outside of peak traffic hours as coordinated with the applicable cities. Construction activities would occasionally be scheduled outside of normal hours to avoid or reduce schedule delays, complete construction activities such as continuous concrete pours, accommodate the schedule for system outages, mitigate safety concerns, or to address emergencies.

~~For the proposed HVDC terminal sites, construction would occur at the site for the duration of the Proposed Project.~~ For the proposed underground transmission line activities, work would generally move in a linear fashion, with multiple duct bank, splice vault, trenchless crossing, and cable installation crews working simultaneously along the route in different locations. As practicable, the crews would be located along the route in a manner that minimizes impacts.

3.7 POST-CONSTRUCTION

3.7.1 CONFIGURING AND TESTING

A final commissioning and testing plan would be coordinated with PG&E, SVP, and CAISO to ensure system reliability during energization of the Proposed Project. Generally, commissioning and testing would begin with pre-commissioning activities that include equipment fit-up inspections, electrical and mechanical tests, and simple function tests to ensure the equipment is connected properly. The protection/control systems for the proposed ~~HVDC terminals and~~ transmission lines would be tested per Proposed Project requirements. After pre-commissioning is completed ~~on the proposed HVDC terminals and associated transmission lines, each proposed HVDC terminal would be energized individually, followed by the energization of the proposed Albrae to Baylands 320 kV DC transmission line connecting the proposed HVDC terminals. To energize a proposed HVDC terminal, the transmission lines to the nearby existing PG&E and SVP substations would first be energized. Next, the GIS switchyard portions of the proposed HVDC terminals would be energized. This would be followed by transformer energization. After confirmation that the transformer is working properly, functional tests would begin on the proposed HVDC terminals to ensure the power electronic devices operate as designed. This would include various performance tests to ensure the proposed HVDC terminals are able to meet all necessary electrical output. While running these tests, the proposed HVDC terminal cooling systems would be tested to confirm adequate cooling of applicable power electronic devices. A similar sequence would be implemented to energize both proposed HVDC terminals. Once commissioning and testing is complete for both proposed HVDC terminals, the proposed Albrae to Baylands 320 kV DC transmission line connecting the proposed HVDC terminals would be energized. Additional performance tests to ensure the proposed HVDC terminals are able to meet all necessary electrical output would be conducted following the energization of the proposed Albrae to Baylands 320 kV DC transmission line. Post-energization performance testing would continue through approximately October 2028.~~, the proposed transmission lines would be energized. The personnel and equipment that would be used for commissioning and testing, along with the approximate duration of use, is provided in **Updated Appendix 3-A**.

3.7.2 LANDSCAPING

The majority of the Proposed Project would be installed underground in city streets. Along the Proposed Project route, landscaping would be restored to pre-existing conditions as needed. LS Power would coordinate with the Cities of Fremont, Milpitas, San José, and Santa Clara to obtain tree removal permits and replace trees pursuant to the applicable Municipal Codes. ~~Each proposed HVDC terminal site would be surrounded by a security wall with minimal landscaping.~~ Additional landscaping would not be installed unless required by a local government or other jurisdictional agency. When required, landscaping would consist of drought resistant plants to minimize the need for watering and other maintenance.

3.7.3 DEMOBILIZATION AND SITE RESTORATION

3.7.3.1 Demobilization

Following completion of construction, the process of demobilization would begin. First, all equipment not needed for the remaining testing and revegetation would be removed. Once all post-energization performance testing is complete, all temporary construction structures (i.e., office trailers, portable toilets, etc.) and remaining construction and testing equipment would be removed. Next, all temporarily disturbed work areas would be restored to their preconstruction conditions. See below for site restoration details.

3.7.3.2 Site Restoration

LS Power would restore all temporarily disturbed areas to approximate preconstruction conditions. Construction debris and waste would be removed and transported off-site to an approved disposal facility. Any types of Proposed Project waste materials that are routinely recycled would be recycled in an appropriate fashion at an approved disposal facility. LS Power would conduct a final inspection to ensure that cleanup activities are successfully completed. Areas that are disturbed by grading, augering, or equipment movement would be restored to their original contours and drainage patterns. Work areas would be de-compacted, and salvaged topsoil would be ~~respread~~re-spread following recontouring to aid in the restoration of temporarily disturbed areas. Revegetation activities would be conducted in accordance with the Proposed Project SWPPP and APMs recommended herein. Restoration could include recontouring, reseeding, and planting replacement vegetation, as appropriate. Additional restoration efforts may include preparing the site for future utility uses. Erosion control measures may be required and would also be implemented in accordance with the Proposed Project SWPPP and APMs recommended herein. Disturbed roads would be reconstructed to the relevant transportation authority specifications. Reconstruction would include the restoration of all removed curbs, gutters, and sidewalks as well as the restoration of all removed or damaged paved surfaces, including the wear surface, striping, and signage.

3.8 OPERATION AND MAINTENANCE

3.8.1 REGULATIONS AND STANDARDS

O&M of the Proposed Project would be conducted in accordance with all applicable Federal Energy Regulatory Commission ~~(FERC)~~, NERC, CPUC, or CAISO requirements. Any O&M work would also be conducted in accordance with NESC, National Electrical Code (NEC), OSHA, and other applicable regulations and standards. Furthermore, since the Proposed Project would not be located within a high fire threat area, as identified by CAL FIRE or the CPUC, a project-specific Wildfire Management Plan is not required for O&M activities. However, LS Power would prepare a Wildfire Management Plan for its existing California projects prior to their energization dates, and this plan would be updated to include the Proposed Project prior to the energization of the Proposed Project.

The new transmission lines would also follow all applicable CPUC GOs; particularly GO 128, which governs the construction and maintenance of underground electric lines. LS Power would also comply with CAISO standards for inspection, maintenance, repair, and replacement.

3.8.2 SYSTEM CONTROLS AND OPERATION STAFF

The proposed ~~HVDC terminals~~transmission line would be remotely monitored by LS Power's control center during O&M, which is staffed 24 hours a day, seven days a week. The LS Power control centers currently operate high-voltage transmission lines and substations and meet all of the physical and cyber security requirements necessary to operate the Proposed Project. LS Power's control centers would be integrated into CAISO to operate the Orchard STATCOM and Fern Road GIS/STATCOM projects, which are currently under construction and are planned to enter operations prior to the Proposed Project.

LS Power would have a SCADA/Energy Management System (EMS) architecture that provides a scalable system capable of handling and processing millions of data points. The SCADA/EMS system would be designed to receive and store large amounts of data that can be used for real-time operations, equipment health monitoring, and predictive maintenance. It would consist of fully redundant servers, power supplies, and Local Area Network (LAN) connections, routers, and switches. If equipment malfunctions, O&M personnel would be dispatched to the site to investigate the problem and take appropriate corrective action. The Proposed Project would be ~~operated and maintained~~monitored by LS Power's control center in Austin, Texas and LS Power's local maintenance/technical staff, utilizing existing internal LS Power staff and external resources for maintenance and emergency response. The Proposed Project would be incorporated into LS Power's existing programs with existing equipment, experienced staff, and trusted contractors to provide operational and cost efficiencies with reduced risks. The Proposed Project would also be monitored by CAISO's control center in Folsom, California~~, and CAISO would have operational control of the proposed HVDC terminals with authority to direct LS Power's control center~~.

LS Power currently maintains a transmission maintenance group staffed with experienced workers. LS Power would hire one technician to be located in close proximity to the Proposed Project to perform routine inspections, monitoring, and repairs. LS Power would also have two other technicians located in California for LS Power's other projects who would assist in O&M of the Proposed Project facilities, if needed. Day-to-day management of the Proposed Project would be provided by LS Power's asset management team.

3.8.3 INSPECTION PROGRAMS

3.8.3.1 LS Power Facilities

General Inspection Programs and Standards

LS Power has developed standards for inspection that ensure a reliable high-voltage transmission system and is committed to complying with those standards. LS Power would comply with CAISO standards for inspection through its existing maintenance policies and procedures and by leveraging the experience of its affiliate, Desertlink. Desertlink's Transmission Maintenance and Inspection Plan was approved by CAISO in 2020. LS Power would also have an approved Transmission Maintenance and Inspection Plan to comply with the provisions for the Orchard STATCOM and Fern Road GIS/STATCOM projects, which are currently under construction.

Prior to energization, the Proposed Project would be incorporated into LS Power's existing maintenance policies and procedures that are successfully utilized for maintaining highly reliable transmission systems across the United States. As part of these policies and procedures, LS Power has a Transmission Maintenance Plan (TMP) ~~and Protection System Maintenance Program (PSMP)~~ in which the Proposed Project would be incorporated. ~~Additionally, an HVDC-specific maintenance plan would be developed based on the manufacturer's recommendations. The TMP and HVDC-specific maintenance plan~~The TMP would detail items such as inspection frequency and type, components to be inspected, qualifications of inspectors, and recordkeeping. LS Power's PSMP would contain specific maintenance and testing procedures for applicable ~~Protection System Component Types in compliance with NERC Standard PRC-005-6, as well as internal LS Power standards related to system projection.~~ The maintenance and testing procedures are based upon manufacturers' recommendations, national standards, good utility practice, and NERC guidance documents.

Project Specific Inspections

~~Each of the major Proposed Project components would have specific inspection plans that detail inspection items, inspection period, and staff qualifications required to perform the inspections. In general, monthly visual inspections would be performed at the proposed HVDC terminals to inspect equipment in accordance with manufacturer recommendations. This typically would be performed without taking the proposed HVDC terminals out of service. It is anticipated that the proposed HVDC terminals would be taken out of service to perform more extensive visual and electrical checks and maintenance on the equipment within the proposed HVDC terminals periodically according to manufacturer recommendations. Due to the diversity of equipment and the individual system components, a small, specialized team would execute the maintenance requirements. Inspection and maintenance would be performed by a small crew of one to two high-voltage technicians and one to two personnel provided by the equipment vendor with support provided by LS Power staff. Inspections and maintenance would be performed from the ground as well as from manlifts within the proposed HVDC terminals.~~

The Proposed Project would have a specific inspection plan that details inspection items, inspection period, and staff qualifications required to perform the inspections. The transmission line inspections would be performed by qualified technicians through sensors and splice vault inspections. The underground vaults would be visually and electrically inspected from within the splice vaults periodically by a crew of two or more technicians and equipment vendor experts. The overhead transmission lines would be visually inspected from the ground periodically by a crew of two or more technicians. No new access is anticipated for any of the Proposed Project inspection activities.

3.8.3.2 PG&E Facilities

PG&E would continue its regular inspections at its Newark substation.

3.8.3.3 SVP Facilities

SVP would continue its regular inspections at its NRS substation.

3.8.4 Maintenance and Operations Programs

3.8.4.1 LS Power Facilities

~~Once construction is complete, the Proposed Project typically would not be occupied on a daily basis. The proposed HVDC terminals~~LS Power would hire one additional California-based technician to accommodate the O&M of the Proposed Project. The technician would perform minor repairs and oversee the outside contractors for the maintenance of the Proposed Project. ~~be monitored and controlled by LS Power's control centers. A perimeter wall would enclose, and all access gates would be locked to prevent the entry of unauthorized individuals. Access would be restricted further by posting signage on~~. ~~exterior and at~~outside contractors for ~~the entryway to~~maintenance of ~~the proposed HVDC terminal station facilities.~~ Proposed Project.

~~LS Power would hire one additional California-based technician to accommodate the integration and O&M of the Proposed Project. The technician would perform minor repairs and oversee the outside contractors for the maintenance of the Proposed Project. Repairs would be performed in~~

~~accordance with the manufacturer's recommendations. In the event that equipment or parts replacements are required, LS Power would maintain critical spare parts and materials required to repair system facilities, including, but not limited to, HVDC valves, control panels, protection panels, cooling system, and medium voltage equipment. The spare parts inventory would be in addition to the more than three percent redundant HVDC valve submodules that would be included as installed spares. Space for a spare transformer and phase reactor would be accounted for on each proposed HVDC terminal site.~~

~~It is anticipated that the terminals would be taken out of service to perform maintenance on equipment within the proposed HVDC terminals periodically according to manufacturer recommendations. Due to the diversity of equipment and the individual system components, a small, specialized team would execute the maintenance requirements. Inspection and maintenance would be performed by a small crew of one to two high-voltage technicians and one to two personnel provided by the equipment vendor with support provided by LS Power staff. Inspections and maintenance would be performed from the ground as well as from manlifts within the proposed HVDC terminals.~~

The transmission line inspections would be performed by qualified technicians through sensors and splice vault inspections. The underground vaults would be visually and electrically inspected from within the splice vaults periodically by a crew of two or more technicians and equipment vendor experts. The overhead transmission line would be visually inspected from the ground periodically by a crew of two or more technicians. If issues are found during inspections, maintenance would be performed on the transmission line component as required.

Impacts from the Proposed Project to surrounding utilities would be studied, and any cathodic protection required as a result of the Proposed Project would be coordinated with the impacted utility. If required, landscaping would be designed to require little to no maintenance.

LS Power would regularly inspect, maintain, and repair the Proposed Project and access roads following completion of Proposed Project construction. These inspections would look at vegetation growth, road conditions, and water drainage conditions. Maintenance of these access roads would include vegetation trimming, road surface renewal, ditch cleaning, and water management practices, all on an as-needed basis.

3.8.4.2 PG&E Facilities

PG&E would continue its regular O&M at its Newark substation.

3.8.4.3 SVP Facilities

SVP would continue its regular O&M at its NRS substation.

3.8.5 VEGETATION MANAGEMENT PROGRAMS

The vegetation management process can be split into three different subcategories: inspection, planned vegetation treatment, and emergency vegetation treatment. Inspections would vary in frequency from annually to every five years. These inspections would be conducted by ground and air, as necessary. During the inspections, any encroachments would be noted and prioritized based on risk level. Planned vegetation treatment includes herbicide spraying (where permitted), removing excessive growth, ROW mowing, ROW side cutting, removal of encroaching trees, and vegetation removal to mitigate wildfire risks. In accordance with fire break clearance requirements in PRC 4292 and Title 14, Section 1254 of the CCR, LS Power would trim or remove flammable vegetation in the area surrounding the Proposed Project site and all other safety hazards. Crews would typically conduct this work using mechanical equipment consisting of weed trimmers, rakes, chain saws, shovels, and leaf blowers. Emergency vegetation treatment would be conducted when any vegetation encroaches within the 10-foot line clearance. ~~LS Power would typically inspect the proposed HVDC terminals on an annual basis to determine if brush clearing is required.~~ Due to the underground nature of the Proposed Project, LS Power would also look for underground vegetation encroachments, including tree roots, water intrusion, and other ~~natural~~naturally occurring environmental encroachments.

3.9 DECOMMISSIONING

3.9.1 DECOMMISSIONING

3.9.1.1 LS Power Facilities

The plan is for the Proposed Project to be in operation or use indefinitely, with no currently established plans or timing for decommissioning. Therefore, there are no reasonably foreseeable plans for the disposal, recycling, or future abandonment of the Proposed Project facilities.

3.9.1.2 PG&E Facilities

PG&E is not subject to decommissioning and would retain its facilities as long as they are useful.

3.9.1.3 SVP Facilities

SVP is not subject to decommissioning and would retain its facilities as long as they are useful.

3.10 ANTICIPATED PERMITS AND APPROVALS

3.10.1 ANTICIPATED PERMITS AND APPROVALS

The CPUC is the lead California agency for the Proposed Project. LS Power must comply with CPUC's GO 131-D Section III-B, which contains the permitting requirements for construction of the Proposed Project (CPUC, 2023). This PEA was prepared as part of an application to obtain a CPCN for the Proposed Project. Although PG&E and SVP are not applicants in LS Power's application for a CPCN, PG&E and SVP's scopes of work are needed to interconnect the Proposed Project to PG&E and SVP's electrical grid, respectively. PG&E and SVP's substation modifications would be included in the CPUC's CEQA analysis. However, PG&E and SVP would likely utilize the respective adopted CEQA document to separately comply with the CPUC's permitting requirements under GO 131-D.

In addition to the CPCN, LS Power may be required to obtain several other permits from federal, state, and local agencies. **Table 3-10**, *Anticipated Permits and Approvals* lists the permits, approvals, and licenses that LS Power may be required to obtain from jurisdictional agencies.

Table 3-10: Anticipated Permits and Approvals[1]				
Agency	**Permit/ Approvals[2]**	**Permit Trigger**	**Application Process**	**Timing**
City of Fremont	Traffic Control Plan	Any construction within public ROW.	Submit application and TCP to City of Fremont Transportation Engineering Division for review and approval.	Prior to the start of construction requiring traffic control.
City of Fremont	Encroachment Permit	Construction within City roads or ROWs. ~~Construction of Albrae terminal.~~	Submit application to City of Fremont for review and approval.	Prior to the start of construction within City roads or ROW.
~~City of Fremont~~	~~Grading Permit (non-discretionary)~~	~~Grading for the terminal site.~~	~~Submit application to City of Fremont for review and approval.~~	~~Prior to the start of construction of the proposed Albrae terminal.~~
City of San José	Traffic Control Plan	Construction within City roads or ROWs.	Submit TCP to City of San José for review and approval.	Prior to the start of construction requiring traffic control.
City of San José	Encroachment Permit	Construction within City roads or ROWs. ~~Construction of proposed Baylands terminal.~~	Submit application to City of San José for review and approval.	Prior to the start of construction within City roads or ROW.
~~City of San José~~	~~Grading Permit (non-discretionary)~~	~~Grading for the proposed Baylands terminal site.~~	~~Submit application to City of San José for review and approval.~~	~~Prior to the start of construction of the proposed Baylands terminal.~~
City of Santa Clara	Traffic Control Plan	Construction within City roads or ROWs.	Submit TCP to City of Santa Clara for review and approval.	Prior to the start of construction requiring traffic control.
City of Santa Clara	Encroachment Permit	Construction within City roads or ROWs.	Submit application to City of Santa Clara for review and approval.	Prior to the start of construction within City roads or ROW.
SCVWD	Encroachment Permit	Work on or near SCVWD land, easement, or facility.	Submit application to SCVWD for review and approval.	Prior to the start of construction within or near SCVWD property.
Caltrans	Encroachment Permit	Construction under Caltrans roads or with Caltrans ROWs.	Submit application to Caltrans for review and approval.	Prior to the start of construction within or near Caltrans ROW.
California Department of Industrial Relations, Division of Occupational Safety and Health, Mining and Tunneling Unit	Classification of new underground project	Installation of new underground boring or pipejacking greater than 30 inches in diameter.	Submit notification and required information to the Mining and Tunneling Unit, District 1.	Prior to bidding for construction of the applicable underground feature.

Table 3-10: Anticipated Permits and Approvals[1]				
Agency	**Permit/ Approvals[2]**	**Permit Trigger**	**Application Process**	**Timing**
State Water Resources Control Board (SWRCB)	Clean Water Act (CWA), National Pollutant Discharge Elimination System General Permit for Discharge of Construction Related Stormwater	SWPPPs are required for stormwater discharges associated with construction activities that disturb more than one acre of land.	Prepare SWPPP and submit Notice of Intent with the SWRCB.	Prior to the start of construction.
California Department of Fish and Wildlife (CDFW)	Section 1602 Lake or Streambed Alteration Agreement (LSAA)	Potential impacts to CDFW jurisdictional waters under Section 1602 of the CDFW Code.	Submit application to CDFW for review and approval.	Prior to the start of construction within jurisdictional waters.
CDFW	Section 2081 Incidental Take Permit (ITP) or Section 2080.1 Consistency Determination	Potential take of species listed under the California Endangered Species Act.	Submit application to CDFW for review and approval.	Prior to the start of construction.
San Francisco Bay Conservation and Development Commission (BCDC)	Administrative Permit	Construction within, over, or under BCDC jurisdiction.	Submit application to BCDC for review and approval.	Prior to the start of construction within BCDC jurisdiction.
CPUC	California Public Utilities Code Section 1001 et seq. and CPUC GO 131-D CPCN	Construction of transmission line ~~and electrical substation~~ facilities governed by GO 131-D.	Submit CPCN Application and PEA to CPUC. The CPUC would initiate the CEQA process and make a proposed and final CPCN ruling.	Prior to the start of construction.
RWQCB	CWA Section 401 Water Quality Certification	Potential impacts to CWA jurisdictional waters.	Submit application to RWQCB for review and approval.	Prior to the start of construction within jurisdictional waters.
Santa Clara Valley Habitat Conservation Plan (HCP) (multiple agencies)	State and Federal Incidental Take Permit	Potential impacts to covered State and Federal species.	Apply for coverage under the Santa Clara Valley HCP.	Prior to the start of construction.
Army Corps of Engineers (USACE)	CWA Section 404 Permit – Nationwide Permit 57	Potential cut or fill within CWA jurisdictional waters.	Submit Preconstruction Notification (PCN) to USACE for review and approval.	Prior to the start of construction within jurisdictional waters.
USACE	Section 408 Program (Rivers and Harbors Act of 1899)	Potential modification of USACE Civil Works Projects (Levees).	Submit application to USACE, San Francisco District.	Prior to alteration of levees.

Table 3-10: Anticipated Permits and Approvals[1]				
Agency	**Permit/ Approvals[2]**	**Permit Trigger**	**Application Process**	**Timing**
USACE and California State Historic Preservation Office (SHPO)	National Historic Preservation Act (NHPA) Section 106 Consultation	Federal Undertaking (USACE Section 404 and 408 Permit Processes).	USACE submits to SHPO for consultation.	Prior to issuance of USACE Section 404 or 408 permits.
U.S. Fish and Wildlife Service (USFWS)	Section 7 or Section 10 ITP	Potential take of federally listed species, in compliance with the Federal Endangered Species Act.	Submit Biological Assessment or HCP to USFWS for review and approval.	Prior to the start of construction.
Federal Aviation Administration (FAA)	Determination of No Hazard	Construction of overhead transmission line structures.	Submit application to FAA for review and approval.	Approximately six months prior to the start of construction.
Union Pacific Railroad	New Wireline Crossing Authorization	Installation of new underground transmission line under Union Pacific's existing railroad via jack-and-bore.	Submit application to Union Pacific for review and approval.	Prior to the start of construction within or near Union Pacific ROW.

[1] Permit requirements in this table only apply to the applicant (LS Power) and are separate from appliable permits for PG&E and SVP's upgrades.
[2] Permits/approvals listed in this table are potentially required and do not necessarily represent a comprehensive list of all possible permits/approvals required for the Proposed Project. In addition, some permits listed in this table may not ultimately be required.

3.10.2 Rights-of-Way or Easement Applications

~~LS Power would acquire approximately one parcel of land through the purchase of privately owned parcels, totaling approximately 6.1 acres, for construction and O&M of the proposed Albrae terminal. A long-term land lease would be negotiated with the City of San José for construction and O&M of the proposed Baylands terminal.~~

~~In addition to the land purchase transactions, additional~~ ROW, franchise, or easement rights would be required for the ~~three transmission lines included in~~ Proposed Project. These requirements are summarized in **Table 3-11**, *Permanent Land and ROW Requirements*.

Table 3-11: Permanent Land and ROW Requirements		
Proposed Project Component	**Approximate Length (miles)**	**Approximate Area (acres)**
Newark to ~~Albrae~~NRS 230 kV Transmission Line	~~0.4~~12	~~2.5~~48
~~Albrae to Baylands 320 kV DC Transmission Line~~	~~8.6~~	~~28.2~~
~~Baylands to NRS 230 kV Transmission Line~~	~~3.5~~	~~7.2~~
~~**TOTAL**~~	~~**12.5**~~	~~**37.9**~~

3.11 APPLICANT PROPOSED MEASURES AND BEST MANAGEMENT PRACTICES

PG&E and SVP are not applicants in this CPCN application proceeding and would not be subject to the APMs listed below. However, PG&E would comply with a separate list of construction BMPs as set forth in **Section 3.11.2**. SVP would implement one Proposed Project APM as described in **Section 3.11.3**, *SVP Best Management Practices*.

3.11.1 APPLICANT PROPOSED MEASURES

LS Power would be responsible for overseeing the construction and environmental teams that would implement the Proposed Project APMs. LS Power would manage construction to allow for implementation of the APMs to be monitored, documented, and enforced during each Proposed Project phase, as appropriate. All those contracted by LS Power to perform this work would be provided with all relevant permits, conditions, and APMs, as well as instructions on how to properly implement the APMs to ensure their effectiveness in reducing potential environmental effects.

Implementation of the proposed APMs would be the responsibility of the environmental compliance and construction teams. The environmental compliance team would include an environmental project manager, resource specialists, and environmental monitors, as needed. All APMs would be implemented consistent with applicable federal, state, and local regulations. The environmental compliance team would be responsible for the inspection, documentation, and reporting of LS Power compliance with all APMs as proposed. As needed, environmental specialists would be retained to verify that all APMs are properly implemented during the construction phase.

The APMs are described in **Table 3-12** and are described in detail in **Section 5.0**, *Environmental Analysis*, which includes an analysis of why the APM was selected and how it would reduce and/or minimize potential impacts. All applicable CPUC Draft Environmental Measures were included, as needed, to further reduce potential impacts.

If conditions occur where construction may potentially adversely affect a known or previously unknown environmentally sensitive resource, or if construction activities significantly deviate from Proposed Project requirements, LS Power monitors and/or contract administrators would have the authority to halt construction activities, if needed, until an alternative method or approach can be identified. Any concerns that arise during implementation of the APMs would be communicated to the appropriate authority to determine if corrective action is required, or the concerns would be addressed on-site, as applicable. As the proposed APMs are implemented, environmental monitors from LS Power would be responsible for the review and documentation of such activities. Field notes and digital photographs would be used to document and describe the status of APMs, as necessary.

Table 3-12: Applicant Proposed Measures

APM Number	Description
Air Quality	
APM AQ-1: Construction Fleet Minimum Requirements and Tracking	LS Power shall ensure that at least 75 percent of equipment horsepower hours related to off-road construction equipment include Tier 4 interim or Tier 4 final emissions controls. An initial listing that identifies each off-road unit's certified tier specification to be operated on the Proposed Project shall be submitted to the CPUC before the start of construction activities. Construction activities shall not begin until the equipment listing has been submitted to the CPUC. As LS Power requires new or replacement construction equipment on the Proposed Project, LS Power shall document verification of the certified

Table 3-12: Applicant Proposed Measures	
APM Number	**Description**
	engine tier before their use on Proposed Project sites. Before the start of construction, LS Power shall develop a diesel-powered equipment-use hours tracking tool and procedure. The tracking tool shall be utilized by LS Power to keep track of the certified engine tier and daily equipment use hours of all off-road diesel-powered equipment. If all diesel-powered equipment is Tier 4 certified, the tracking tool is not required. The tracking tool shall be maintained by LS Power, and tracking updates shall be submitted to the CPUC on a monthly basis to track the Proposed Project's compliance. The updated tracking tool shall be submitted to the CPUC no later than the tenth day of the following month.
APM AQ-2: Dust Control Best Management Practices	LS Power shall implement the following measures to control fugitive dust during construction activities: • All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day. The watering regiment may be adjusted during rain events as needed. • All haul trucks transporting soil, sand, or other loose material off-site shall be covered. • All visible mud or dirt tracked out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited. • All vehicle speeds on unpaved roads shall be limited to 15 miles per hour (mph). • All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible. • Building pads shall be laid as soon as possible after grading unless seeding or soil binders are used. • All excavation, grading, and/or demolition activities shall be suspended when average wind speeds exceed 20 mph. • All trucks and equipment, including their tires, shall be washed off or otherwise cleaned prior to leaving the site. • Unpaved roads providing access to sites located 100 feet or further from a paved road shall be treated with a 6- to 12-inch layer of compacted layer of wood chips, mulch, or gravel. • Publicly visible signs shall be posted with the telephone number and name of the person to contact at the lead agency regarding dust complaints. This person shall respond and take corrective action within 48 hours. The Air District's General Air Pollution Complaints number shall also be visible to ensure compliance with applicable regulations.
Biological Resources	
APM BIO-1: Restoration of Disturbed Areas	Once construction is complete in a given area, natural vegetation areas (annual grassland, annual grassland/wetland, riparian, wetland, and vernal pools) that are temporarily disturbed by Proposed Project activities shall be restored to approximate preconstruction conditions. Areas that are temporarily disturbed by grading, augering, or equipment movement shall

Table 3-12: Applicant Proposed Measures	
APM Number	**Description**
	be restored to their original contours and drainage patterns. Work areas shall be decompacted, and salvaged topsoil materials shall be respread following recontouring to aid in restoration of temporary disturbed areas. Revegetation activities shall be conducted in accordance with the Proposed Project SWPPP and APMs. Restoration could include recontouring, reseeding, and planting replacement of natural vegetation, as appropriate. Temporarily disturbed natural vegetation areas shall be revegetated with appropriate weed-free native seed mixes or species that are characteristic of the plant community that was disturbed.
APM BIO-2: Rare Plant Surveys	Protocol surveys following standard guidelines shall be conducted within suitable habitat areas for special-status plants that may occur within the Proposed Project impact areas during the appropriate blooming period to determine the location and extent of populations of rare plants, if present. In the event of the discovery of a rare plant, the area shall be marked as a sensitive area and shall be avoided to the extent practicable. If avoidance is not possible, LS Power shall consult with the USFWS for ITP, as required. There are no CDFW-listed species that were analyzed, but CNPS species would require surveys and potential mitigation if they cannot be avoided. Construction activities that may impact rare plants, including movement of construction equipment and other activities outside of the fenced/paved areas within suitable habitat, shall be monitored by a qualified biologist. Upon the discovery of sensitive plants, the qualified biologist shall have the authority to stop work activities and, following the identification and implementation of steps required to avoid or minimize impacts to sensitive plants, direct construction work to commence once more.
APM BIO-3: Preconstruction Sweeps	Prior to initial vegetation clearance and ground-disturbing activities, a qualified biologist shall conduct preconstruction survey sweeps of the Proposed Project work area for special-status wildlife and plants in potentially suitable habitats. In the event of the discovery of a special-status plant, the area shall be marked as a sensitive area and shall be avoided to the extent practicable. If avoidance is not possible, LS Power shall seek coverage from the Santa Clara Valley HCP, or shall consult with the USFWS and/or CDFW for take ITP or other authorization as well as any additional mitigation. Any other construction activities that may impact sensitive biological resources, including movement of construction equipment and other activities outside of the fenced/paved areas within wildlife habitat, shall be monitored by a qualified biologist. The qualified biologist shall have the authority to stop work activities upon the discovery of sensitive biological resources and allow construction to proceed after the identification and implementation of steps required to avoid or minimize impacts to sensitive resources. These surveys will be conducted within 30 days of the start of construction activities and after protocol surveys for individual species have been conducted. These surveys serve to double-check populations, nesting/breeding areas, and sensitive habitats that would be identified during protocol surveys and to ensure that these areas will be avoided by construction activities.
APM BIO-4: Sensitive Area Demarcation	All sensitive biological areas (including creeks, rivers, wetlands, vernal pools, riparian areas, and special-status species habitats) within the Proposed Project work area shall be clearly marked prior to construction commencement to restrict construction activities and equipment from entering these areas, except as necessary for construction activities.

Table 3-12: Applicant Proposed Measures	
APM Number	**Description**
	These markings shall be inspected regularly to ensure that they remain in place.
APM BIO-5: Vehicle Cleaning Prior to Entering Natural Areas	Vehicles and equipment shall be cleaned prior to use in native habitat on the Proposed Project areas to avoid the spread of noxious weeds and non-native invasive plant species.
APM BIO-6: Vehicle Speed Limits	Speed of vehicles driving along proposed access roads and on the Proposed Project site during construction and operation shall be limited to 15 mph, except in the case of legal roadgoing vehicles traveling on portions of the Proposed Project site that are public roadways which shall be limited to posted speed limits. In addition, construction and maintenance employees shall be required to stay on established and clearly marked and existing roads, except where not feasible due to physical or safety constraints and shall be advised that care should be exercised when commuting to and from the Proposed Project area.
APM BIO-7: Salt Marsh Harvest Mouse (SMHM) Surveys	Protocol surveys following standard guidelines shall be conducted within all proposed impact areas and suitable buffers within suitable habitat areas for salt marsh harvest mouse (SMHM) by an approved biologist. In the event of the discovery of SMHM individuals, the area and a suitable buffer shall be marked as a sensitive area and shall be avoided to the extent practicable. If avoidance is not possible, USFWS and/or CDFW shall be consulted prior to construction activity. Any other construction activities that may impact SMHM including movement of construction equipment and other activities outside of the fenced/paved areas within suitable habitat would be monitored by a qualified biologist. The qualified biologist shall have the authority to stop work activities upon the discovery of live individuals and allow construction to proceed after the identification and implementation of steps required to avoid or minimize impacts to SMHM, such as allowing individuals to leave on their own or temporarily halting construction in areas where SMHM is present. All adjacent known SMHM preserve areas shall be clearly marked as well and avoided. This APM would be applied along the transmission line west of the proposed alignment in the vicinity of Coyote Creek Lagoon.
APM BIO-8: Excavation Wildlife Safety BMPs	Excavated holes/trenches that are not within areas that have wildlife exclusion fencing or that are not filled at the end of a workday shall be covered, or a wildlife escape ramp shall be installed to prevent the inadvertent entrapment of wildlife species.
APM BIO-9: Worker Environmental Awareness Program (WEAP) Training	A WEAP shall be developed and implemented to educate all on-site construction workers on site-specific biological and non-biological resources and proper work practices to avoid harming wildlife during construction activities. This WEAP shall include measures to reduce trash buildup during construction.

Table 3-12: Applicant Proposed Measures	
APM Number	**Description**
APM BIO-10: Outdoor Lighting Measures	The use of outdoor lighting during construction and O&M shall be minimized whenever practicable. ~~Photocell and motion detection-controlled lighting shall be provided at a level sufficient to provide safe entry and exit to the Proposed Project terminals and control enclosures and for security purposes.~~ All lighting shall be selectively placed, shielded, and directed downward to the extent practicable. All lighting near sensitive species habitat shall be directed away from these areas to the extent practicable. Night work shall be avoided as practicable; however, given the large amount of construction proposed within existing roads, local municipalities may dictate that transmission line construction occurs at nighttime within certain areas of the Proposed Project. The most likely areas for nighttime construction are within commercial and industrial areas and not residential or potentially sensitive biological areas. Night work is not anticipated during O&M except during emergencies.
APM BIO-11: Special-Status Bird Surveys	Protocol surveys following standard guidelines shall be conducted for California black rail, tricolored blackbird, California clapper rail, burrowing owl, golden eagle, and bald eagle and focused surveys shall be conducted for western snowy plover, white-tailed kite, and other raptors. In the event of the discovery of suitable habitats, nests, or live individuals, the area and a suitable buffer shall be marked as a sensitive area and shall be avoided to the extent practicable. If avoidance is not possible, USFWS and/or CDFW would be consulted. Tricolored blackbird and burrowing owl are covered species under the Santa Clara Valley HCP; if impacts are identified during species-specific protocol surveys, the take for this species shall be covered either under the HCP or covered under a State ITP in consultation with CDFW. If impacts are identified during species-specific protocol surveys for the other State-listed avian species that are not covered under the Santa Clara Valley HCP (California black rail, California clapper rail, Western snowy plover, bald eagle, and any other avian species that are identified), the take shall be covered under a State ITP in consultation with CDFW. Any other construction activities that may impact special-status birds, including movement of construction equipment and other activities outside of the fenced/paved areas within suitable habitat, shall be monitored by a qualified biologist. Additionally, qualified biologists shall monitor all active nests to ensure that construction activities are not disturbing the nest. The monitor/inspector shall have the authority to stop work activities upon the discovery of nests or live individuals and allow construction to proceed after the identification and implementation of steps required to avoid or minimize impacts to sensitive birds. ~~Additional burrowing owl protections may be required in the vicinity of the proposed Baylands terminal site depending on proximity of construction to active burrows. These measures may include constructing berms or placing haybales between the known burrowing owl burrows and active construction areas and having additional monitors to make sure the owls are not being stressed by construction activities.~~
APM BIO-12: Nesting Bird Protection Measures	If feasible, LS Power shall avoid certain construction activities such as vegetation trimming/removal during the migratory bird nesting or breeding season. When it is not feasible to avoid construction during the nesting or breeding season (generally February 15 – August 31) **APM BIO-15** shall be used. ~~–~~Any construction activities that may impact nesting birds including movement of construction equipment and other activities outside of the fenced/paved areas within suitable habitat shall be monitored by a

Table 3-12: Applicant Proposed Measures	
APM Number	**Description**
	qualified biologist. Additionally, biologists shall monitor all active nests to ensure that construction activities are not disturbing the nest. The monitor/inspector shall have the authority to stop work activities upon the discovery of nests or live individuals and allow construction to proceed after the identification and implementation of steps required to avoid or minimize impacts to nesting birds.
APM BIO-13: Raptor Surveys	If a raptor nest is observed within 500 feet of the Proposed Project during protocol or preconstruction surveys, a qualified biologist shall determine if it is active. If the nest is determined to be active, the qualified biologist shall establish an appropriately sized no construction buffer around the nest and shall monitor the nest to ensure that nesting or breeding activities are not substantially adversely affected. If the biological monitor determines that activities associated with the Proposed Project are disturbing or disrupting nesting or breeding activities, the monitor shall make recommendations to reduce noise or disturbance in the vicinity of the nest. If the nest is determined to be inactive, the nest shall be removed under direct supervision of the qualified biologist.
APM BIO-14: Golden Eagle Protection	The USFWS recommends a one mile no disturbance buffer around active nests during the active nesting season (USFWS, 2021). LS Power shall conduct an eagle nest survey within suitable nesting habitat prior to construction. If preconstruction surveys determine that there is an active golden eagle nest within the Survey Area, LS Power shall consult with the agencies to identify an appropriate disturbance buffer based on existing conditions, including existing visual barriers, existing noise levels, existing high levels of human activity and vehicle traffic, and other factors. In lieu of placing an avoidance buffer, LS Power could construct a barrier wall, outside of the nesting season, to obstruct construction activities from line of site from the nest. The barrier would also dampen noise from construction activities. A full-time biological monitor shall monitor the bird(s) for signs of distress. If signs of distress are identified, the biological monitor shall require construction to cease until the birds exhibits normal behavior.
APM BIO-15: Nesting Bird Surveys	Preconstruction nest surveys shall be conducted during the nesting or breeding season (generally February 15 – August 31) within all proposed impact areas and suitable buffers within suitable habitat areas for Migratory Bird Treatment Act (MBTA)-protected birds. This survey shall be performed to determine the presence or absence of nesting birds and roosting bats. If roosting bats or active nests (i.e., containing eggs or young) are identified, a suitable construction avoidance buffer shall be implemented to ensure that the nesting or breeding activities are not affected. If the nesting or breeding activities by a Federal- or State-listed species are observed, LS Power shall consult with the USFWS and CDFW as necessary. Monitoring of the nest shall continue until the birds have fledged or construction is no longer occurring on the site.
APM BIO-16: Special-Status Invertebrate Surveys	Protocol surveys following standard guidelines and during appropriate seasons shall be conducted within all proposed impact areas and suitable buffers within potentially suitable habitat areas for vernal pool tadpole shrimp, vernal pool fairy shrimp, monarch butterfly, Western bumblebee, and Crotch's bumblebee. In the event of the discovery of suitable habitat, host plants, or individuals of these special-status invertebrates, the area shall be marked as a sensitive area and shall be avoided to the extent practicable. If impacts are identified during species-specific surveys for

Table 3-12: Applicant Proposed Measures	
APM Number	**Description**
	verna pool tadpole shrimp, vernal pool fairy shrimp, monarch butterfly, Western bumblebee, or Crotch's bumblebee which are not covered under the Santa Clara Valley HCP, the take shall be covered under a Federal ITP (vernal pool tadpole shrimp; Federally Endangered, vernal pool fairy shrimp; Federally Threatened, monarch butterfly; Federal candidate species) or State ITP (Western bumblebee and Crotch's bumblebee; State candidate species) in consultation with CDFW or USFWS. Any other construction activities that may impact special-status invertebrates or their habitats, including movement of construction equipment and other activities outside of the fenced/paved areas within suitable habitat shall be monitored by a qualified biologist. The qualified biologist shall have the authority to stop work activities upon the discovery of individuals or host plants and allow construction to proceed after the identification and implementation of steps required to avoid or minimize impacts to sensitive invertebrates.
APM BIO-17: Wetland, Vernal Pool, and Waterway Construction Timing Restrictions	Construction in the vicinity of waterways, wetlands, and vernal pools such as along the Cushing Parkway bridge that borders the Don Edwards San Francisco Bay National Wildlife Refuge (NWR), near vernal pools north of the existing Newark substation, and in the vicinity of Coyote Creek and Guadalupe River shall be restricted to occur during the dry season (generally from May 1st through October 15th) to the maximum extent possible. This would minimize the chance of encountering and impacting sensitive species such as vernal pool tadpole shrimp and California tiger salamander that can be found in annual grassland/wetland, wetland, and vernal pool habitat present in these areas as well as fish species such as steelhead, longfin smelt, and green sturgeon that could be using waterways. If construction cannot be conducted during the dry season in the vicinity of waterways, wetlands, and vernal pools, they would be clearly marked and avoided to the maximum extent possible and biological monitors would be present to ensure that no impacts occur.
APM BIO-18: Special-Status Amphibian Surveys	Protocol surveys shall be conducted for California tiger salamander and California red-legged frog and preconstruction surveys shall be conducted within all proposed impact areas and suitable buffers within potentially suitable habitat areas for California tiger salamander and California red-legged frog. In the event of the discovery of suitable habitats or live individuals, the area and a suitable buffer shall be marked as a sensitive area and shall be avoided to the extent practicable. If avoidance is not possible, USFWS and/or CDFW shall be consulted. California tiger salamander and California red-legged frog are covered species under the Santa Clara Valley HCP; if impacts are identified during species-specific surveys, the take for this species shall be covered either under the HCP or covered under a State ITP in consultation with CDFW. Any other construction activities that may impact special-status amphibians including movement of construction equipment and other activities outside of the fenced/paved areas within suitable habitat shall be monitored by a qualified biologist. The qualified biologist shall have the authority to stop work activities upon the discovery of live individuals and allow construction to proceed after the identification and implementation of steps required to avoid or minimize impacts to sensitive amphibians.
APM BIO-19: Wetland and Aquatic Resources Delineations	Pursuant to property owner approval, a wetland and aquatic resources delineation will be conducted for the portion of the proposed ~~Baylands~~Newark to NRS 230 kV transmission line within Caltrans ROW

Table 3-12: Applicant Proposed Measures	
APM Number	**Description**
	containing potentially State or Federal jurisdictional waters. Accurate acreages of vernal pools and RWQCB, CDFW, and USACE jurisdictional waters will be defined from these delineations. Vernal pools and jurisdictional waters shall be marked as a sensitive area and shall be avoided to the extent practicable. If these areas cannot be avoided, applicable permits shall be obtained.
Cultural Resources	
APM CUL-1: WEAP Training	LS Power shall obtain a qualified archaeologist to design the cultural resources component of a WEAP that shall be provided to all Proposed Project personnel who may encounter and/or alter historical resources or unique archaeological properties, including construction supervisors and field personnel. The WEAP shall be submitted to the CPUC prior to construction. No construction worker shall be involved in ground-disturbing activities without having participated in the WEAP. The WEAP shall include, at a minimum: • Training on how to identify potential cultural resources and human remains during the construction process; • A review of applicable local, state, and federal ordinances, laws, and regulations pertaining to historic preservation; • A discussion of procedures to be followed in the event that unanticipated cultural resources are discovered during implementation of the Proposed Project; • A discussion of disciplinary and other actions that could be taken against persons violating historic preservation laws and LS Power policies; and • A statement by the construction company or applicable employer agreeing to abide by the WEAP, LS Power policies, and other applicable laws and regulations. The WEAP may be conducted in concert with other environmental or safety awareness and education programs for the Proposed Project, provided that the program elements pertaining to cultural resources are designed by a qualified archaeologist, which is defined as an archaeologist meeting the Secretary of the Interior's Professional Qualifications Standards for Archaeology (36 CFR Part 61)
APM CUL-2: Archaeological and Native American Monitoring	Archaeological and Native American monitoring shall be conducted during initial ground disturbance associated with the Proposed Project when within 100 feet (30 m) of previously recorded prehistoric or ethnohistoric resources, or after unanticipated discovery of same. Archaeological monitoring shall be conducted during ground disturbance associated with the Proposed Project when within 100 feet (30 m) of previously recorded historic-period resources, or after unanticipated discovery of same. Prehistoric and/or ethnohistoric archaeological sites have been recorded adjacent to the Proposed Project area, and the Sacred Lands File (SLF) search and Tribal outreach indicate that lands sacred to the North Valley Yokuts Tribe and the Ohlone Indian Tribe are present within the Proposed Project search area. In addition, historic-era archaeological sites have been recorded within 100 feet (30 m) of the Proposed Project area. A qualified archaeologist, or an archaeological monitor under the supervision

Table 3-12: Applicant Proposed Measures	
APM Number	**Description**
	of a qualified archaeologist, shall be retained by LS Power to monitor excavation in each work area for the Proposed Project in accordance with the above monitoring criteria to ensure that there is no impact to any significant unanticipated historical resource. A qualified archaeologist, and a Native American monitor, if determined during Tribal consultation, shall be retained by LS Power to monitor excavation in each work area for the Proposed Project in accordance with the above monitoring criteria to ensure that there is no impact to any significant unanticipated cultural resource. Procedures to be followed in the event that a Native American monitor is not available shall be determined during Tribal consultation. Native American monitoring requirements established in this APM may be superseded by government-to-government consultation conducted between the CPUC and Tribal organizations as part of the Assembly Bill 52 process or otherwise.
APM CUL-3: Unanticipated Discovery of Potentially Significant Prehistoric and Historic Resources	In the event that previously unidentified cultural resources are uncovered during implementation of the Proposed Project, all work within 100 feet (30 m) of the discovery shall be halted and redirected to another location. LS Power's qualified archaeologist shall inspect the discovery and determine whether further investigation is required. If the discovery can be avoided and no further impacts shall occur, the resource shall be documented on State of California Department of Parks and Recreation (DPR) cultural resource records, and no further effort shall be required. If the resource cannot be avoided and may be subject to further impact, LS Power's qualified archaeologist shall evaluate the significance and California Register of Historic Resources (CRHR) eligibility of the resources and, in consultation with the CPUC, determine appropriate treatment measures. Preservation in place shall be the preferred means to avoid impacts to significant historical resources. Consistent with CEQA Section 15126.4(b)(3), if it is demonstrated that resources cannot feasibly be avoided, LS Power's qualified archaeologist, in consultation with the CPUC and, if the unearthed resource is prehistoric or Native American in nature, the Native American monitor shall develop additional treatment measures, such as data recovery consistent with CEQA Guidelines 15126.4(b)(3)(C)-(D). Archaeological materials recovered during any investigation shall be curated at an accredited curation facility or transferred to the appropriate Tribal organization.
APM CUL-4: Cultural Resources Inventory	The limits of construction for the proposed ~~overhead structure AC-3, limits of construction for the area west of overhead structure AC-4~~Newark to NRS transmission line within Caltrans ROW, ~~the remainder of proposed overhead structures DC-1 through DC-11~~, and temporary construction Staging Areas 1, ~~3~~4 through ~~9~~8, 10, and part of ~~10~~11 shall be surveyed prior to construction. If additional proposed facilities and ground-disturbing activities move outside the previously surveyed acreage, the new areas shall be subjected to a cultural resources inventory to ensure that any newly identified cultural resources are either avoided by project redesign or evaluated and treated.
APM CUL-5: Unanticipated Discovery of Human Remains	Avoidance and protection of inadvertent discoveries that contain human remains shall be the preferred protection strategy where feasible and otherwise managed pursuant to the standards of CEQA Guidelines 15064.5(d) and (e). If human remains are discovered during construction or O&M activities, all work shall be diverted from the area of the discovery and the CPUC shall be informed immediately. LS Power's qualified

Table 3-12: Applicant Proposed Measures	
APM Number	**Description**
	archaeologist shall contact the appropriate County Coroner to determine whether or not the remains are Native American. If the remains are determined to be Native American, the Coroner shall contact the Native American Heritage Commission (NAHC). The NAHC shall then identify the person or persons it believes to be the most likely descendant of the deceased Native American, who in turn shall make recommendations for the appropriate means of treating the human remains and any associated funerary objects. No part of the Proposed Project is located on federal land and no federal monies are involved; therefore, the Proposed Project is not subject to the Native American Graves Protection and Repatriation Act (NAGPRA) of 1990.
Geology, Soils, and Paleontological Resources	
APM GEO-1: Geotechnical Studies and Geologic Hazard Reduction Measures	The following measures shall be implemented during construction to minimize impacts from geological hazards and disturbance to soils: • Keep vehicle and construction equipment within the limits of the Proposed Project and in approved construction work areas to reduce disturbance to topsoil; • Geotechnical studies shall be completed to evaluate the risk of geologic hazards associated with the Proposed Project. The geotechnical studies shall provide geotechnical engineering recommendations relative to subsurface soil and rock conditions, groundwater conditions, lateral earth pressures, and seismic classifications of the Proposed Project area. Recommendations from the geotechnical studies shall be considered in the final design. • Avoid construction in areas with saturated soils, whenever practical, to reduce impacts to soil structure and allow safe access. Similarly, avoid topsoil salvage in saturated soils to maintain soil structure; • Keep topsoil material on-site in the immediate vicinity of the temporary disturbance or at a nearby approved work area to be used in restoration of temporary disturbed areas. Temporary disturbance areas shall be re-contoured following construction to match pre-construction grades. Areas shall be allowed to re-vegetate naturally or be reseeded with a native seed mix from a local source if necessary. On-site material storage shall be sited and managed in accordance with all required permits and approvals; and • Keep vegetation removal and soil disturbance to a minimum and limited to only the areas needed for construction. Removed vegetation shall be disposed of off-site to an appropriate licensed facility or can be chipped on-site to be used as mulch during restoration.
APM PALEO-1: Paleontological Resources Mitigation Monitoring Plan (PRMMP)	Prior to the issuance of grading permits, a qualified paleontologist shall be retained to prepare and oversee the PRMMP for the Proposed Project. The PRMMP shall contain monitoring procedures, define areas and types of earthwork to be monitored, and provide methods for determining the significance of fossil discoveries. The PRMMP shall direct that a qualified paleontological monitor (working under the supervision of the qualified paleontologist) shall monitor all excavations or grading at depths exceeding seven feet bgs where potentially fossil-bearing alluvial deposits of Pleistocene age may be present. The duration and timing of paleontological monitoring shall be determined by the qualified paleontologist based on the grading plans and construction schedule and may be modified based on the initial results of monitoring. The PRMMP

Table 3-12: Applicant Proposed Measures	
APM Number	**Description**
	shall state that any fossils that are collected shall be prepared to the point of curation, identified to the lowest reasonable taxonomic level, and curated into a recognized professional repository (e.g., San Diego Natural History Museum [SDNHM], University of California Museum of Paleontology [UCMP]), along with associated field notes, photographs, and compiled fossil locality data. The repository shall be contracted prior to the start of earthwork to curate and store any discovered and recovered fossils. Such an institution shall be a recognized paleontological specimen repository with a permanent curator, such as a museum or university. Donation of the fossils shall be accompanied by financial support for initial specimen curation and storage. Following the completion of the above tasks, the qualified paleontologist shall prepare a final mitigation report that outlines the results of the mitigation program. This report shall include discussions of the methods used, stratigraphic section(s) exposed, fossils collected, and significance of recovered fossils. The report shall be submitted to appropriate agencies, as well as to the designated repository.
APM PALEO-2: Paleontological Resource Findings	If paleontological resources are encountered during ground disturbing activities when the qualified paleontologist or paleontological monitor is not on-site (an inadvertent discovery), earthwork within the vicinity of the discovery shall immediately halt, and the qualified paleontologist shall evaluate the significance of the fossil discovery. If the fossil discovery is deemed significant, the fossil shall be recovered using appropriate recovery techniques based on the type, size, and mode of preservation of the unearthed fossil. Earthwork may resume in the area of the fossil discovery once the fossil has been recovered and the qualified paleontologist deems the discovery site has been mitigated to the extent necessary.
Hazards, Hazardous Materials, and Public Safety	
APM HAZ-1: Site-Specific Spill Prevention, Control, and Countermeasure Plan	A site-specific SPCCP shall be prepared prior to the initiation of storage of hazardous liquids on the Proposed Project site in excess of the appropriate regulatory thresholds. In the event of an accidental spill, the Proposed Project shall be equipped with secondary containment that meets SPCCP guidelines. The secondary containment shall be sufficiently sized to accommodate accidental spills. The plan shall be provided to the CPUC prior to construction for recordkeeping.
APM HAZ-2: Hazardous Materials Management Plan	A HMMP shall be prepared and implemented for the Proposed Project. The plan shall be prepared in accordance with relevant state and federal guidelines and regulations (e.g., Cal/OSHA). The plan shall include the following information related to hazardous materials and waste, as applicable: • A list of hazardous materials present on-site during construction and O&M to be updated as needed, along with product Safety Data Sheets and other information regarding storage, application, transportation, and disposal requirements; • A Hazardous Materials Communication (i.e., "HAZCOM") Plan; • Assignments and responsibilities of Proposed Project health and safety roles;

Table 3-12: Applicant Proposed Measures	
APM Number	**Description**
	• Standards for any secondary containment and countermeasures required for hazardous materials; • Spill response procedures based on product and quantity. The procedures shall include materials to be used, location of such materials within the Proposed Project area, and disposal protocols; and • Protocols for the management, testing, reporting, and disposal of potentially contaminated soils or groundwater observed or discovered during construction. This would include termination of work within the area of suspected contamination sampling by an OSHA-trained individual and testing at a certified laboratory. ~~The Proposed Project would also have lead-acid batteries to provide backup power for monitoring, alarm, protective relaying, instrumentation and control, and emergency lighting during power outages. Secondary containment shall be constructed around and under the battery racks, and the HMMP shall address containment from a battery leak.~~ The plan shall be provided to the CPUC prior to construction for recordkeeping. Plan updates shall be made and submitted as needed if construction activities change such that the existing plan does not adequately address the Proposed Project.
APM HAZ-3: Compliance with the Covenant to Restrict Use of Property (Cisco Systems Site 6/Syntax Court Disposal Site)	Construction activities within the Cisco Systems Site 6/Syntax Court Disposal Site boundaries (as outlined in **Figure 5.9-1**, *Contaminated Sites Map*) shall comply with the Covenant to Restrict Use of Property and Environmental Restriction, signed May 23, 2003. Specific activities could include: a) Providing written notice to the Department of Toxic Substances Control (DTSC) at least 14 days prior to ground disturbing construction activities with the location of excavation, proposed depth, and soil management procedures. b) Conducting construction activities in accordance with the SMP and the Health and Safety Plan (2001 and 2015 update). c) Handling excavated soils in accordance with all applicable local, state, and federal regulations.
APM HAZ-4: Compliance with the Covenant and Agreement for Environmental Restriction (South Bay Asbestos Area)	Construction activities within the South Bay Asbestos Area site boundaries shall comply with the Covenant and Agreement for Environmental Restriction, signed October 21, 2004, by the property owner and the DTSC. Specific activities would include, but not necessarily be limited to, the following: a) Coordinating with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Lead Agency and gaining written approval for ground disturbing activities that could affect the soil cap. b) Preparing a SMP for any soils contaminated with asbestos or asbestos containing materials brought to the surface by grading, excavation, trenching, or backfilling.

Table 3-12: Applicant Proposed Measures	
APM Number	**Description**
APM HAZ-5: Final Induction Study and Utility Coordination	Design and construction of the proposed transmission lines shall be coordinated with existing utility owners (as applicable) to ensure that operation of the new transmission lines shall not cause unsafe electromagnetic induction effects on any existing metallic utilities located in close proximity to the proposed transmission lines. LS Power shall conduct a detailed induction study for all existing metallic utilities in close proximity to proposed transmission line alignments. Where potential adverse effects are identified by the Final Induction Study, LS Power shall coordinate with the applicable utility owner to develop appropriate mitigation measures. Final designs and mitigation strategies, if required, shall be submitted to the CPUC prior to commencement of construction of the transmission lines.
Hydrology and Water Quality	
APM WQ-1: Groundwater Dewatering and Discharge Measures	Groundwater, if encountered during construction, shall be handled and discharged in accordance with all state and federal regulations including the following: • Recovered groundwater shall be contained on-site and tested prior to discharge; • When testing determines water is suitable for land application, discharge may be applied to flat, vegetated, upland areas, used for dust control, or used in other suitable construction operations • Land application shall be made in a manner that discharge does not result in substantial erosion; • Water unsuitable for land application shall be disposed of at an appropriately permitted facility; and • Discharge to surface waters or storm drains may occur only if permitted by the agency(ies) with jurisdiction over the resource (e.g., USACE, RWQCB, and/or CDFW, as applicable).
Recreation	
APM REC-1: Trail Management Plan	LS Power shall coordinate with the City of Fremont, City of Milpitas, City of San José, City of Santa Clara, the National Park Service (NPS), Metropolitan Transit Commission (MTC), and the USFWS for the preparation of the Proposed Project TMP. The TMP shall identify if a detour route(s) is required, as well as provide for trail-specific traffic control and safety measures for pedestrians, trail users, and motorists. Measures that may be implemented by LS Power as part of the TMP include, but are not limited to, provision of a crossing guard during periods of active construction along the portions of the trails that would be directly impacted by construction of the Proposed Project or designation of a detour route if use of a crossing guard is not practical. Signage and flagging may be used to help direct trail users and provide safety for both trail users and construction crews. A copy of the TMP shall be provided to CPUC for recordkeeping.

Table 3-12: Applicant Proposed Measures	
APM Number	**Description**
Traffic and Transportation	
APM TRA-1: Traffic Control Plan	LS Power shall prepare a TCP to describe measures to guide traffic (such as signs and workers directing traffic), safeguard construction workers, provide safe passage, and minimize traffic impacts. LS Power shall follow its standard safety practices, including installing appropriate barriers between work zones and transportation facilities, posting adequate signs, and using proper construction techniques. LS Power shall follow the recommendations regarding basic standards for the safe movement of traffic on highways and streets in accordance with Section 21400 of the California Vehicle Code. As required for obtaining a local encroachment permit, LS Power shall provide a TCP to the applicable local jurisdictions which shall comply with the U.S. Department of Transportation's (DOT) Manual on Uniform Traffic Control Devices (MUTCD). Construction activities shall be coordinated with local law enforcement and fire protection agencies, as required. Emergency service providers shall be notified, as required by the local permit, of the timing, location, and duration of construction activities. A copy of the TCP shall be provided to CPUC for recordkeeping.
APM TRA-2: Coordinate Bus Stop Closures	If bus stop closures are required for Proposed Project implementation, LS Power shall coordinate closures with Santa Clara VTA and/or Alameda-Contra Costa County Transit ("AC Transit"), as appropriate, in advance of closure to minimize disruptions to service. Where disruptions to service are anticipated, advanced notice shall be given to allow transit users on effected routes to identify and locate a temporary interim bus stop(s). Measures that may be implemented to give advanced notice of disruptions to service may include, but not necessarily be limited to, posting signage at bus stops with planned closures and posting notices for anticipated route detours and bus stop closures on the Santa Clara VTA and AC Transit websites. Identification and implementation of specific measures shall be implemented in coordination with Santa Clara VTA and AC Transit.
APM TRA-3: Repair Infrastructure	Following construction, LS Power shall confirm that contractors have repaired damage to roads, trails, and bicycle facilities resulting from Proposed Project construction activities. Existing conditions shall be documented to assure that roads, trails, and bicycle facilities are returned to preconstruction conditions. LS Power shall confer with local agencies, as needed, to confirm repairs are consistent with preconstruction conditions.
APM TCR-1: WEAP Training	LS Power shall work with interested Tribes to design the TCRs component of a WEAP that shall be provided to all Proposed Project personnel who may encounter and/or alter TCRs or prehistoric/ethnohistoric archaeological properties, including construction supervisors and field personnel. The WEAP shall be submitted to the CPUC prior to construction. No construction worker shall be involved in ground-disturbing activities without having participated in the WEAP. The WEAP shall include, at a minimum: • Training on how to identify potential TCRs and human remains during the construction process; • A review of applicable regulations pertaining to TCRs; • A discussion of procedures to be followed in the event that unanticipated TCRs are discovered during implementation of the Proposed Project;

Table 3-12: Applicant Proposed Measures	
APM Number	**Description**
	• A discussion of culturally appropriate dignity, taking into account the Tribal cultural values and meaning of the resource, including the cultural character and integrity, traditional uses, and confidentiality of resources. • A statement by the construction company or applicable employer agreeing to abide by the WEAP, LS Power policies, and other applicable laws and regulations. The WEAP may be conducted in concert with other environmental or safety awareness and education programs for the Proposed Project, provided that the program elements pertaining to cultural resources are designed with the input of interested Tribes.
APM TCR-2: Native American Monitoring	Native American monitoring shall be conducted during ground disturbance associated with the Proposed Project when within 100 feet (30 meters) of previously recorded prehistoric, ethnohistoric, or TCRs. Prehistoric and/or ethnohistoric archaeological sites have been recorded within the Proposed Project area, and the SLF search and Tribal outreach indicates that lands sacred to the North Valley Yokuts Tribe and the Ohlone Indian Tribe are present within the Proposed Project search area. A Native American monitor determined during Tribal consultation shall be retained by LS Power to monitor excavation associated with the Proposed Project to ensure that there is no impact to any significant unanticipated prehistoric, ethnohistoric, or TCR. Prior to construction, LS Power shall confer with a designated Tribal representative on the appropriate course of action to be taken should unanticipated cultural materials, and specifically human remains, be discovered during construction. Native American monitoring requirements established in this APM may be superseded by government-to-government consultation conducted between the CPUC and Tribal organizations as part of the AB 52 process or otherwise.
Utilities	
APM UTIL-1: Coordination with Utilities	LS Power shall notify all utility companies with utilities located within or crossing the Proposed Project ROW to locate and mark existing underground utilities along the entire length of the Proposed Project. Due to the linear nature of transmission line construction, utilities shall be marked in short segments at least 14 days prior to construction within said segments. No subsurface work shall be conducted that would conflict with (i.e., directly impact or compromise the integrity of) a buried utility. In the event of a conflict, areas of subsurface excavation shall be realigned vertically and/or horizontally, as appropriate, to avoid other utilities and provide adequate operational and safety buffering, or relocation of the existing utility shall be coordinated with each utility owner/operator. LS Power shall coordinate with third-party utilities and shall submit the intended construction methodology to the owner of the third-party utility for review and coordination. Construction methods shall be adjusted as necessary to ensure that the integrity of existing utility lines is not compromised.

3.11.2 PG&E Best Management Practices

PG&E would be responsible for overseeing the construction and environmental teams that would implement their construction BMPs and field protocols (FPs). PG&E would manage construction to allow for implementation of the BMPs to be monitored, documented, and enforced, as appropriate. All those contracted by PG&E to perform this work would be provided with all relevant permits, conditions, and BMPs, as well as instructions on how to properly implement the BMPs to ensure their effectiveness.

The construction BMPs are described in **Table 3-13**, *PG&E Best Management Practices (BMPs) and Field Protocols (FPs)* and discussed in **Section 5.0**, which includes an analysis of why each BMP or FP was selected and how it would reduce and/or minimize potential impacts.

If conditions occur where construction may potentially adversely affect a known or previously unknown environmentally sensitive resource, or if construction activities significantly deviate from Proposed Project requirements, PG&E monitors and/or contract administrators would have the authority to halt construction activities, if needed, until an alternative method or approach can be identified. Any concerns that arise during implementation of the BMPs would be communicated to the appropriate authority to determine if corrective action is required, or the concerns would be addressed on-site, as applicable. As the proposed BMPs are implemented, environmental monitors from PG&E would be responsible for the review and documentation of such activities. Field notes and digital photographs would be used to document and describe the status of BMPs as necessary.

Table 3-13: PG&E Best Management Practices (BMPs) and Field Protocols (FPs)

BMP or FP Number	Description
Air Quality	
BMP AQ-1	**Vehicle Idling**. A vehicle operator is prohibited from idling an on-road diesel-fueled vehicle with a Gross Vehicle Weight of ≥10,001 pounds (lbs), or an off-road diesel-fueled vehicle with a primary engine ≥25 horsepower (hp), in excess of five minutes unless conducting one or more of the following activities: • Doing work for which the vehicle was intended; • Powering equipment necessary to perform a job function; • Operating lights or signals to direct traffic at a PG&E job site; • Service, testing or maintenance on the vehicle; • Regenerating an exhaust filter; • Idling for safety reasons, including providing light when working after dark, defrosting windows, keeping the cabin warm to avoid a health hazard, and providing air conditioning to avoid heat illness; • Idling due to traffic conditions beyond the vehicle operator's control; • Warming an engine up to operating temperatures, as specified by the equipment manufacturer; • Queuing, such as when a line of off-road trucks forms to receive materials from an excavator. Queuing does not include a vehicle waiting for another vehicle to perform a task. Idling while queuing is not allowed within 100 feet of a residential home.
BMP AQ-2	**Fugitive Dust – General.** Field crews must limit fugitive dust from PG&E project work at all times. Types work activities where water trucks or other dust abatement methods are typically required include: • Construction; • Demolition; • Excavation; • Trenching;

Table 3-13: PG&E Best Management Practices (BMPs) and Field Protocols (FPs)	
BMP or FP Number	**Description**
	• Grading; • Sand blasting; • and other earthmoving activities Visible emissions of fugitive dust from PG&E project activities must be maintained within the project boundary. The crew shall abate dust by: • Applying water to disturbed areas and to storage stockpiles; • Covering and securing stockpiled soil at the end of each workday; • Applying water in sufficient quantities to prevent dust plumes during activities such as clearing & grubbing, backfilling, trenching and other earth moving activities; • Limit vehicle speed to 15 miles per hour within approved unpaved work areas and along unpaved roads; • Vehicles and equipment used to transport bulk materials must be wetted, covered, and provide at least 6 inches of free board (space between top of truck and load) during transport; • Clean-up track-out at least daily; • Escalate preventative measures as needed to match conditions • Consider postponing construction activities during high wind events; and • The crew shall not generate dust in amounts that create a nuisance to wildlife or people, particularly where sensitive receptors such as neighborhoods, schools, and hospitals are located nearby or down-wind. During inactive periods (e.g. after normal working hours, weekends, and holidays), the crew shall apply water or other approved material to form a visible crust on the soil and restrict vehicle access.
BMP AQ-3	**Portable Equipment Registration Program.** PG&E requires that portable engines be registered into the Statewide Portable Equipment Registration Program (PERP) administered by the California Air Resources Board (CARB), if: • the engine is portable (mounted on a truck, trailer, skids, or wheels); • the engine is 50 brake horsepower or greater, and; • the engine does not provide motive force for a vehicle. Auxiliary engines mounted on vehicles need to be registered if they are 50 brake horsepower or greater. For PG&E-owned units, PG&E Environmental Management Air Program is responsible for maintaining valid PERP registration with support from Transportation Services. For rental units, the rental vendor is responsible for the PERP registration and to provide PG&E with a copy of the current registration, permit, and placard before use. Greenhouse Gas (GHG) Facility Requirements: If diesel portable engines greater than 50 brake horsepower (bhp) are operated onsite at a GHG facility subject to the Mandatory Reporting Rule for GHGs (MRR) at any time, the AB617 PERP Log must be completed.

Table 3-13: PG&E Best Management Practices (BMPs) and Field Protocols (FPs)	
BMP or FP Number	**Description**
BMP AQ-4	**Tier 4 Construction Equipment**. At least 75 percent of construction equipment with a rating between 100 and 750 hp shall be required to use engines compliant with Environmental Protection Agency (EPA) Tier 4 non-road engine standards. In the event enough Tier 4 equipment are not available to meet the 75-percent threshold, documentation of the unavailability shall be provided and engines utilizing a lower standard shall be used.
Biological Resources	
FP-01	Hold annual training on HCP requirements for employees and contractors performing covered activities in the Plan Area that are applicable to their job duties and work.
FP-02	Park vehicles and equipment on pavement, existing roads, or other disturbed or designated areas (barren, gravel, compacted dirt).
FP-03	Use existing access and ROW roads. Minimize the development of new access and ROW roads, including clearing and blading for temporary vehicle access in areas of natural vegetation.
FP-04	Locate off-road access routes and work sites to minimize impacts on plants, shrubs, trees, small mammal burrows, and unique natural features (e.g., rock outcrops).
FP-05	Notify conservation landowner at least two business days prior to conducting covered activities on protected lands (state and federally owned wildlife areas, ecological reserves, or conservation areas); more notice shall be provided if possible or if required by other permits. If the work is an emergency, as defined in PG&E's Utility Procedure ENV-8003P-01, PG&E shall notify the conservation landowner within 48 hours after initiating emergency work. While this notification is intended only to inform conservation landowner, PG&E shall attempt to work with the conservation landowner to address landowner concerns.
FP-06	Minimize potential for covered species to seek refuge or shelter in pipes and culverts. Inspect pipes and culverts, with a diameter wide enough to be entered by a covered species that could inhabit the area where pipes are stored, for wildlife species prior to moving pipes and culverts. Immediately contact a biologist if a covered species is suspected or discovered.
FP-07	Vehicle speeds on unpaved roads shall not exceed 15 mph.
FP-08	Prohibit trash dumping, firearms, open fires (such as barbecues), hunting, and pets (except for safety in remote locations) at work sites.
FP-09	During fire season in designated State Responsibility Areas, equip all motorized equipment with federally approved or state-approved spark arrestors. Use a backpack pump filled with water and a shovel and fire-resistant mats and/or windscreens when welding. During fire "red flag" conditions as determined by Cal Fire, curtail welding. Each fuel truck will carry a large fire extinguisher with a minimum rating of 40 B:C. Clear parking and storage areas of all flammable materials.
FP-10	Minimize the activity footprint and minimize the amount of time spent at a work location to reduce the potential for take of species.
FP-11	Utilize standard erosion and sediment control BMPs (pursuant to the most current version of PG&E's *Stormwater Field Manual for Construction Best Management Practices*) to prevent construction site runoff into waterways.

Table 3-13: PG&E Best Management Practices (BMPs) and Field Protocols (FPs)	
BMP or FP Number	**Description**
FP-12	Stockpile soil within established work area boundaries and locate stockpiles so as not to enter water bodies, stormwater inlets, or other standing bodies of water. Cover stockpiled soil prior to precipitation events.
FP-13	Fit open trenches or steep-walled holes with escape ramps of plywood boards or sloped earthen ramps at each end if left open overnight. Field crews shall search open trenches or steep-walled holes every morning prior to initiating daily activities to ensure wildlife are not trapped. If any wildlife is found, a biologist shall be notified and shall relocate the species to adjacent habitat or the species shall be allowed to naturally disperse, as determined by a biologist.
FP-14	If the covered activity disturbs 0.1 acre or more of habitat for a covered species in grasslands, the field crew shall revegetate the area with a commercial "weed free" seed mix.
FP-15	Prohibit vehicular and equipment refueling 250 feet from the edge of vernal pools, and 100 feet from the edge of other wetlands, streams, or waterways. If refueling must be conducted closer to wetlands, construct a secondary containment area subject to review by an environmental field specialist (EFS) and/or biologist. Maintain spill prevention and cleanup equipment in refueling areas.
FP-16	Maintain a buffer of 250 feet from the edge of vernal pools and 50 feet from the edge of wetlands, ponds, or riparian areas. If maintaining the buffer is not possible because the areas are either in or adjacent to facilities, the field crew shall implement other measures as prescribed by the land planner, biologist, or HCP administrator to minimize impacts by flagging access, requiring foot access, restricting work until dry season, or requiring a biological monitor during the activity
FP-17	Directionally fell trees away from an exclusion zone, if an exclusion zone has been defined. If this is not possible, remove the tree in sections. Avoid damage to adjacent trees to the extent possible. Avoid removal of snags and conifers with basal hollows, crown deformities, and/or limbs over 6 inches in diameter.
FP-18	Nests with eggs and/or chicks shall be avoided; contact a biologist, land planner, or the Avian Protection Program manager for further guidance.
BMP BIO-1	**Burrowing Owl**. A survey for evidence of burrowing owl (sign or presence) shall be conducted prior to initial ground disturbance. The survey shall occur within the best detection timeframe and within two weeks of construction. If burrowing owl are detected, consult with the CDFW.
BMP BIO-2	**Nesting Birds**. If work is anticipated to occur within the nesting bird season (February through August), nesting birds, including raptors and other species protected under the MBTA, may be impacted. If active nests are discovered, exclusionary measures and/or designated avoidance buffers may be required and implemented according to the guidance in the PG&E Nesting Bird Management Plan. The Proposed Project biologist determines if the construction action will impact the nest, and if so, identifies whether alternative actions or monitoring can be implemented to avoid impacts. If active nests are observed during construction, crews must immediately alert the PG&E Proposed Project biologist.
Cultural Resources	
BMP CULT-1	**Worker Awareness Training.** PG&E will provide environmental awareness training on archeological cultural and paleontological resources protection. This training may be administered by the PG&E cultural resources specialist (CRS) or a designee as a stand-alone training or

Table 3-13: PG&E Best Management Practices (BMPs) and Field Protocols (FPs)	
BMP or FP Number	**Description**
	included as part of the overall environmental awareness training as required by the project and will at minimum include: types of cultural resources or fossils that could occur at the project site; types of soils or lithologies in which the cultural resources or fossils could be preserved; procedures that should be followed in the event of a cultural resource, human remain, or fossil discovery; and penalties for disturbing cultural or paleontological resources.
BMP CULT-2	**Inadvertent Discovery**. If any new cultural resources are encountered during Proposed Project activities, all work must be suspended in the vicinity (approximately 100 feet) of the resource, and the cultural resource specialist (CRS) shall be immediately notified. At that time, the CRS shall coordinate any necessary investigations of the site with appropriate specialists, as needed. PG&E may be required to implement protective measures deemed necessary for the protection of the cultural resources. Prehistoric resources that may be identified during Proposed Project implementation may include, but are not limited to, stone tools and manufacturing debris made of obsidian, basalt, and other lithic materials; milling equipment such as bedrock mortars, portable mortars, and pestles; and locally darkened soils (midden) that may contain dietary remains such as shell and bone, as well as human remains. Historic resources that may be identified include, but are not limited to, small cemeteries or burial plots, structural foundations, cabin pads, cans with soldered seams or tops, bottles or fragments of clear and colored glass, cut (square) nails, and ceramics.
BMP CULT-3	**Human Remains**. In keeping with the provisions provided in 7050.5 of the CHSC and Public Resource Code 5097.98, if human remains are encountered (or are suspected) during any project-related activity, PG&E shall: • Stop all work within 100 ft.; • Immediately contact: CRS, who will then notify the county coroner; • Secure location, but do not touch or remove remains and associated artifacts; • Do not remove associated spoils or pick through them; • Record the location and keep notes of all calls and events; and • Treat the find as confidential and do not publicly disclose the location. If the human remains are of Native American origin, the coroner must notify the Native American Heritage Commission within 24 hours of such identification. The most likely descendant shall work with the CRS to develop a program for re-interment or other disposition of the human remains and any associated artifacts. No additional work shall take place within the immediate vicinity of the find until the appropriate actions have been implemented.
Geology, Soils, and Paleontological Resources	
BMP PALEO-1	**Unanticipated Paleontological Discoveries**. If significant paleontological resources are discovered during construction activities, work will stop within 50 feet and the PG&E CRS will be contacted immediately. The CRS will work with the qualified paleontologist to evaluate the discovery. If the discovery is determined to be significant, PG&E will implement measures to protect and document the paleontological resource. Work may not

Table 3-13: PG&E Best Management Practices (BMPs) and Field Protocols (FPs)	
BMP or FP Number	**Description**
	resume within 50 feet of the find until approval by the CRS in coordination with the paleontologist. In the event that significant paleontological resources are encountered during the project, protection and recovery (if feasible and safe) of those resources may be required. Treatment and curation of fossils will be conducted in consultation with the landowner, PG&E, and CPUC. The paleontologist will be responsible for developing the recovery strategy and will lead the recovery effort, which will include establishing recovery standards, preparing specimens for identification and preservation, documentation and reporting, and securing a curation agreement from the approved facility.
Hazards, Hazardous Materials, and Public Safety	
BMP HAZ-1	**Oil-Filled Electrical Equipment (OFEE)**. The following measures shall be followed: • OFEE shall be managed in accordance with ENV-3000P-02-JA01 Job Aid: Handling In-Service Electrical Equipment from the Field. • If during the removal/replacement of OFEE, visible evidence of an oil leak is identified (e.g., seeping, weeping, staining, sheen), contact your local EFS immediately to determine cleanup actions and regulatory reporting requirements. • Work must cease on all leaking pre-July 1, 1979 equipment or equipment without a non-poly-chlorinated biphenyls (PCB) blue sticker or other non-PCB indicator on its nameplate until you've made contact with your local EFS. • All leaking equipment must be patched, pumped, or containerized in the field so that it shall not leak during transport; taken straight back to the Service Center (i.e., stops at staging areas are prohibited); and placed in the designated returned equipment area with a completed yellow condition tag. • Other equipment and bushings that cannot be tested and shall be assumed > 500 ppm PCB. Contact the EFS to coordinate generation of a purchase order and contract for disposal. This equipment shall be transported by a PG&E-approved hazardous waste contractor and taken to a disposal facility. ○ **Note**: Do NOT transport to a PG&E waste consolidation site.
BMP HAZ-2	**Hazardous Materials Business Plan (HMBP)**. The EFS shall be notified 30 days prior to a threshold exceeding hazardous material/waste being placed on-site. Threshold limits are 200 cubic feet of compressed gases (1,000 cubic feet for simple asphyxiation or the release of pressure only; carbon dioxide), 500 lbs of solids, or 55 gallons of liquids for more than 30 non-consecutive days. If required, the local county or city shall be notified of any amount of hazardous material/waste: • Counties: Nevada, San Bernardino (waste only), San Francisco, Santa Clara (call for city specific details), Santa Cruz, Yuba (waste only) • Cities: Bakersfield (waste only), Berkeley, Healdsburg, Sebastopol, Petaluma, Santa Clara (call for city specific details) • PG&E shall develop an HMBP as necessary.
BMP HAZ-3	**Hazardous Waste Management**. This Proposed Project may involve the storage of hazardous materials, and they must be managed according to regulations and the following BMPs.

Table 3-13: PG&E Best Management Practices (BMPs) and Field Protocols (FPs)	
BMP or FP Number	**Description**
	• All releases of hazardous materials must be immediately addressed. Maintain a spill kit on-site during the length of the Proposed Project. Contact the Proposed Project EFS for spills of hazardous materials/wastes to determine if agency notifications shall be required and/or if additional resources are needed. • Hazardous materials, greater than 440 lbs and less than 1,001 lbs can be transported on PG&E vehicles if the proper materials of trade (MOT) shipping paper/Material Safety Data Sheet (MSDS) accompanies the load. Contact the Proposed Project EFS for additional guidance in these areas. • All hazardous materials containers must be marked correctly. • All hazardous materials signs must be displayed as required. • Non-saturated oily rags (to be laundered) stored in non-combustible containers. • Emergency equipment such as fire extinguisher, eye wash, MSDS, etc. must be available on-site. • Hazardous material containers must be in good condition. • All hazardous materials must be compatible with containers. • Hazardous materials containers are kept closed. • If there is an unauthorized release of hazardous material, contact your EFS immediately. For after-hours releases contact the Environmental Emergency Hotline at 1-800-874-4043. Immediately contact the local PG&E EFS and stop work if any of the following conditions occur. After hours or if the local EFS is unavailable, please call the Environmental Hotline at 800-874-4043. • Discharge or spill of hazardous substance. • If an Environmental Regulator visits the site. • Visually cloudy/muddy water is observed leaving the work area; • An underground storage tank is discovered. • A subsurface component related to site remediation activities (e.g., monitoring well, recovery well, injection well) is discovered. No subsurface components may be impacted. • If during excavation unanticipated evidence of contamination is identified (e.g., staining, odors), work must cease and when safe to do so, cover the trench with steel plates. In order to minimize impacts to public safety and the environment, place contaminated soil on a polyethylene sheet (four milliliters) and cover or place the contaminated soil in lined covered containers. Then contact your local/support EFS to determine the next steps. • If any subsurface components related to site remediation activities (e.g., monitoring well, recovery well, injection well) are discovered in the path of excavation, work must cease in that location and your EFS must be notified to determine the next steps. No subsurface components may be impacted.
BMP HAZ-4	**Lead Acid Batteries**. This Proposed Project shall be generating lead-acid battery universal waste. The construction contractor or PG&E technicians shall properly manage and dispose of universal waste and follow Lead Acid Battery Procedure ENV 4000P-05-JA05 and/or ENV 4000P-05-JA06. Contact the Proposed Project EFS for additional guidance in these areas.

Table 3-13: PG&E Best Management Practices (BMPs) and Field Protocols (FPs)	
BMP or FP Number	**Description**
	Management of Undamaged (Intact) Batteries – Universal Waste: • If batteries are undamaged (i.e., intact and not leaking), they can be managed as universal waste at the nearest PG&E waste consolidation site. Remote sites shall have batteries transported and disposed of from site if quantities warrant. A PG&E-approved hazardous waste contractor transports intact batteries from a waste consolidation site to an approved universal waste handler using a non-hazardous waste manifest. o Note: It is recommended that large station backup batteries are better shipped directly from the substation to a disposal facility rather then taken to a PG&E waste consolidation site. Coordinate with the local EFS for disposal. • Reference ENV 4000P-05-JA05 for general information, proper labeling, transportation, storage, and accumulation time limit. Management of Damaged or Leaking Batteries – Hazardous Waste: • Ship damaged or leaking batteries from a waste consolidation site to an approved treatment, storage, and disposal facility (TSDF) for disposal using a PG&E-approved hazardous waste contractor and a uniform hazardous waste manifest (see ENV-4000P-02-JA01 Uniform Hazardous Waste Manifest). • Batteries must be placed in non-reactive, structurally sound, closed containers (such as plastic drum) that are adequate to prevent breakage or further damage and contain vermiculite, which can be attained at a PG&E waste consolidation site. • Reference ENV 4000P-05-JA05 for general information, proper labeling, transportation, storage, and accumulation time limit. Transportation – Reference ENV 4000P-05-JA05. • Transporting > 10 lbs of non-spillable batteries per vehicle from a field location to a consolidation facility requires a shipping paper (see Utility Procedure: ENV-4000P-05, Hazardous Waste Shipping Paper). Contact EFS if there is a large quantity of batteries for waste to determine handling and whether to ship from site to recycler. • Transporting ≤ 10 lbs of intact batteries per vehicle does not require a shipping paper. However, document the shipment in the log maintained in the consolidation site's waste storage area. Disposal – Reference ENV 4000P-05-JA06.
BMP HAZ-5	**Lead Paint Removal**. For any physical removal, sanding, scraping, needle gunning, blasting, or welding, contact the local Safety Specialist or Paintings and Coating Department. For PG&E Contractor lead paint removal, the Contractor shall adhere to the Contract for worker health and safety. If the Proposed Project team has safety concerns prior to or during the Proposed Project, immediately contact the Safety Program Consultant.
BMP HAZ-6	**Sulfur Hexafluoride (SF_6) Gas Material/Waste Management**. Advanced Specialty Gas (ASG) provides sole-source service in supplying, replacing, removal and recycling of SF_6 in all facilities. ASG provides 24-hour service in response to events involving SF_6 as well as delivery and removal of all SF_6 cylinders. • Contact information: https://www.advancedspecialtygases.com.

Table 3-13: PG&E Best Management Practices (BMPs) and Field Protocols (FPs)	
BMP or FP Number	**Description**
	Before accessing any equipment that may contain SF_6 gas byproduct waste, contact the local EFS at least two weeks in advance for assistance in arranging cleanup, transportation, and disposal. • PSC shall retrieve, package, label, and transport SF_6 byproduct waste (i.e., fluorides of sulfur, metallic fluorides, etc.). All SF_6 byproduct waste that is removed must have proper shipping papers, which could include a remote waste shipping paper or a manifest (manifests require a permanent or temporary EPA identification number). • SF_6 cylinder tracking and facility inventory shall be managed in accordance with Utility Procedure TD-3350P-001.
BMP HAZ-7	**Spill Prevention, Control, and Countermeasure (SPCC) Plan**. The local/support EFS shall be notified 30 days prior to an SPCC-triggering event occurs. Events that trigger an SPCCP include: • New storage of oil at a facility causing the total oil storage to exceed 1,320 gallons. • Modification to existing oil storage at a facility that contains >1,320 gallons of oil by addition or removal of oil containers >55 gallons. If the oil volume is contained in anything greater than 55 gallons, the SPCC Plan must be certified by a licensed engineer. SPCC containment must be installed prior to moving on-site of oil quantities requiring containment. The PM number must remain open until the local/support EFS notifies the team that the plan is certified by an engineer, and any necessary modifications are complete.
BMP HAZ-8	**Underground Electric Cable**. Underground electric cable might require special handling and disposal as the cable may potentially be wrapped in lead or asbestos containing material, contain asbestos insulation, and/or oil for insulation. Furthermore, insulating oil used in underground cable may contain PCBs. If evidence of these hazardous materials is identified during the cable replacement, such as weeping oil from the cut end of the cable, the local EFS shall be contacted immediately to arrange for sampling, and to determine transportation and disposal requirements. A PG&E authorized hazardous waste hauler may be required to transport the cable. Arc-proofing wrap that is both friable (brittle, crisp or fragile) and non-friable must be removed by a certified abatement vendor or trained PG&E personnel (PG&E Insulation & Coatings, PSC, Bohm, ACS).
BMP HAZ-9	**Vault Dewatering**. Vault dewatering may be required. All vault dewatering must take place in accordance with the Vault Dewatering form.
BMP HAZ-10	**Stormwater BMP Installation**. This Proposed Project shall require an SWPPP. If the construction crew shall not be installing stormwater BMPs, it is the responsibility of the Proposed Project manager to contact the Stormwater Quality Subject Matter Expert (SME) and Environmental Lead prior to construction to request BMP support with as much lead time as possible. Thirty days is preferred. The regional Stormwater SME shall hire a contractor to install, maintain, and remove stormwater BMPs.
BMP HAZ-11	**Construction Dewatering**. If dewatering of trenches or excavations is required, the Environmental Lead/Proposed Project EFS shall be notified at least 30 days in advance to ensure the appropriate dewatering methods are used, proper notifications are made, and, if necessary, applicable authorizations/permits are obtained. All dewatering activities must be

Table 3-13: PG&E Best Management Practices (BMPs) and Field Protocols (FPs)	
BMP or FP Number	**Description**
	coordinated through the Environmental Lead/Proposed Project EFS throughout the duration of the Proposed Project.

3.11.3 SVP Best Management Practices

Where applicable to SVP's scope of work, SVP would implement Proposed Project APMs. The specific APM applicable to SVP's scope of work is listed in **Table 3-14**, *Proposed Project APMs Applicable to SVP Work*. Implementation of this APM is discussed in **Section 5.3**, which includes an analysis of why the APM was selected and how it would reduce and/or minimize potential impacts. Prior to construction, SVP may develop specific BMPs to implement in place of the APM listed below. These BMPs would, if utilized, be consistent with the requirements and specifications included within the Proposed Project APMs.

SVP would be responsible for overseeing the construction and environmental teams that would implement the APM and/or BMPs. SVP would manage construction to allow for implementation of the APMs/BMPs to be monitored, documented, and enforced, as appropriate. All those contracted by SVP to perform this work would be provided with all relevant permits, conditions, and APMs/BMPs, as well as instructions on how to properly implement the APMs/BMPs to ensure their effectiveness.

If conditions occur where construction may potentially adversely affect a known or previously unknown environmentally sensitive resource, or if construction activities significantly deviate from Proposed Project requirements, SVP and/or monitors would have the authority to halt construction activities, if needed, until an alternative method or approach can be identified. Any concerns that arise during implementation of the APMs/BMPs would be communicated to the appropriate authority to determine if corrective action is required, or the concerns would be addressed on-site, as applicable. As the proposed APMs/BMPs are implemented, environmental monitors from SVP would be responsible for the review and documentation of such activities. Field notes and digital photographs would be used to document and describe the status of APMs/BMPs, as necessary.

Table 3-14: Proposed Project APMs Applicable to SVP Work	
APM Number	**Description**
Air Quality	
APM AQ-1: Construction Fleet Minimum Requirements and Tracking	SVP shall ensure that at least 75 percent of equipment horsepower hours related to off-road construction equipment include Tier 4 interim or Tier 4 final emissions controls. An initial listing that identifies each off-road unit's certified tier specification to be operated on the Proposed Project shall be submitted to the CPUC before the start of construction activities. Construction activities shall not begin until the equipment listing has been submitted to the CPUC. As new or replacement construction equipment on the Proposed Project, SVP shall document verification of the certified engine tier before their use on Proposed Project sites. Before the start of construction, SVP shall develop a diesel-powered equipment-use hours tracking tool and procedure. The tracking tool shall be utilized by SVP (and/or its construction contractor[s]) to keep track of the certified engine tier and daily

Table 3-14: Proposed Project APMs Applicable to SVP Work	
APM Number	**Description**
	equipment use hours of all off-road diesel-powered equipment. If all diesel-powered equipment is Tier 4 certified, the tracking tool is not required. The tracking tool shall be maintained by SVP, and tracking updates shall be submitted to the CPUC on a monthly basis to track the Proposed Project's compliance. The updated tracking tool shall be submitted to the CPUC no later than the tenth day of the following month.

Updated Appendix 3-A: Construction Equipment and Workforce								
Work Activity				Activity Production				
Equipment Description	Estimated Horsepower	Probable Fuel Type	Equipment Quantity	Estimated Workforce	Crews	Estimated Start Date	Estimated End Date	Duration of Use, Hrs./Day
Transmission Line								
Underground Transmission Line								
Road Work, Site and Staging Preparation								
Truck - Water 4 K	300	Diesel	2	20	1	June 2026	September 2026	10
Loader - 4-5 Yd	275	Diesel	2					8
Truck - Dump 10-12 Yd	415	Diesel	6					5
Motor Grader	250	Diesel	1					8
Roller	405	Diesel	2					8
Pickup - 1/2 Ton	395	Gas	3					2
Pickup - 1 Ton	410	Diesel	3					2
Backhoe	70	Diesel	1					5
Discing Tractor and machine	640	Diesel	1					9
Skid Steer	74.3	Diesel	1					4
Pot Holing Machine (Hydro Vacuum Excavator)	525	Diesel	1					8
Excavating Scraper	407	Diesel	1					5
Generator – 25 Kw	45	Diesel	2					10
Security Vehicle	158	Gas	1					24
Bulldozer (CAT D5 Equivalent)	170	Diesel	1					7
Survey / Potholing								
Pickup - 1/2 Ton	395	Gas	2	7	2	June 2026	February 2027	6
Pot Holing Machine (Hydro Vacuum Excavator)	525	Diesel	1					6
Vaults								
Pickup - 1/2 Ton	395	Gas	2	8	3	July 2026	January 2027	4
Pickup - 1 Ton	410	Diesel	1					6
Excavator	275	Diesel	1					6
Backhoe - 2X4	68	Diesel	1					6
Loader - 4-5Yd	275	Diesel	1					6
Compressor	100	NA	1					6
Tractor Trailer	500	Diesel	1					3
Mobile Crane	260	Diesel	2					2
Truck - Dump 10-12 Yd	415	Diesel	2					3
Truck - Water 4 K	300	Diesel	1					4

Updated Appendix 3-A: Construction Equipment and Workforce

Work Activity				Activity Production				
Equipment Description	Estimated Horsepower	Probable Fuel Type	Equipment Quantity	Estimated Workforce	Crews	Estimated Start Date	Estimated End Date	Duration of Use, Hrs./Day
Duct Bank and Restoration								
Pickup - 1/2 Ton	395	Gas	3	11	4	July 2026	September 2027	4
Pickup - 1 Ton	410	Diesel	2					6
Excavator	275	Diesel	1					6
Backhoe	68	Diesel	1					6
Loader	275	Diesel	1					6
Compressor	100	NA	1					6
Truck - Water 4 K	300	Diesel	1					6
Asphalt Paver	235	Diesel	1					2
Roller	405	Diesel	1					3
Truck - Dump 10-12 Yd	415	Diesel	2					4
Truck - Water 4 K	300	Diesel	1					4
Concrete Truck	430	Diesel	2					6
Underground Crossings								
HDD Machine	25	Diesel	1	7	2	August 2026	July 2027	6
Pickup - 1/2 Ton	395	Gas	3					
Pickup - 1 Ton	410	Diesel	2					
Excavator	275	Diesel	1					
Backhoe	68	Diesel	1					
Truck - Dump 10-12 Yd	415	Diesel	2					
Truck - Water 4 K	300	Diesel	1					
Jack and Bore Machine	67	Diesel	1	7	1	October 2026	February 2027	6
Pickup - 1/2 Ton	395	Gas	3					
Pickup - 1 Ton	410	Diesel	2					
Excavator	275	Diesel	1					
Backhoe	68	Diesel	1					
Truck - Dump 10-12 Yd	415	Diesel	2					
Truck - Water 4 K	300	Diesel	1					
Cable Install								
Pickup - 1/2 Ton	395	Gas	1	8	2	August 2027	March 2028	4
Pickup - 1 Ton	410	Diesel	1					4
Wire Trailer/ Tensioner	70	NA	2					6
Wire Puller	82	Diesel	2					6
Cable Splicing Rig	300	Diesel	1					3

Updated Appendix 3-A: Construction Equipment and Workforce

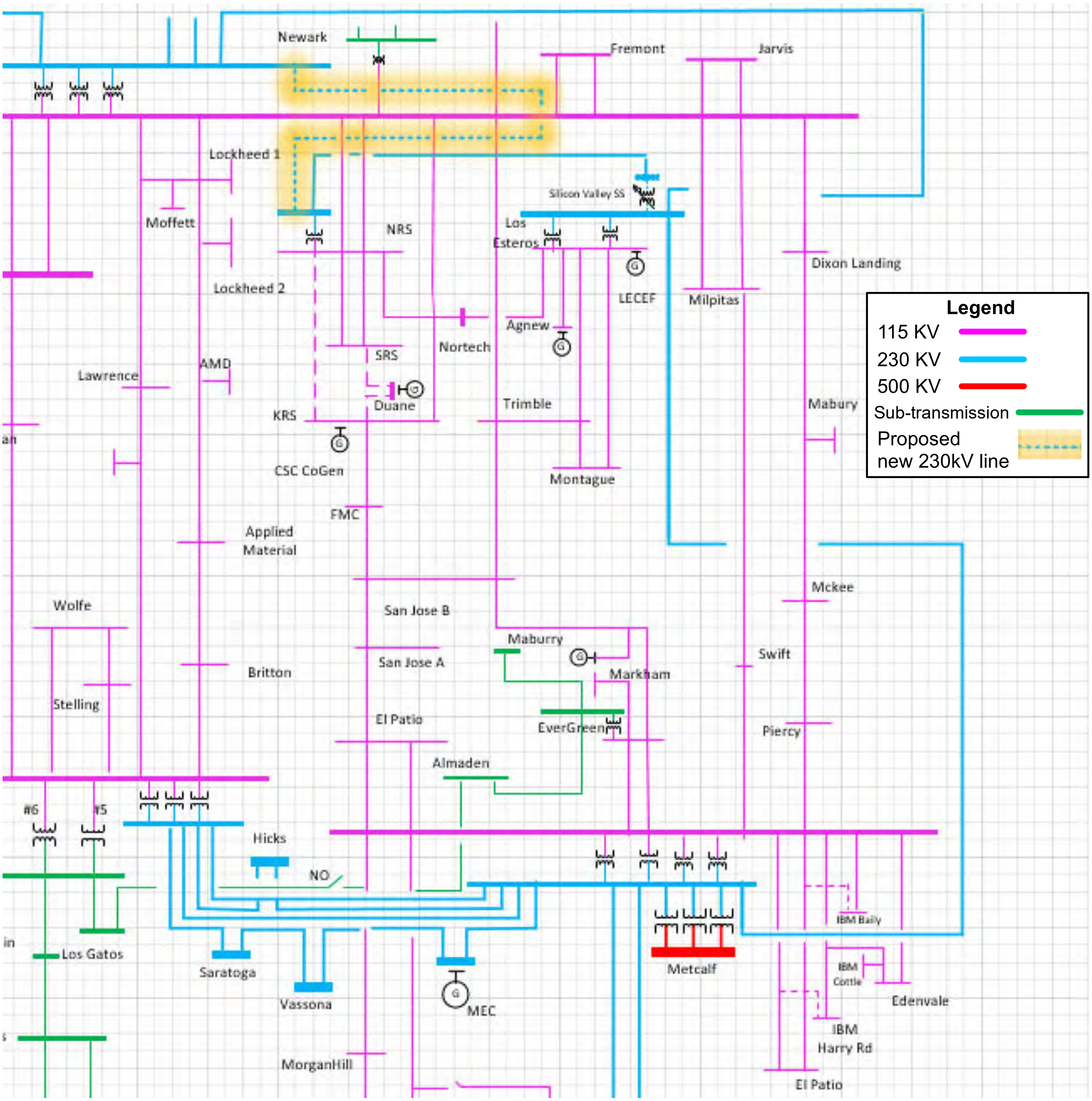
Work Activity				Activity Production				
Equipment Description	**Estimated Horsepower**	**Probable Fuel Type**	**Equipment Quantity**	**Estimated Workforce**	**Crews**	**Estimated Start Date**	**Estimated End Date**	**Duration of Use, Hrs./Day**
Overhead Transmission Line								
Surveying								
Pickup - 1/2 Ton	395	Gas	2	3	1	June 2026	June 2026	
Clearing / ROW / Access								
Truck - Water 4 K	300	Diesel	2	18	2	June 2026	September 2026	10
Loader - 4-5 Yd	275	Diesel	1					8
Truck - Dump 10-12 Yd	415	Diesel	3					5
Motor Grader	250	Diesel	1					8
Pickup - 1/2 Ton	395	Gas	1					2
Pickup - 1 Ton	410	Diesel	1					2
Backhoe	70	Diesel	1					5
Skid Steer	74.3	Diesel	2					4
Pot Holing Machine (Hydro Vacuum Excavator)	525	Diesel	1					8
Excavating Scraper	407	Diesel	1					5
Foundation / Structures / Wire								
3/4 - Ton Truck, 4x4	275	Gas	3	25	1	June 2026	February 2027	3
Pickup - 1 Ton	410	Diesel	3					3
Boom/Crane Truck	367	Diesel	1					4
Flat Bed Pole Truck	400	Diesel	1					4
Truck - Water 4 K	300	Diesel	1					10
Backhoe/Frontloader	125	Diesel	2					4
Manlift/Bucket Truck	250	Diesel	8					4
Compressor Trailer	60	Diesel	1					6
R/T Crane	367	Diesel	5					5
Jet A Fuel Truck	300	Diesel	1					1
Helicopter Support Truck	300	Diesel	1					2
Light or Medium Duty Helicopter	NA	Jet A	1					3
Wire Trailer/ Tensioner	70	NA	2					6
Wire Puller	70	Gas	2					6
Drilling Rig	82	Diesel	2					6
Conductor Splicing Rig	300	Diesel	1					3
Truck - Dump 10-12 Yd	415	Diesel	2					3
Skid Steer	74.3	Diesel	2					4
Concrete Truck	430	Diesel	2					6

Updated Appendix 3-A: Construction Equipment and Workforce								
Work Activity				**Activity Production**				
Equipment Description	**Estimated Horsepower**	**Probable Fuel Type**	**Equipment Quantity**	**Estimated Workforce**	**Crews**	**Estimated Start Date**	**Estimated End Date**	**Duration of Use, Hrs./Day**
Other								
Commissioning and Testing								
Pickup - 1/2 Ton	395	Gas	2	20	1	March 2028	June 2028	2
Pickup - 1 Ton	410	Diesel	2					2
Generator – 25 Kw	45	Diesel	2					10
Manlift - 40'	49	Diesel	3					8
Tool - Van/Conex 20'		NA	6					10
10 k Reach Forklift	130	Diesel	1					5
15 k lb Forklift	49	Diesel	1					5
PG&E Substation Upgrades and Connection								
Pickup - 1 Ton	410	Diesel	3	10	2	December 2026	February 2028	10
Forklift - 10 K Reach	130	Diesel	1					10
Excavator - Mini	70	Diesel	1					5
Loader - 4-5 Yd	275	Diesel	1					5
Pressure Digger - Lo-Drill (Tracked)	125	Diesel	2					10
Welding Truck	395	Diesel	2					2
Concrete Truck	430	Diesel	2					6
SVP Substation Upgrades and Connection								
Pickup - 1 Ton	410	Diesel	3	10	2	September 2026	February 2028	10
Forklift - 10 K Reach	130	Diesel	1					10
Excavator - Mini	70	Diesel	1					5
Loader - 4-5 Yd	275	Diesel	1					5
Pressure Digger - Lo-Drill (Tracked)	125	Diesel	2					10
Welding Truck	395	Diesel	2					2
Concrete Truck	430	Diesel	2					6

POWER THE SOUTH BAY PROJECT

Updated Figure 3-5: Transmission System of Power the South Bay Project

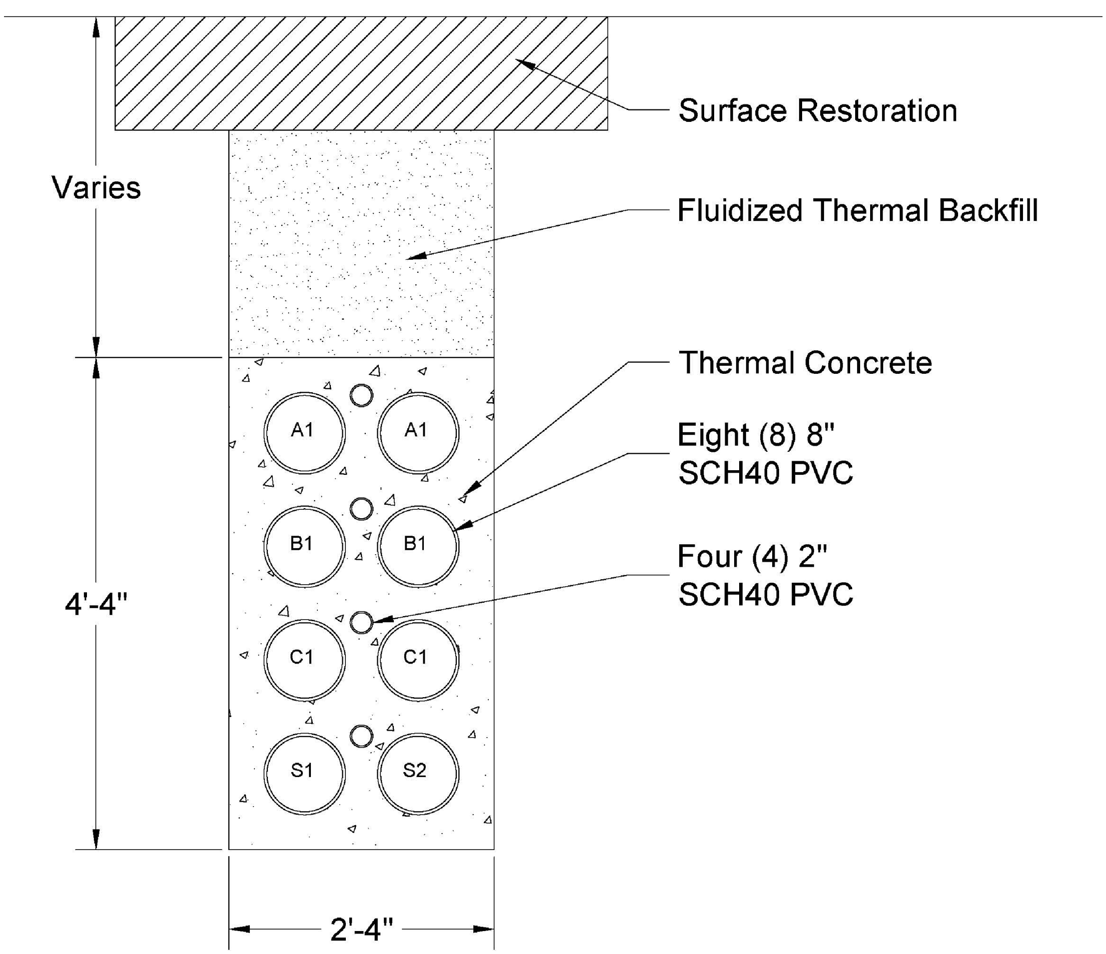
Alameda Co. and Santa Clara Co., CA



Source: CAISO, 2022; G:\LS Power Centinella\MXD\Newark PEA\Figure 3-5 Transmission System of Power the South Bay Project.mxd 111324 RCQ

Updated Figure 3-9: Typical 230 kV AC Duct Bank Configuration

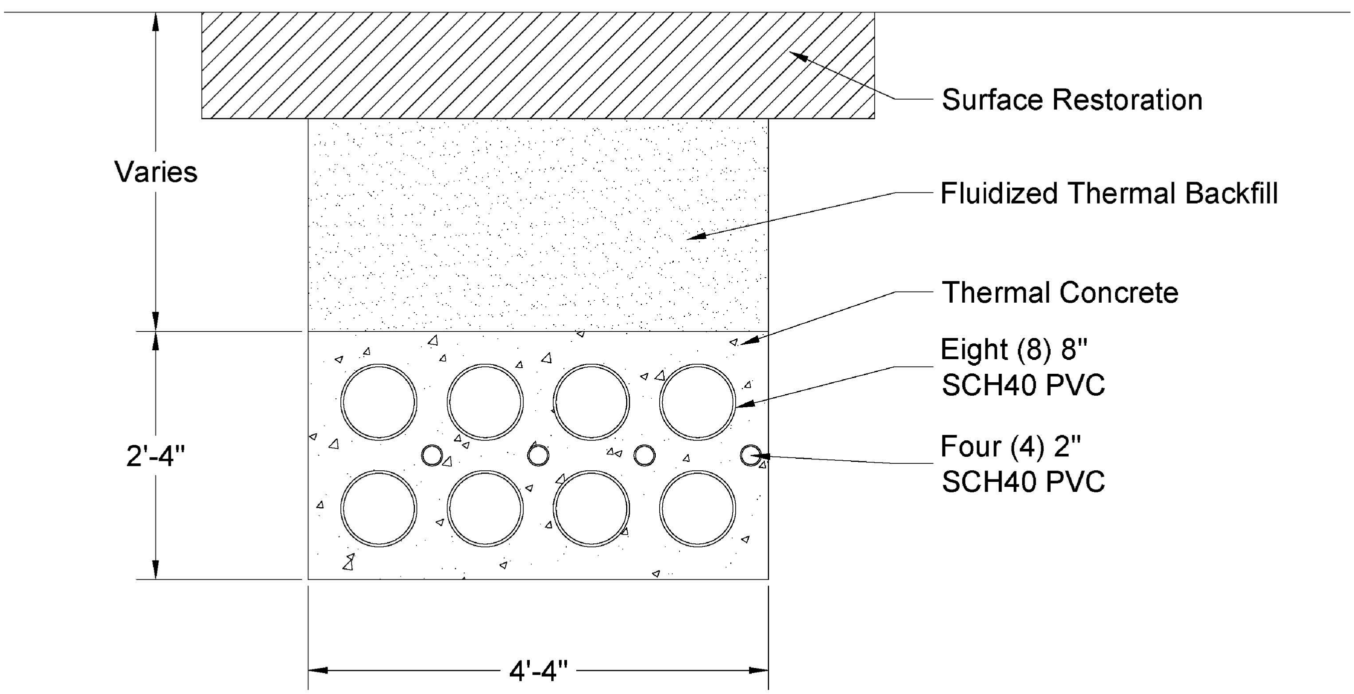
Alameda Co. and Santa Clara Co., CA



POWER THE SOUTH BAY PROJECT

Updated Figure 3-9: Typical 230 kV AC Duct Bank Configuration - Horizontal

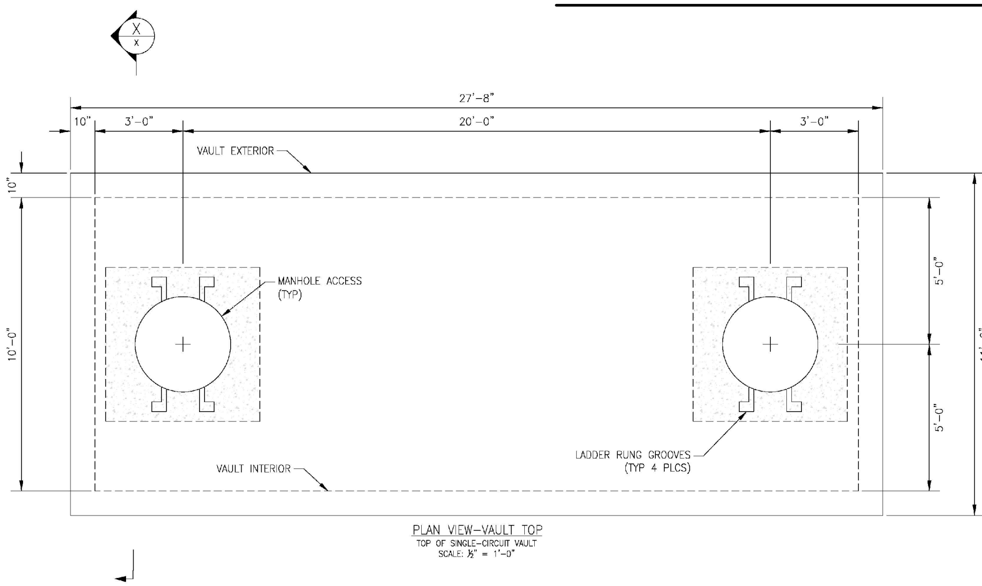
Alameda Co. and Santa Clara Co., CA



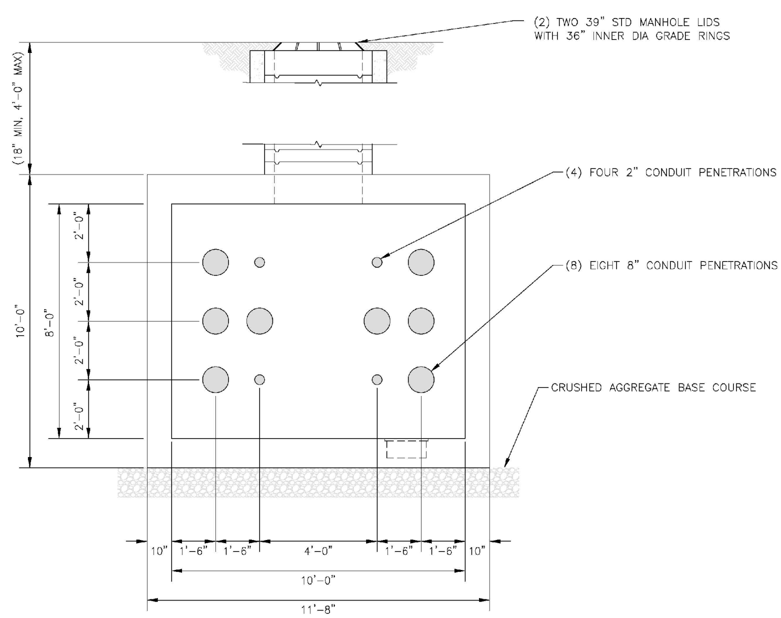
POWER THE SOUTH BAY PROJECT

Updated Figure 3-10: Typical 230 kV AC Splice Vault

Alameda Co. and Santa Clara Co., CA



PLAN VIEW–VAULT TOP
TOP OF SINGLE-CIRCUIT VAULT
SCALE: ½" = 1'-0"



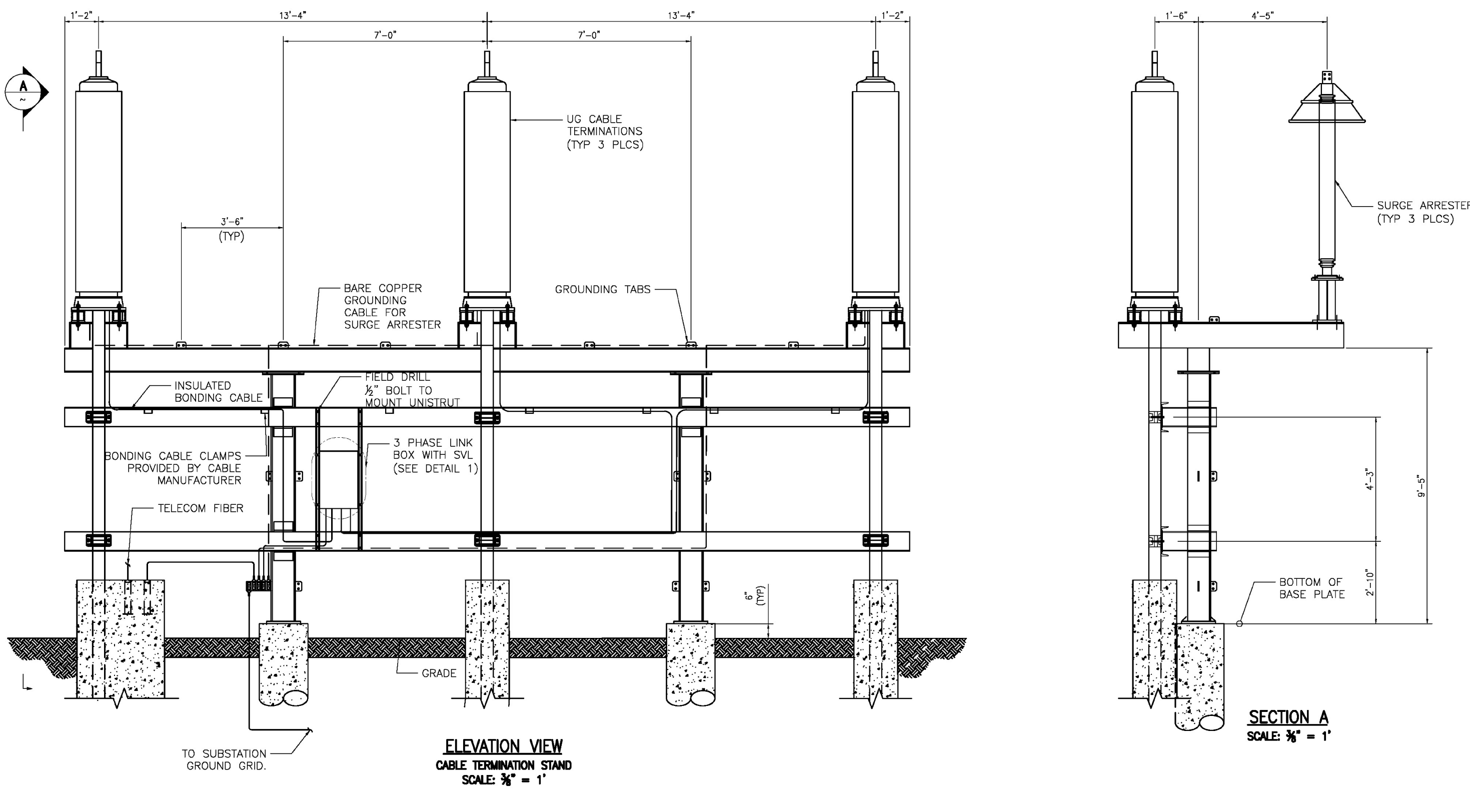
SECTION X
END VIEW OF SINGLE-CIRCUIT VAULT
SCALE: ½" = 1'-0"

Source:LSPGC, 2023; G:\LS Power Centinella\MXD\Newark PEA\Figure 3-10 Typical Splice Vault 230kV 011824.mxd 112024 RCQ

POWER THE SOUTH BAY PROJECT

Updated Figure 3-11: Typical 230 kV AC Substation Termination / Riser Structure

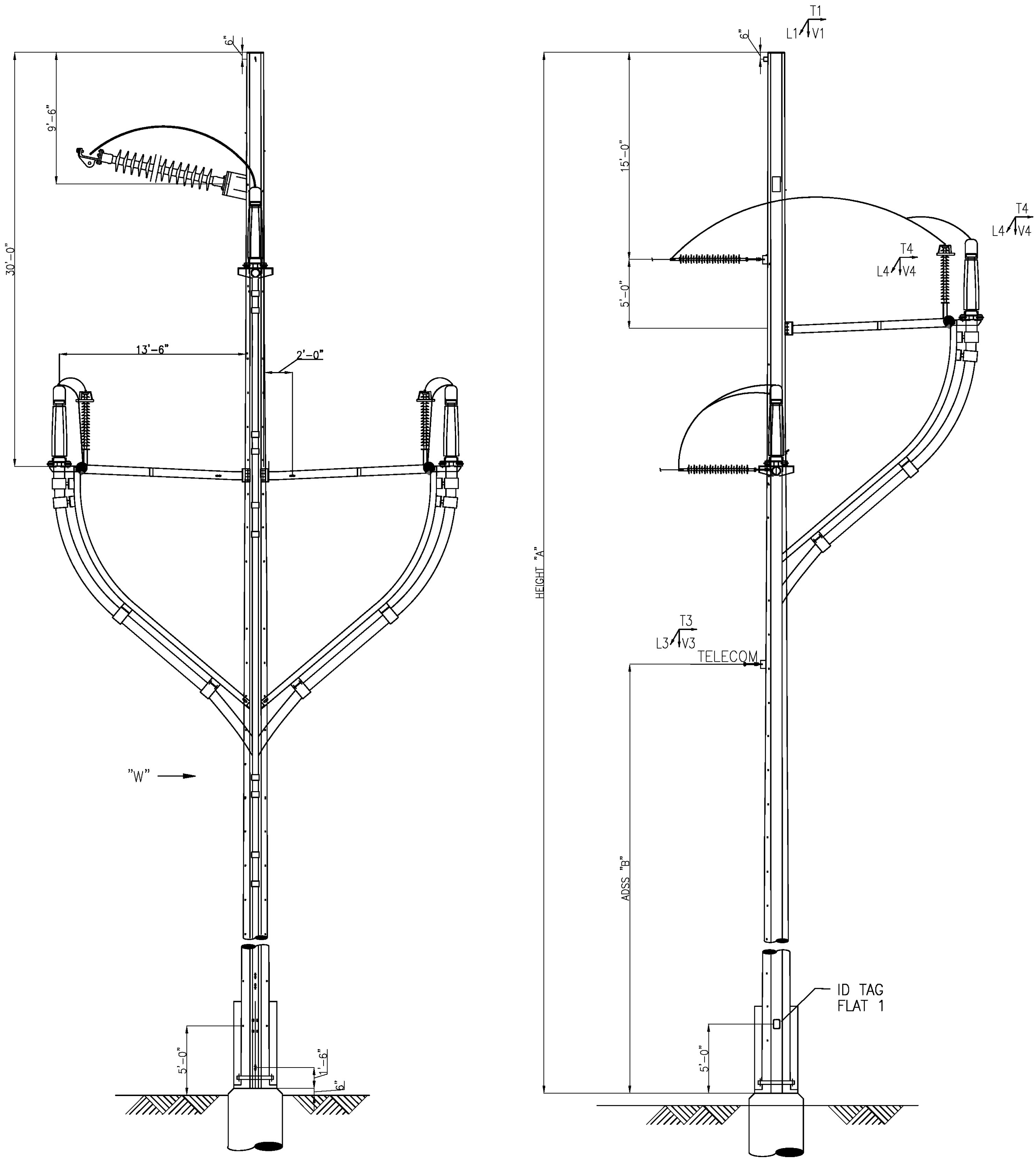
Alameda Co. and Santa Clara Co., CA



POWER THE SOUTH BAY PROJECT

Updated Figure 3-11: Typical 230 kV AC Cable Riser Pole

Alameda Co. and Santa Clara Co., CA

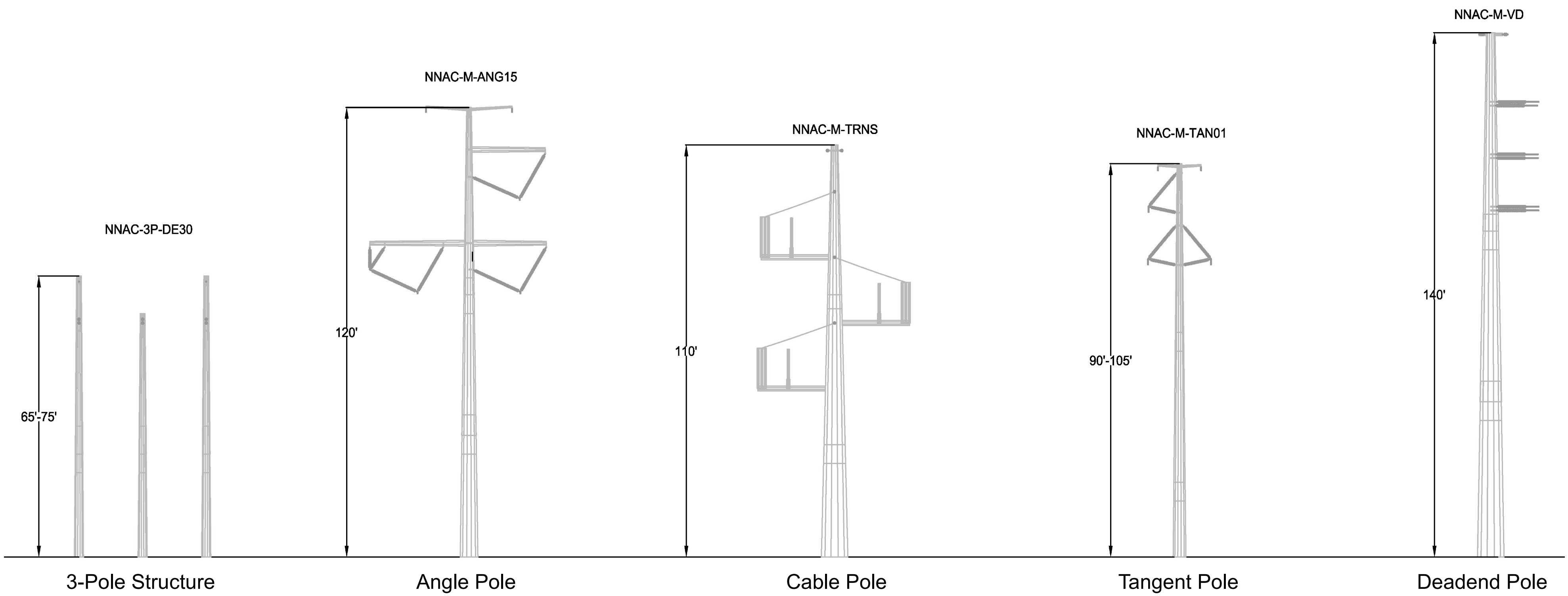


Source:LSPGC, 2023; G:\LS Power Centinella\MXD\Schematics\Figure 3-11 Typical 230kV AC Termination Riser Structures 3.mxd 021324 RCQ

POWER THE SOUTH BAY PROJECT

Updated Figure 3-12: Typical 230 kV AC Overhead Transmission Line Structures

Alameda Co. and Santa Clara Co., CA

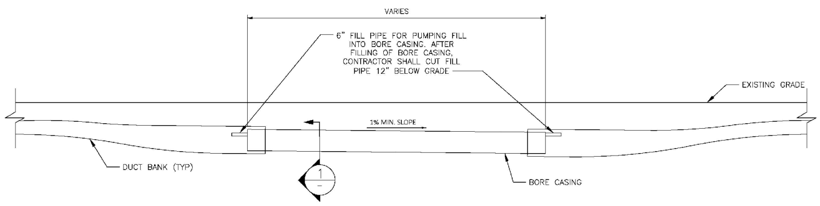


Source:LSPGC, 2023; G:\LS Power Centinella\MXD\Schematics\Figure 3-12 Typical 230 kV AC Overhead Transmission Line Structures 111523.mxd 021324 RCQ

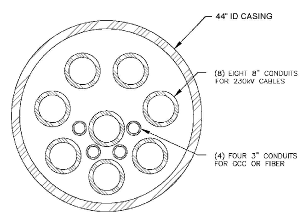
POWER THE SOUTH BAY PROJECT

Updated Figure 3-13: Typical 230 kV Horizontal Bore (Jack and Bore and Microtunnelling) Diagrams - Option 1

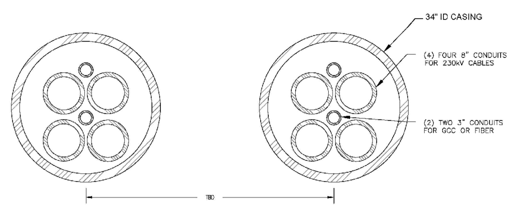
Alameda Co. and Santa Clara Co., CA



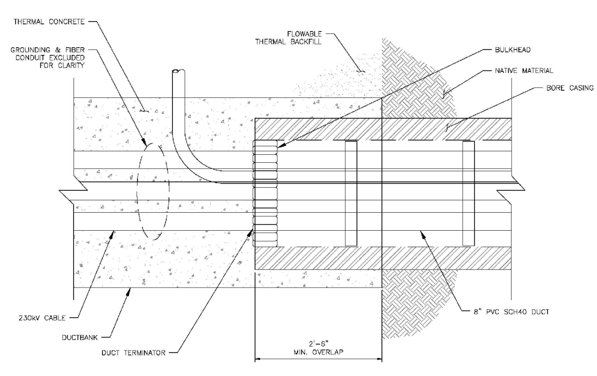
TYPICAL JACK AND BORE INSTALLATION
SCALE: NTS



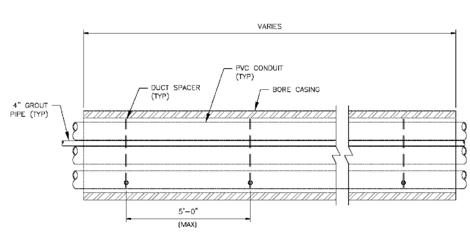
SECTION 1 BORE CASING
SCALE: NTS



SECTION 2 BORE CASING
SCALE: NTS



TYPICAL BORE CASING/DUCTBANK INTERFACE
SCALE: NTS

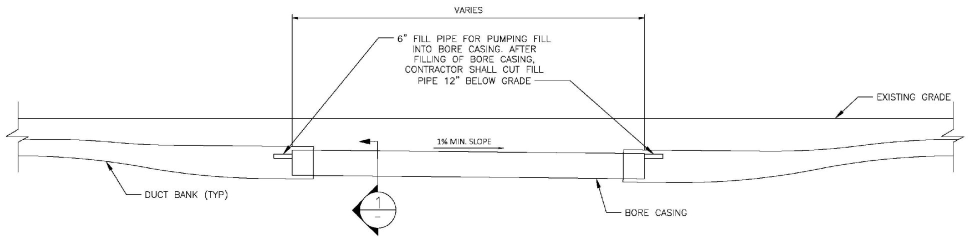


TYPICAL BORE CASING – SIDE VIEW
SCALE: NTS

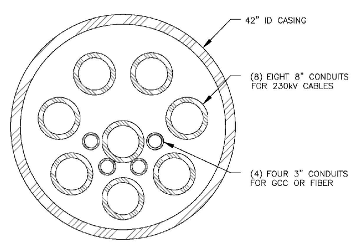
POWER THE SOUTH BAY PROJECT

Updated Figure 3-13: Typical 230 kV Horizontal Bore (Jack and Bore and Microtunnelling) Diagrams - Option 2

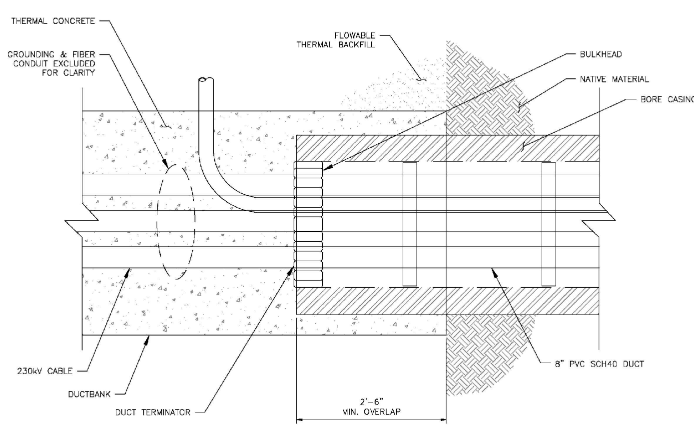
Alameda Co. and Santa Clara Co., CA



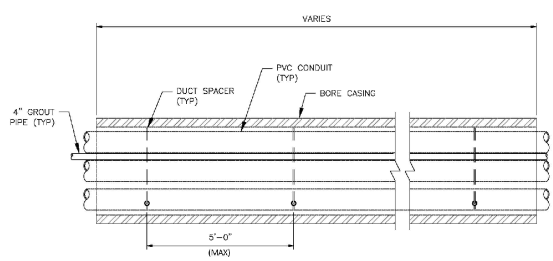
TYPICAL JACK AND BORE INSTALLATION
SCALE: NTS



SECTION 1 BORE CASING
SCALE: NTS



TYPICAL BORE CASING/DUCTBANK INTERFACE
SCALE: NTS

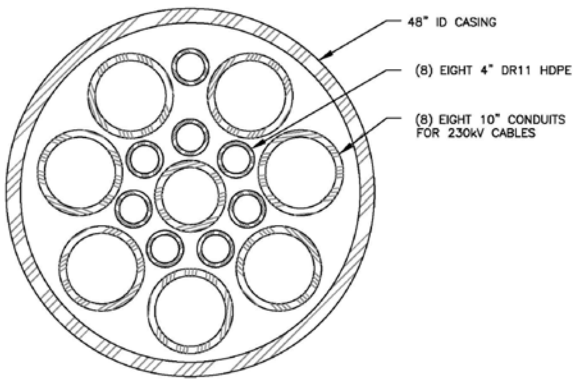


TYPICAL BORE CASING – SIDE VIEW
SCALE: NTS

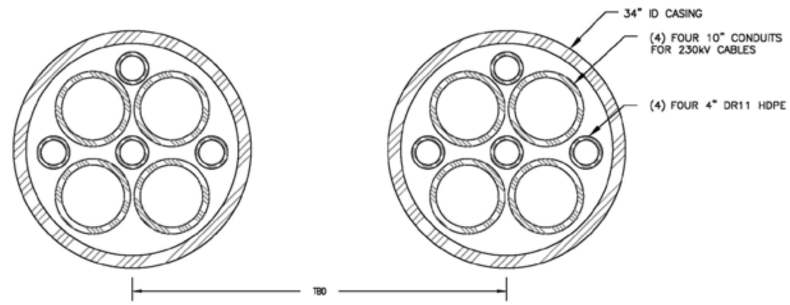
POWER THE SOUTH BAY PROJECT

Updated Figure 3-14: Typical HDD Diagram

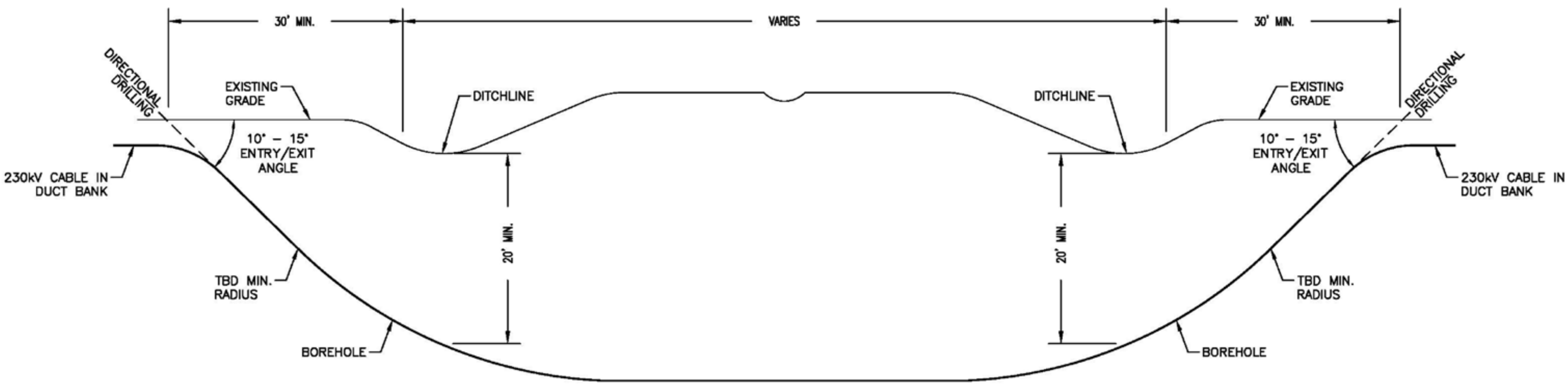
Alameda Co. and Santa Clara Co., CA



SECTION 1 HDD CASING
SCALE: NTS



SECTION 2 HDD CASING
SCALE: NTS

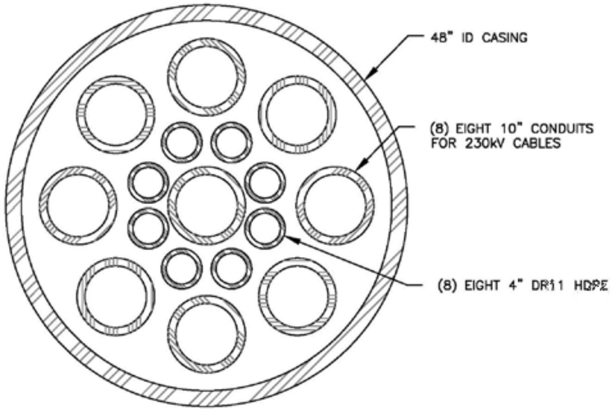


TYPICAL HDD PROFILE
SCALE: NTS

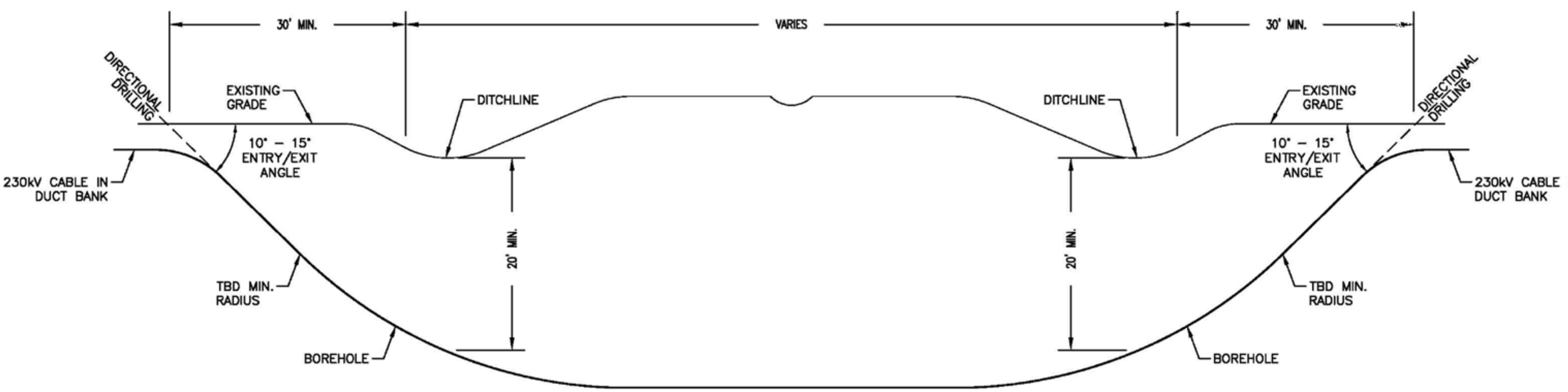
POWER THE SOUTH BAY PROJECT

Updated Figure 3-14: Typical HDD Diagram

Alameda Co. and Santa Clara Co., CA



HDD CASING
SCALE: NTS



TYPICAL HDD PROFILE
SCALE: NTS

5.3 AIR QUALITY

Where available, the significance criteria by the applicable air quality management district or air pollution control district may be relied upon to the following determinations. Would the project:		Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a.	Conflict with or obstruct implementation of the applicable air quality plan?			X	
b.	Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?			X	
c.	Expose sensitive receptors to substantial pollutant concentrations?			X	
d.	Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?			X	

This section describes the existing air quality within the vicinity of the Proposed Project as well as potential impacts to air quality that could result from construction and operation and maintenance (O&M) of the Proposed Project. The Proposed Project intends to install a transmission line and connect to existing substations. **Operations** at the existing substations would not increase from this Proposed Project. Operation of the new transmission line would be remote, and the transmission line would not require regular inspection or maintenance that would result in daily emissions. Therefore, operation and maintenance (O&M) emissions would be considered to be consistent with existing conditions, and would have a less than significant impact.

5.3.1 ENVIRONMENTAL SETTING

The Proposed Project is located in the Cities of Fremont, Milpitas, San José, and Santa Clara, California, and the Proposed Project encompasses four zonal areas. The Proposed Project includes the construction of a ~~to include two~~ new 230 kilovolt (kV) alternating~~high-voltage direct~~ current (AC)~~HVDC) terminals (the proposed Albrae and Baylands terminals) and associated~~ transmission line~~lines~~ between the existing ~~Pacific Gas and Electric Company (PG&E) Newark substation and the existing~~ Silicon Valley Power (SVP) Northern Receiving Station (NRS) substation and the existing Pacific Gas and Electric Company (PG&E) Newark substation.

~~**Transmission Lines**~~

The proposed Newark to NRS 230 kV AC transmission line is located within the City of Fremont, City of Milpitas, the City of San José, and the City of Santa Clara and would connect the existing Newark and NRS substations. The new transmission line would be approximately 12~~seven~~ miles in length and would include both underground and overhead segments (refer to the **Updated GIS Database**).~~apart.~~

Albrae Terminal and Newark Substation ~~The transmission line alignment, which includes all portions of the transmission lines from the Newark substation to the NRS substation, are analyzed as one area that would traverse the Cities of Fremont, Milpitas, San José, and Santa Clara, California.~~ The closest sensitive receptors would be residential uses along the alignment which could be as close as 20 feet from the proposed transmission line with the closest being near the existing NRS substation. General aerial images showing the transmission line alignment for this Proposed Project are provided in the **Updated GIS Database**.

Newark Substation

~~The Proposed Project seeks to construct the Albrae terminal approximately 0.2 mile northeast of the existing Newark substation. The proposed Albrae terminal site and the existing Newark substation are located in the City of Fremont. The proposed Albrae terminal site is approximately 6.1 acres. The site is located north of Weber Road and west of Boyce Road, approximately 0.8 mile west of Interstate (I)-880.~~

~~The Proposed Project would include an approximately 0.4-mile 230 kilovolt (kV) transmission line between the proposed Albrae terminal and existing Newark substation. The proposed transmission line would leave the proposed Albrae terminal in an underground position for approximately 0.2 mile and would then transition to an overhead position for approximately 0.2 mile to enter into the existing Newark substation.~~

In order to facilitate the new~~proposed Newark to Albrae 230 kV~~ transmission lines at the Newark substation~~line~~, PG&E would need to relocate existing distribution structures and add new~~within their property to accommodate the new connection. Additionally, to provide a point of interconnection for the new Newark to Albrae 230 kV transmission line, PG&E would need to add~~ electrical infrastructure to support the termination of the new transmission line within the existing Newark substation fence line.

~~The sites for the proposed Albrae terminal and the existing Newark substation are relatively close and are treated as one area for this analysis. The combined sites are surrounded by general industrial uses.~~ General aerial images showing the ~~proposed Albrae terminal and the existing~~ Newark substation are provided in the **Updated GIS Database**. ~~**Figures 5.3-1**, *Albrae Terminal and Newark Substation* and **3-7a**, *Albrae Terminal General Arrangement*.~~

~~**Baylands Terminal**~~

~~The Proposed Project seeks to construct the Baylands terminal within a 9.2-acre site located approximately 0.5 mile north of State Route (SR)-237, approximately 1.8 miles west of I-880, and approximately 1.77 miles northeast of the existing NRS substation. The proposed Baylands terminal would be located south of Los Esteros Road and west of the San José-Santa Clara Regional Wastewater Facility (RWF). The site is located within the City of San José and is zoned for Planned Development Single Family Residential uses.~~

~~Surrounding land uses consist of Los Esteros Road and a recycling trash center to the north, San José-Santa Clara RWF to the east, and undeveloped land to the south and west. The closest sensitive receptors are the residences approximately one mile west and northwest of the Proposed Project site. The construction around the proposed Baylands was modeled separately within this air quality analysis. General aerial images showing the proposed Baylands terminal~~

~~location are provided in **Figures 5.3-2**, *Baylands Terminal* and **3-7b**, *Baylands Terminal General Arrangement*.~~

NRS Substation

~~To provide a point of interconnection for the new Baylands to NRS 230 kV transmission line (see below),~~ SVP needs to add electrical infrastructure to support the termination of the new transmission line within the existing NRS substation.~~, located approximately 1.77 miles southwest of the proposed Baylands terminal.~~ The existing NRS substation is surrounded by Levi's Stadium and a training facility to the north, the City of Santa Clara's water utilities to the west, and residential developments to the south and east. This area is analyzed separately within this analysis. An aerial image showing the existing NRS substation is provided in the **Updated GIS Database**~~**Figure 5.3-3**, *NRS Substation*~~.

Transmission Lines

~~The Proposed Project includes the new Albrae to Baylands 320 kV direct current (DC) transmission line that would connect the proposed Albrae terminal to the proposed Baylands terminal (refer to **Figures 3-3**, *Project Overview* and **3-4**, *Project Route Map*). The proposed Albrae to Baylands 320 kV DC transmission line would be approximately 8.6 miles in length and includes both overhead and underground segments. The underground alignment would start at the proposed Albrae terminal and continue southeast for approximately 6.7 miles. The overhead alignment would be approximately 1.9 miles in length, starting south of McCarthy Boulevard (approximately 0.1 mile south from its intersection with Dixon Landing Road) and would continue in a south/southwest direction towards Los Esteros Road to span across the San José-Santa Clara RWF existing wastewater drying ponds. The alignment would transition back underground within Los Esteros Road for approximately 0.9 mile to its terminus at the proposed Baylands terminal site.~~

~~The proposed Newark to Albrae 230 kV transmission line would be approximately 0.4 mile in length (approximately 0.2 mile of underground alignment and approximately 0.2 mile of overhead alignment) and would connect the proposed Albrae terminal to the existing Newark substation. Starting from the proposed Albrae terminal, the new Newark to Albrae 230 kV transmission line would exit in an underground position and would follow Weber Road south, until turning east and transitioning to an overhead position until connecting with the existing Newark substation.~~

~~The proposed Baylands to NRS 230 kV transmission line would be approximately 3.5 miles and would connect the proposed Baylands terminal to the existing NRS substation. The new Baylands to NRS 230 kV transmission line would consist of approximately 0.2 mile of overhead alignment and approximately 3.3 miles of underground alignment. The underground portions of the proposed Baylands to NRS 230 kV transmission line would be located mainly within existing roads, parking lots, and other disturbed or developed areas. The overhead proposed Baylands to NRS 230 kV transmission line would span over the Guadalupe River and would consist of two tubular steel poles.~~

The transmission line alignment, which includes all portions of the transmission lines from the Newark substation to the NRS substation, are analyzed as one area that would traverse the Cities of Fremont, Milpitas, San José, and Santa Clara, California. ~~The closest sensitive receptors would be residential uses approximately 20 feet from the proposed underground Baylands to NRS 230 kV transmission line near the existing NRS substation. General aerial images showing the~~

~~transmission line alignment for this Proposed Project are provided in **Figures 5.3-4**, *Transmission Line Alignment* and **3-4**.~~

Staging Areas

Construction equipment along the proposed transmission line corridor would be stored within staging areas along the alignment (see **Updated GIS Database**).~~**Figure 5.3-4**).~~ No significant construction activities would occur at these locations. These locations would be expected to have a crane and rough terrain forklift to unload and load materials. Given this, sensitive receptors located near the fixed construction areas (such as the ~~proposed terminals and~~ existing substations) that do include significant construction activities would be considered worst-case. Short-term air quality emissions demonstrated at these locations ~~shown in **Figures 5.3-1** through **5.3-3**~~ could be assumed to represent any potential receptors on the alignment. No long-term air quality impacts, such as health risk, would be anticipated at the staging areas.

5.3.1.1 Air Quality Plans

The State of California has 35 specific air districts, which are each responsible for ensuring that the criteria pollutants are below the National Ambient Air Quality Standards (NAAQS) and the California Ambient Air Quality Standards (CAAQS). Air basins that exceed either the NAAQS or the CAAQS for any criteria pollutants are designated as "non-attainment areas" for that pollutant. Currently, there are 15 non-attainment areas for the federal ozone standard and two non-attainment areas for particulate matter (PM) 2.5 micron and smaller standard, and many areas are in nonattainment for PM10 micron and smaller standard as well. As a result, the State of California created the California State Implementation Plan (SIP), which is designed to provide control measures needed to attain ambient air quality standards.

The Proposed Project encompasses various areas located within the Cities of Fremont, Milpitas, San José, and Santa Clara, which are all located within the Bay Area Air Quality Management District (BAAQMD) jurisdictional entity that is responsible for implementing the SIP. The BAAQMD developed an air quality management plan along with ambient air quality standards for ozone (O_3), carbon monoxide (CO), particulate matter (PM10), and certain toxic air pollutants (BAAQMD, 2017) and attainment of pollutants. The attainment status of pollutants managed by the BAAQMD are shown in **Table 5.3-1**, *BAAQMD Attainment Status by Pollutant*.

Table 5.3-1: BAAQMD Attainment Status by Pollutant

Criteria Pollutant	Federal Designation	State Designation
Ozone (8-Hour)	Non-attainment	Non-attainment
PM10	Unclassified	Non-attainment
PM2.5	Unclassified/Attainment	Non-attainment
Carbon Monoxide	Attainment	Attainment
Nitrogen Dioxide	Attainment	Attainment
Sulfur Dioxide	Status Not Reported	Attainment
Lead	Unclassified/Attainment	Attainment
Hydrogen Sulfide	No Federal Standard	Unclassified
Sulfates	No Federal Standard	Attainment
Visibility	No Federal Standard	Unclassified
Source: BAAQMD, 2017		

5.3.1.2 Air Quality

Criteria Pollutants

The Proposed Project is located within the San Fransisco Air Basin (SFAB). Criteria pollutants are measured using monitoring equipment in various locations (stations) throughout the SFAB. This data is used to determine attainment status when compared to the NAAQS and CAAQS. The BAAQMD is responsible for monitoring and reporting monitoring data, and the California Air Resources Board (CARB) data is updated yearly (CARB, 2020). **Table 5.3-2**, *Three-Year Ambient Air Quality Summary SFAB* identifies the criteria pollutants monitored by BAAQMD within the Cities of Fremont, Milpitas, San José, and Santa Clara.

Table 5.3-2: Three-Year Ambient Air Quality Summary SFAB

Pollutant	Averaging Time	CAAQS	NAAQS	2020	2021	2022
O_3 (parts per million [ppm])	1 Hour	0.09 ppm	No Standard	0.116	0.113	0.122
	8 Hour	0.070 ppm	0.070 ppm	0.092	0.086	0.079
PM10 (µg/m3)	24 Hour	50 µg/m3	150 µg/m3	165.4	42.8	41.1
	Annual Arithmetic Mean	20 µg/m3	No Standard	23.3	20.1	21.3
PM2.5 (µg/m3)	24 Hour	No Standard	35 µg/m3	167.7	45.0	37.3
	Annual Arithmetic Mean	12 µg/m3	15 µg/m3	12.5	10.9	10.1
NO_2 (ppm)	Annual Arithmetic Mean	0.030 ppm	0.053 ppm	0.013	0.012	0.013
	1 Hour	0.18 ppm	0.100 ppm	0.065	0.051	0.051

Source: CARB, 2023a

5.3.1.3 Sensitive Receptor Locations

~~Albrae Terminal and~~ Newark Substation

Based on review of the Proposed Project area ~~at both the proposed Albrae terminal and the existing Newark substation~~, no sensitive receptors are identified in the immediate area of the existing Newark substation (see **Updated GIS Database**).~~(refer to **Figure 5.3-1**). However,~~ the closest sensitive receptors are residences located approximately 0.3 mile to the northwest.

~~Baylands Terminal~~

~~Based on review of the Proposed Project area at the proposed Baylands terminal, no sensitive receptors are identified in the immediate area (refer to **Figure 5.3-2**). However, the closest sensitive receptors are residences located approximately 0.5 mile to the west.~~

NRS Substation

Based on review of the Proposed Project area, residential uses exist to the east and south of the existing NRS substation. The closest sensitive receptors are the residences approximately 82 feet to the south. There are also residences approximately 227 feet to the east. The Proposed Project construction on-site would have the potential to expose sensitive receptors to construction emissions. A graphical representation of the existing NRS substation site is shown in the **Updated GIS Database**.~~**Figure 5.3-5**, *NRS Substation Nearby Sensitive Receptors.*~~ Receptor locations 1 through 4 represent the closest sensitive receptor locations (residences) to the existing NRS substation.

Transmission Lines

Construction of the proposed transmission lines would occur along the alignment shown in the **Updated GIS Database**.~~**Figure 5.3-4**.~~ Due to the quick transitory movement for work within the proposed transmission line corridor, equipment would be moving linearly over short durations at any given location. The closest sensitive receptors are residential uses approximately 20 feet from the proposed underground ~~Baylands to NRS 230 kV~~ transmission line near the existing NRS substation. Sensitive receptors located near the fixed construction areas (the ~~proposed terminals and~~ existing substations) would be considered worst-case, and any short-term air quality emissions demonstrated at locations near the existing NRS substation and underground line shown in the **Updated GIS Database**~~**Figure 5.3-5**~~ could be assumed to represent any potential receptors on the alignment. No long-term air quality impacts, such as health risks, would be anticipated to occur along the proposed transmission line routes because construction activities would only occur in proximity to individual receptors for short periods of time.

Staging Areas

Construction equipment along the proposed transmission line corridor would be stored within staging areas along the alignment. No significant construction activities would occur at these locations. These locations would be expected to have a crane and rough terrain forklift to unload and load materials. Given this, sensitive receptors located near the fixed construction areas, such as that expected surrounding the existing NRS substation, would be considered worst-case. Any short-term air quality emissions demonstrated at these locations shown in the **Updated GIS Database**~~**Figures 5.3-1** through **5.3-3**~~ could be assumed to represent any potential receptors on the alignment. No long-term air quality impacts, such as health risk, would be anticipated at the staging areas.

5.3.2 Regulatory Setting

Federal, state, and local regulations were evaluated with respect to the Proposed Project.

5.3.2.1 Air Quality Regulatory Setting

Federal

Federal Clean Air Act

The Federal Air Quality Standards were developed per the requirements of the Federal Clean Air Act (CAA), which is a federal law that was passed in 1970 and further amended in 1990. This law provides the basis for the national air pollution control effort. An important element of the CAA included the development of NAAQS for major air pollutants.

The CAA established two types of air quality standards, otherwise known as primary and secondary standards. Primary standards set limits for the intention of protecting public health, which includes sensitive populations such as asthmatics, children, and the elderly. Secondary standards set limits to protect public welfare to include the protection against decreased visibility, damage to animals, crops, vegetation, and buildings.

The Environmental Protection Agency (EPA) Office of Air Quality Planning and Standards has set NAAQS for principal pollutants, which are called "criteria" pollutants. These pollutants are defined below:

- **Carbon Monoxide (CO)** is a colorless, odorless, and tasteless gas and is produced from the partial combustion of carbon-containing compounds, notably in internal-combustion engines. CO usually forms when there is a reduced availability of oxygen present during the combustion process. Exposure to CO near the levels of the ambient air quality standards can lead to fatigue, headaches, confusion, and dizziness. CO interferes with the blood's ability to carry oxygen.

- **Lead (Pb)** is a potent neurotoxin that accumulates in soft tissues and bone over time. The major sources of lead emissions have historically been motor vehicles (such as cars and trucks) and industrial sources. Because lead is only slowly excreted, exposures to small amounts of lead from a variety of sources can accumulate to harmful levels. Effects from inhalation of lead near the level of the ambient air quality standard include impaired blood formation and nerve conduction. Lead can adversely affect the nervous, reproductive, digestive, immune, and blood-forming systems. Symptoms can include fatigue, anxiety, short-term memory loss, depression, weakness in the extremities, and learning disabilities in children.

- **Nitrogen Dioxide (NO_2)** is a reactive, oxidizing gas capable of damaging cells lining the respiratory tract and is one of the nitrogen oxides emitted from high-temperature combustion, such as those occurring in trucks, cars, power plants, home heaters, and gas stoves. In the presence of other air contaminants, NO_2 is usually visible as a reddish-brown air layer over urban areas. NO_2 along with other traffic-related pollutants is associated with respiratory symptoms, respiratory illness, and respiratory impairment. Studies in animals have reported biochemical, structural, and cellular changes in the lung when exposed to NO_2 above the level of the current state air quality standard. Clinical studies of human subjects suggest that NO_2 exposure to levels near the current standard may worsen the effect of allergens in allergic asthmatics, especially in children.

- **Particulate Matter (PM10 or PM2.5)** is a complex mixture of tiny particles that consists of dry solid fragments, solid cores with liquid coatings, and small droplets of liquid. These particles vary in shape, size, and chemical composition and can be made up of multiple materials, such as metal, soot, soil, and dust. PM10 particles are 10 microns (µm) or less and PM2.5 particles are 2.5 µm or less. These particles can contribute significantly to regional haze and reduction of visibility in California. Exposure to PM levels exceeding current air quality standards increases the risk of allergies, such as asthma and respiratory illness.

- **Ozone (O_3)** is a highly oxidative unstable gas capable of damaging the linings of the respiratory tract. This pollutant forms in the atmosphere through reactions between chemicals directly emitted from vehicles, industrial plants, and many other sources. Exposure to ozone above ambient air quality standards can lead to human health effects, such as lung inflammation, tissue damage and impaired lung functioning. Ozone can also damage materials such as rubber, fabrics, and plastics.

- **Sulfur Dioxide (SO_2)** is a gaseous compound of sulfur and oxygen and is formed when sulfur-containing fuel is burned by mobile sources, such as locomotives, ships, and off-road diesel equipment. SO_2 is also emitted from several industrial processes, such as petroleum refining and metal processing. Effects from SO_2 exposures at levels near the one-hour standard include bronchoconstriction accompanied by symptoms, which may include wheezing, shortness of breath, and chest tightness, especially during exercise or physical activity. Children, the elderly, and people with asthma, cardiovascular disease, or chronic lung disease (such as bronchitis or emphysema) are most susceptible to these symptoms. Continued exposure at elevated levels of SO_2 results in increased incidence of pulmonary symptoms and disease, decreased pulmonary function, and increased risk of mortality.

State

California Air Resources Board

CARB sets the laws and regulations for air quality on the state level. CAAQS is similar to the NAAQS and also restricts four additional contaminants. **Table 5.3-3**, *Ambient Air Quality Standards* below identifies both the NAAQS and CAAQS.

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Table 5.3-3: Ambient Air Quality Standards						
Pollutant	**Duration**	**California Standards[1]**		**Federal Standards[2]**		
		Concentration[3]	Method[4]	Primary[3,5]	Secondary[3,6]	Method[7]
Ozone (O_3)[8]	1 Hour	0.09 ppm (180 µg/ m3)	Ultraviolet Photometry	-	Same as Primary Standard	Ultraviolet Photometry
	8 Hour	0.070 ppm (137 µg/m3)		0.070 ppm (137 µg/m3)		
Respirable Particulate Matter (PM10)[9]	24 Hour	50 µg/m3	Gravimetric or Beta Attenuation	150 µg/m3	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	20 µg/m3		-		
Fine Particulate Matter (PM2.5)[9]	24 Hour	No Separate State Standard		35 µg/m3	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	12 µg/m3	Gravimetric or Beta Attenuation	12 µg/m3	15 µg/m3	
Carbon Monoxide (CO)	8 hour	9.0 ppm (10mg/m3)	Non-Dispersive Infrared Photometry (NDIR)	9 ppm (10 mg/m3)	-	Non-Dispersive Infrared Photometry
	1 hour	20 ppm (23 mg/m3)		35 ppm (40 mg/m3)		
Nitrogen Dioxide (NO_2)[10]	Annual Arithmetic Mean	0.030 ppm (57 µg/m3)	Gas Phase Chemiluminescenc e	0.053 ppm (100 µg/m3)[8]	Same as Primary Standard	Gas Phase Chemiluminescenc e
	1 Hour	0.18 ppm (339 µg/m3)		0.100 ppm[8] (188/ µg/m3)	-	
Sulfur Dioxide (SO_2)[11]	Annual Arithmetic Mean	-	Ultraviolet Fluorescence	0.030 ppm[10] (for Certain Areas)	-	Ultraviolet Flourescence; Spectrophotometry (Pararoosaniline Method)[9]
	24 Hour	0.04 ppm (105 µg/m3)		0.14 ppm[10] (for Certain Areas) (See Footnote 9)	-	
	3 Hour	-		-	0.5 ppm (1300 µg/m3)	
	1 Hour	0.25 ppm (655 µg/m3)		75 ppb (196 µg/m3)	-	
Lead[12,13]	30 Day Average	1.5 µg/m3	Atomic Absorption	-		-
	Calendar Quarter	-		1.5 µg/m3	Same as Primary Standard	High Volume Sampler and Atomic Absorption
	Rolling 3-Month Average	-		0.15 µg/m3		
Visibility Reducing Particles	8 Hour	See footnote 14				
Sulfates	24 Hour	25 µg/m3	Ion Chromatography			
Hydrogen Sulfide	1 Hour	0.03 ppm (42 µg/m3)	Ultraviolet Fluorescence			
Vinyl Chloride[12]	24 Hour	0.01 ppm (26 µg/m3)	Gas Chromatography			

1. California standards for ozone, carbon monoxide (except 8-hour Lake Tahoe), sulfur dioxide (1 and 24 hour), nitrogen dioxide, and particulate matter (PM10, PM2.5, and visibility reducing particles), are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.
2. National standards (other than ozone, particulate matter, and those based on annual arithmetic mean) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest 8-hour concentration measured at each site in a year, averaged over three years, is equal to or less than the standard. For PM10, the 24-hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 µg/m3 is equal to or less than one. For PM2.5, the 24-hour standard is attained when 98 percent of the daily concentrations, averaged over three years, are equal to or less than the standard. Contact the U.S. EPA for further clarification and current national policies.
3. Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of 25°C and a reference pressure of 760 torr. Most measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 torr; ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.
4. Any equivalent procedure which can be shown to the satisfaction of the CARB to give equivalent results at or near the level of the air quality standard may be used.
5. National Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health.
6. National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.
7. Reference method as described by the U.S. EPA. An "equivalent method" of measurement may be used but must have a "consistent relationship to the reference method" and must be approved by the U.S. EPA.
8. On October 1, 2015, the national 8-hour ozone primary and secondary standards were lowered from 0.075 to 0.070 ppm.
9. On December 14, 2012, the national annual PM2.5 primary standard was lowered from 15 µg/m3 to 12.0 µg/m3. The existing national 24- hour PM2.5 standards (primary and secondary) were retained at 35 µg/m3, as was the annual secondary standard of 15 µg/m3. The existing 24-hour PM10 standards (primary and secondary) of 150 µg/m3 also were retained. The form of the annual primary and secondary standards is the annual mean, averaged over 3 years.
10. To attain the 1-hour national standard, the 3-year average of the annual 98th percentile of the 1-hour daily maximum concentrations at each site must not exceed 100 ppb. Note that the national 1-hour standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the national 1-hour standard to the California standards the units can be converted from ppb to ppm. In this case, the national standard of 100 ppb is identical to 0.100 ppm.
11. On June 2, 2010, a new 1-hour SO_2 standard was established, and the existing 24-hour and annual primary standards were revoked. To attain the 1-hour national standard, the 3-year average of the annual 99th percentile of the 1-hour daily maximum concentrations at each site must not exceed 75 ppb. The 1971 SO_2 national standards (24-hour and annual) remain in effect until one year after an area is designated for the 2010 standard, except that in areas designated non-attainment for the 1971 standards, the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standards are approved.
12. The CARB has identified lead and vinyl chloride as 'toxic air contaminants' with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.
13. The national standard for lead was revised on October 15, 2008, to a rolling 3-month average. The 1978 lead standard (1.5 µg/m3 as a quarterly average) remains in effect until one year after an area is designated for the 2008 standard, except that in areas designated non-attainment for the 1978 standard, the 1978 standard remains in effect until implementation plans to attain or maintain the 2008 standard are approved.
14. In 1989, the CARB converted both the general Statewide 10-mile visibility standard and the Lake Tahoe 30-mile visibility standard to instrumental equivalents, which are "extinction of 0.23 per kilometer" and "extinction of 0.07 per kilometer" for the Statewide and Lake Tahoe Air Basin standards, respectively.

CARB, 2016

The additional contaminants regulated by the CAAQS are defined below:

- **Visibility Reducing Particles** are particles in the air that obstruct visibility.

- **Sulfates** are salts of Sulfuric Acid. Sulfates occur as microscopic particles (aerosols) resulting from fossil fuel and biomass combustion. They increase the acidity of the atmosphere and form acid rain.

- **Hydrogen Sulfide (H_2S)** is a colorless, toxic, and flammable gas with a recognizable smell of rotten eggs or flatulence. H_2S occurs naturally in crude petroleum, natural gas, volcanic gases, and hot springs. Usually, H_2S is formed from bacterial breakdown of organic matter. Exposure to low concentrations of H_2S may cause irritation to the eyes, nose, or throat. It may also cause difficulty in breathing for some asthmatics. Brief exposures to high concentrations of H_2S (greater than 500 parts per million [ppm] can cause a loss of consciousness and possibly death.

- **Vinyl Chloride**, also known as chloroethene, is a toxic, carcinogenic, colorless gas with a sweet odor. It is an industrial chemical mainly used to produce its polymer, polyvinyl chloride (PVC).

Assembly Bill 203

Assembly Bill (AB) 203 is an amendment to the California Labor Code that addresses worker awareness training relating to Valley fever. Specifically, AB 203 requires construction employers who work in counties with high rates of Valley fever (i.e., endemic counties) to train their employees on awareness and minimizing the risks of Valley fever (State of California, 2019).

Local

The California Public Utilities Commission (CPUC) has sole and exclusive state jurisdiction over the siting and design of the Proposed Project. Pursuant to CPUC General Order (GO) 131-D, Section XIV.B, "Local jurisdictions acting pursuant to local authority are preempted from regulating electric power line projects, distribution lines, substations, or electric facilities constructed by public utilities subject to the CPUC's jurisdiction. However, in locating such projects, the public utilities shall consult with local agencies regarding land use matters" (CPUC, 2023). Consequently, public utilities are directed to consider local regulations and consult with local agencies, but City regulations are not applicable as the Cities of Fremont, Milpitas, San José and Santa Clara do not have jurisdiction over the Proposed Project. Because the CPUC has exclusive jurisdiction over the Proposed Project siting, design, and construction, the Proposed Project is not subject to local land use and zoning regulations or discretionary permits. This section includes a summary of local air quality-related policies, plans, or programs for informational purposes. Although LS Power Grid California, LLC ("LS Power") is not subject to local discretionary permitting, ministerial permits would be secured as required.

Governing General Plan

The Proposed Project is located within the Cities of Fremont, Milpitas, San José, and Santa Clara. These Cities provide general jurisdictional guidance (General Plan) for land development planning as necessary to meet regulatory requirements into the future. Each General Plan has policies designed to improve air quality within the region and are outlined below.

City of Fremont General Plan

Chapter 7 of the City of Fremont's General Plan (City of Fremont, 2011) outlines general air quality goals and policies geared towards reducing air quality impacts within the City. This document includes several air quality-related policies with implementation measures (IMP) that pertain to this Proposed Project located within the City.

Goal 7-7 **Air Quality.** Air quality improved over current conditions that meets or exceeds State and Regional standards.

Policy 7-7.1 **Cooperation to Improve Regional Air Quality.** Support and coordinate air quality planning efforts with other local, regional, and State agencies to improve regional air quality.

IMP 7-7.1.A **Monitor and Control Air Pollutants.** Support BAAQMD efforts to monitor and control air pollutants from stationary and non-stationary sources.

IMP 7-7.1.B **Permits for Projects that may Impact Air Quality.** Require new stationary sources with potential air quality impacts to obtain necessary permits from the BAAQMD.

IMP 7-7.1.C **Annual Review of Air Quality Data.** Monitor available air quality data for the City of Fremont relative to State standards on an annual basis.

IMP 7-7.1.D **Include Air Quality in Environmental Impact Process.** Review proposed projects for their potential to affect air quality conditions during the environmental impact process.

IMP 7-7.1.E **Clean Air Plan.** Review and comment on the Clean Air Plan and other documents prepared by BAAQMD.

IMP 7-7.1.F **Impacts from Projects in Neighboring Communities.** Review environmental impact reports of large projects in neighboring communities with the potential to affect Fremont's air quality and request appropriate mitigations.

IMP 7-7.1.G **Air Emission Standards.** Promote enforcement of air emission standards by BAAQMD.

IMP 7-7.1.H **Better Transportation, Lower Emissions.** Support efforts by Metropolitan Transit Commission (MTC) and Association of Bay Area Governments (ABAG) to help reduce traffic congestion and provide greater efficiency in the regional transportation system.

Policy 7-7.2 **Reduce Air Pollution Levels.** Reduce City of Fremont air contaminant levels and particulate emissions below BAAQMD attainment levels, in particular, ozone and particulate matter levels.

IMP 7-7.2.A **Construction Practices.** Require construction practices that reduce dust and other particulate emissions and require watering of exposed areas at construction sites.

Policy 7-7.3 **Land Use Planning to Minimize Health Impacts from Toxic Air Contaminants.** Coordinate land use planning with air quality data and local transportation planning to reduce the potential for long-term exposure to toxic air contaminants (TAC) from permanent sources that affect the community.

IMP 7-7.3.A **Limit New TAC Sources.** Evaluate new sources of TAC emissions pursuant to BAAQMD guidelines and thresholds for an increased health risk of no more than 10 additional incidents of cancer per million exposures or contribute to a cumulative risk in excess of 100 additional incidents of cancer per million exposures.

IMP 7-7.3.C **Incorporate TAC Controls with New Development.** New development projects with sensitive receptors within 1,000 feet of a freeway or major TAC source shall assess the TAC health risk for the site and incorporate, to the maximum extent feasible, risk reduction measures to reduce exposure to TAC. Risk reduction measures may include, but not be limited to, project phasing, site orientation, distance separations, landscape buffering, building air filtration systems, modified building design or building type, or off-site improvements at a TAC source.

Policy 7-7.4 **Air Quality Impact of Industry.** Reduce the air quality impacts created by truck traffic, hazardous materials, and industry.

IMP 7-7.4.A **Alternative-Fuel Vehicles.** Encourage other agencies and private industry to use alternative-fuel vehicles.

IMP 7-7.4.B **Enforcement of Air Quality Regulations.** Encourage stationary air pollutant sources to reduce emissions and encourage enforcement by the relevant regulatory agencies when attainment levels are not met.

IMP 7-7.4.C **Review and Update Hazardous Materials Policy.** Enforce City policies and regularly review and update policies on the use, transport, and storage of hazardous materials with potential for impacts on air quality and health.

IMP 7-7.4.D **Review Truck and Train Routes.** Review truck and train routes for the potential to affect sensitive receptors in the event of an accident involving hazardous materials.

City of Milpitas General Plan

The Conservation and Sustainability chapter of the of the City of Milpitas General Plan (City of Milpitas, 2021) outlines general air quality goals (CON-7), policies, and actions geared towards reducing air quality impacts within the City. This document includes several air quality-related policies that pertain to this Proposed Project located within this City.

Goal CON-7 Implement a proactive approach to maintain and improve air quality within Milpitas and the region.

Policy CON 7-1 Ensure that land use and transportation plans support air quality goals through a logical development pattern that focuses growth in and around existing urbanized areas, locates new housing near places of employment, encourages alternative modes of transportation, supports efficient parking strategies, reduces vehicle miles traveled, and requires projects to mitigate significant air quality impacts.

Policy CON 7-2 Minimize exposure of the public to toxic or harmful air emissions and odors through requiring an adequate buffer or setback distance between residential and other sensitive land uses and land uses that typically generate air pollutants, toxic air contaminants, or obnoxious fumes or odors, including, but not limited to, industrial, manufacturing, and processing facilities, high-volume roadways, and industrial rail lines. New sensitive receptors, such as residences (including residential care and assisted living facilities for the elderly), childcare centers, schools, playgrounds, churches, and medical facilities shall be located away from existing point sources of air pollution such that excessive levels of exposure do not result in unacceptable health risks. Compliance shall be verified through the preparation of a Health Risk Assessment when deemed necessary by the Planning Director.

Policy CON 7-4 Require projects to adhere to the requirements of the BAAQMD.

Policy CON 7-5 Use the City's development review process and the California Environmental Quality Act (CEQA) to evaluate and mitigate the local and cumulative effects of new development on air quality.

Policy CON 7-6 Coordinate with the CARB and the BAAQMD to properly measure air quality emission sources and enforce the standards of the Clean Air Act.

Policy CON 7-7 Comply with regional, state, and federal standards and programs for control of all airborne pollutants and noxious odors, regardless of source.

Policy CON 7-8 Consider the health risks associated with TACs when reviewing development applications.

Policy CON 7-9 Coordinate with Santa Clara County and nearby cities to implement regional greenhouse gas (GHG) reduction plans and to consolidate efforts to reduce GHGs throughout the county as appropriate.

Policy CON 7-11 Encourage improvements and design features that reduce vehicle delay such as bus turnouts, and synchronized traffic signals for new development to reduce excessive vehicle emissions caused by idling.

Policy CON 7-12 Encourage and prioritize infrastructure investments and improvements that promote safe walking, bicycling, and increased transit ridership.

Policy CON 7-13 Implement energy policies and actions that have co-benefits of reduced air pollution and greenhouse gases by increasing energy efficiency, conservation, and the use of renewable resources.

Action CON-7d Continue to seek the cooperation of the BAAQMD to monitor emissions from identified point sources that impact the community. In addition, for sources not within the regulatory jurisdiction of the City, seek cooperation from the applicable regulatory authority to encourage the reduction of emissions and dust from the pollutant source.

Action CON-7e Require dust control measures, including those included in the Santa Clara Valley Non-point Source Pollution Control Program, and BAAQMD's Best Management Practices for fugitive dust control during construction.

Action CON-7f Use the BAAQMD "Air Quality Guidelines", as amended, or replaced, in identifying thresholds, evaluating the potential project and cumulative impacts, and determining appropriate mitigation measures.

Review development, infrastructure, and planning projects for consistency with BAAQMD requirements during the CEQA review process. Require project applicants to prepare air quality analyses to address BAAQMD, and General Plan requirements, which includes analysis and identification of:

- Air pollutant emissions associated with the project during construction, project operation, and cumulative conditions;
- Potential exposure of sensitive receptors to toxic air contaminants;
- Significant air quality impacts associated with the project for construction, project operation, and cumulative conditions; and
- Mitigation measures to reduce significant impacts to less than significant or the maximum extent feasible where impacts cannot be mitigated to less than significant.

Action CON-7i Require construction activity plans and grading and drainage plans to include and/or provide for dust management to prevent fugitive dust from leaving the property boundaries and causing a public nuisance or a violation of an ambient air standard. Project applicants, or their assigned agents/contractors, shall be responsible for ensuring that all adequate dust control measures are implemented in a timely manner during all phases of project grading and construction.

City of San José General Plan

The City of San José General Plan addresses air quality and climate change (City of San José, 2024). The General Plan sets guiding policies for minimizing impacts on resources and ensuring that the City of San José is able to maintain the infrastructure and services necessary to sustain its economy and quality of life.

Goal MS-10 Minimize air pollutant emissions form new and existing development.

Policy MS-10.1 Assess projected air emissions from new development in conformance with the BAAQMD CEQA Guidelines and relative to state and federal standards. Identify and implement feasible air emission reduction measures.

Policy MS-10.2 Consider the cumulative air quality impacts from proposed developments for proposed land use designation changes and new development, consistent with the region's Clean Air Plan and state law.

Policy MS-10.3 Promote the expansion and improvement of public transportation services and facilities, where appropriate, to both encourage energy conservation and reduce air pollution.

Policy MS-10.4 Encourage effective regulation of mobile and stationary sources of air pollution, both inside and outside of San José. In particular, support federal and state regulations to improve automobile emission controls.

Policy MS-10.7 Encourage regional and statewide air pollutant emission reduction through energy conservation to improve air quality.

Policy MS-10.8 Minimize vegetation removal required for fire prevention. Require alternatives to discing, such as mowing, to the extent feasible. Where vegetation removal is required for property maintenance purposes, encourage alternatives that limit the exposure of bare soil.

Policy MS-10.10 Actively enforce the City's ozone-depleting compound ordinance and supporting policy to ban the use of chlorofluorocarbon compounds (CFCs) in packaging and in building construction and remodeling. The City may consider adopting other policies or ordinances to reinforce this effort to help reduce damage to the global atmospheric ozone layer.

Policy MS-10.12 Increase the City's alternative fuel vehicle fleet with the co-benefit of reducing local air emissions. Implement the City's Environmentally Preferable Procurement Policy (Council Policy 4-6) and Pollution Prevention Policy (Council Policy 4-5) in a manner that reduces air emissions from municipal operations. Support policies that reduce vehicle use by City employees.

Policy MS-10.14 Review and evaluate the effectiveness of site design measures, transit incentives, and new transportation technologies and encourage those that most successfully reduce air pollutant emissions.

Policy MS-11.2 For projects that emit toxic air contaminants, require project proponents to prepare health risk assessments in accordance with BAAQMD-recommended procedures as part of environmental review and employ effective mitigation to reduce possible health risks to a less than significant level. Alternatively, require new projects (such as, but not limited to, industrial, manufacturing, and processing facilities) that are sources of

TACs to be located an adequate distance from residential areas and other sensitive receptors.

Policy MS-11.7 Consult with BAAQMD to identify stationary and mobile TAC sources and determine the need for and requirements of a health risk assessment for proposed developments.

Policy MS-13.1 Include dust, particulate matter, and construction equipment exhaust control measures as conditions of approval for subdivision maps, site development and planned development permits, grading permits, and demolition permits. At minimum, conditions shall conform to construction mitigation measures recommended in the current BAAQMD CEQA Guidelines for the relevant project size and type.

Policy MS-13.2 Construction and/or demolition projects that have the potential to disturb asbestos (from soil or building material) shall comply with all the requirements of the CARB's air toxics control measures (ATCMs) for Construction, Grading, Quarrying, and Surface Mining Operations.

Policy MS-13.4 Adopt and periodically update dust, particulate, and exhaust control standard measures for demolition and grading activities to include on project plans as conditions of approval based upon construction mitigation measures in the BAAQMD CEQA Guidelines.

Policy MS-13.5 Prevent silt loading on roadways that generates particulate matter air pollution by prohibiting unpaved or unprotected access to public roadways from construction sites.

Policy MS-13.6 Revise the grading ordinance and condition grading permits to require that graded areas be stabilized from the completion of grading to commencement of construction.

City of Santa Clara General Plan

Chapter 5 of the City of Santa Clara's 2010-2035 General Plan (City of Santa Clara, 2010) outlines general air quality goals and policies geared towards reducing air quality impacts within the City. This document includes several air quality-related policies that pertain to the Proposed Project located within the City.

Goal 5.10.2-G1 Improved air quality in Santa Clara and the region.

Goal 5.10.2-G2 Reduced greenhouse gas emissions that meet the State and regional goals and requirements to combat climate change.

Policy 5.10.2-P1 Support alternative transportation modes and efficient parking mechanisms to improve air quality.

Policy 5.10.2-P2 Encourage development patterns that reduce vehicle miles traveled and air pollution.

Policy 5.10.2-P3 Encourage implementation of technological advances that minimize public health hazards and reduce the generation of air pollutants.

Policy 5.10.2-P4 Encourage measures to reduce greenhouse gas emissions to reach 30 percent below 1990 levels by 2020.

Policy 5.10.2-P5 Promote regional air pollution prevention plans for local industry and businesses.

Policy 5.10.2-P6 Require "Best Management Practices" for construction dust abatement.

Bay Area Air Quality Management District Significance Thresholds

The BAAQMD has established significance thresholds for Criteria Pollutants for use within the County of Santa Clara and Alameda including many cities within the BAAQMD boundaries. These thresholds can be used to demonstrate that a project's total emissions would not result in a significant impact as defined by CEQA. These significance~~The~~ thresholds for construction and daily operations are used to establish both direct and cumulative impacts and are shown in **Table 5.3-4**, *BAAQMD Significance Thresholds for Criteria Pollutants* (BAAQMD, 2022).

Non-criteria pollutants such as Hazardous Air Pollutants (HAP) or TACs are also regulated by BAAQMD for operational fixed-source emission generators. These are broken out into carcinogens and non-carcinogens (acute and chronic). A project's fixed-source operations which increases the cancer risk to greater than one per one million exposed would be required to install Best Available Control Technology (T-BACT) equipment. The Proposed Project would not install any stationary emissions source equipment, so a less-than-significant health risk is expected during operations. Diesel Particulate Matter (DPM) is a known carcinogen and can increase health hazards when a person is exposed. DPM would be expected on a short-term basis during construction and is further analyzed below.

PM2.5 is a complex mixture of substances that includes elements such as carbon and metals; compounds such as nitrates, organics, and sulfates; and complex mixtures such as diesel exhaust and wood smoke. The project-level threshold addresses the potential for an individual project to significantly elevate existing risks or hazards. A project would have a cumulatively considerable PM2.5 impact if the Project would incrementally increase PM2.5 by more than 0.3 µg/m3 annual average.

In addition, the BAAQMD indicates that odor impacts could occur if the project proposes a new odor source near existing receptors. Projects that expect to generate odors need to disclose this and provide analysis demonstrating that odor impacts would not exist at the property line.

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Table 5.3-4: BAAQMD Significance Thresholds for Criteria Pollutants			
Criteria Air Pollutants and Precursors (Regional)	**Construction Related**	**Operational**	
	Average Daily Emissions (lb/day)	**Average Daily Emissions (lb/day)**	**Annual Average Emissions (tons per year [tpy])**
Reactive Organic Gases (ROG)	54	54	10
NO_2	54	54	10
PM10	82 (Exhaust)	82	15
PM2.5	54 (Exhaust)	54	10
PM10/ PM2.5 (Fugitive Dust)	Best Management Practices	None	
Local CO	None	9.0 ppm (8-hour average), 20.0 ppm (1-hour average)	
Health Risks and Hazards	~~**Individual Project**~~	~~**Cumulative**~~	
Cumulative Increased Cancer Risk	~~>10.0 individuals per one million exposed~~	>100 individuals per one million exposed	
Cumulative Increased Non-Cancer Hazard (Acute or Chronic)	~~>1.0~~	>10.0	
Cumulative Incremental Annual PM2.5	~~>0.3 µg/m3~~	>0.8 µg/m3	
Individual Project Increased Cancer Risk		>10.0 individuals per one million exposed	
Individual Project Increased Non-Cancer Hazard (Acute or Chronic)		>1.0	
Individual Project Incremental Annual PM2.5		>0.3 µg/m3	
Source: BAAQMD, 2022			

5.3.2.2 Air Permits

The Proposed Project does not propose any stationary emission source equipment and would, therefore, not require any air quality permits.

5.3.3 IMPACT QUESTIONS

5.3.3.1 CEQA Impact Questions

The significance criteria for assessing the impacts to air quality come from the CEQA, Appendix G Environmental Checklist. Where available, the significance criteria by the applicable air quality management district or air pollution control district may be relied upon to the following determinations. According to the CEQA Environmental Checklist, a project may cause a potentially significant impact if it would:

- Conflict with or obstruct implementation of the applicable air quality; or

- Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard; or
- Expose sensitive receptors to substantial pollutant concentrations; or
- Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people.

5.3.3.2 Additional CEQA Impact Questions

Pursuant to the *Guidelines for Energy Project Applications Requiring CEQA Compliance: Pre-filing Proponent's Environmental Assessments* (CPUC, 2019), there are no additional CEQA Impact Questions required for air quality.

5.3.4 Impact Analysis

5.3.4.1 Air Quality Impact Analysis

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

Less-Than-Significant Impact. The BAAQMD has developed an air quality plan consistent with California's SIP. As part of the plan, projects are required to show that project-related emissions would generate less-than-significant air quality emissions.

Potential air quality impacts related to the Proposed Project construction and operations were calculated using the latest California Emissions Estimator Model (CalEEMod Version 2022.1) air quality model, which was developed by South Coast Air Quality Management District (SCAQMD) in 2022. Since the Proposed Project is spread out over a large geographical area, it was analyzed in three~~four~~ parts, which include the proposed work at~~Albrae terminal and~~ the existing Newark substation, work at~~the proposed Baylands terminal,~~ the existing NRS substation, and the proposed transmission line~~lines~~. The CalEEMod input/output model for each specific area is provided as Attachments 1A, 1B, ~~1C,~~ and 1C~~1D~~ in **Updated Appendix 5.3-A**, *Updated Air Quality and GHG Modeling Files*.

Health risks and hazard increases related to DPM were calculated using emission concentrations calculated by Air Quality Dispersion Modeling (AERMOD), which is a dispersion model software prepared by the U.S. EPA. The closest sensitive receptors exposed to DPM concentrations are shown in the **Updated GIS Database**.~~**Figure 5.3-5.**~~ The remaining three areas would not expose sensitive receptors to high enough levels of DPM to cause human health risk effects. The AERMOD input/output model is provided as Attachment 2A in **Updated Appendix 5.3-A**.

Once the dispersed concentrations of DPM are estimated in the surrounding air, they are used to evaluate estimated risks to people including sensitive residential receptors and also off-site worker receptors. The Office of Environmental Health Hazard Assessment (OEHHA) recommends different methodologies for both types of receptors which include age sensitivity factors from the third trimester to 70 years old, exposure durations, breathing rates, and averaging time. Worker receptors are assumed to be at least 16 years of age and would be limited to exposure for only the workday.

Chronic non-cancer risks are also known with respect to DPM and are determined by the hazard index. To calculate the hazard index, DPM concentration is divided by its chronic Reference Exposure Levels (REL), which is five µg/m3 (OEHHA, 2015). Since all calculated exposure levels are less than five µg/m3, the hazard index would be less than one, and a less-than-significant non-cancer risk is expected. Cancer risk outputs as well as AERMOD concentration levels used in the analysis are provided in Attachment~~Attachments~~ 3A ~~and 3B~~ in **Updated Appendix 5.3-A**.

A project is considered to have a cumulatively considerable impact if it resulted in an incremental increase of greater than 0.3 µg/m3 annual average PM2.5. Based on review of the CalEEMod outputs, the highest PM2.5 generated within the vicinity of sensitive receptors would be at the NRS substation 2027 which is summarized in Attachment 4A in **Updated Appendix 5.3-A**. The AERMOD dispersion model was utilized to determine the maximum project PM2.5 emission concentration based on the highest annual emission from all sources. PM2.5 concentrations were calculated at the worst-case receptor locations as identified in **Section 5.3.1.3**. Based on the modeling, the worst-case PM2.5 was calculated at 0.051 µg/m3, which is considered a less than significant PM2.5 impact. Since the project contribution is less than 0.3 µg/m3 the Project would not have the potential to add a significant amount of PM2.5 to contribute to cumulative PM2.5 impacts. The PM2.5 AERMOD outputs are provided in Attachment 5A in **Updated Appendix 5.3-A**.

The Proposed Project plans to start grading and construction in 2026, with work assumed to be scheduled to occur six days per week and be completed in 2028. Material hauling/truck details along with worker trips are provided in **Section 3.0**, *Proposed Project Description* (see **Table 3-8**, *Estimated Average Daily Construction Traffic)* and was manually updated within the CalEEMod software. **Updated Appendix 5.3-A** includes detailed equipment and usage as provided by the Proposed Project engineer. In addition, the CARB regulations require that, starting in 2012, off-road equipment produced needs to meet the basic requirements for Tier 4 compliance (CARB, 2023b). Off-road equipment fleets are managed by CARB and are typically based on total horsepower owned. Owners are limited to what types of equipment they must maintain as their fleet and can include equipment from rental companies. For this reason, it is assumed that the project equipment would conservatively be made up of at least 75 percent Tier 4 during the construction years of 2026 through 2028. This assumption is viable and would be reasonably achievable because most equipment operators already maintain fleets consisting of mostly Tier 4 equipment. **Applicant Proposed Measure (APM) AQ-1**, *Construction Fleet Minimum Requirements and Tracking* has been incorporated into the Proposed Project to ensure that the assumed construction fleet specifications are tracked and achieved consistent with the analysis.

Table 5.3-5, *Expected Construction Emissions Summary (Pounds per Day) – ~~Albrae Terminal and~~ Newark Substation Modifications* summarizes the construction emissions in pounds per day at the ~~proposed Albrae terminal and the~~ existing Newark substation based on the construction activities and equipment identified in **Section 3.0** and **Updated Appendix 5.3-A**. Based on the modeling for the unmitigated case, the Proposed Project would not exceed BAAQMD significance thresholds. It is assumed that the Proposed Project would implement Best Management Practices (BMPs) in all four areas consistent with BAAQMD Guidelines during construction to reduce fugitive dust generation. The BMPs are further discussed below. This would, at a minimum, include wetting exposed soils, sweeping dirt and debris from the Proposed Project site, and implementing measures to reduce trucks from bringing dirt onto the City of Fremont's roadways.

Table 5.3-5: Expected Construction Emissions Summary (Pounds per Day) – ~~Albrae Terminal and~~ Newark Substation Modifications				
	ROG	**NO_x**	**PM10 (Exhaust)**	**PM2.5 (Exhaust)**
Average Maximum Daily Emissions	0.47~~1.37~~	3.95~~12.9~~	0.10~~30~~	0.09~~29~~
BAAQMD Air Quality Thresholds	54	54	82	54
Exceeds Thresholds?	***NO***	***NO***	***NO***	***NO***
Source: Updated **Appendix 5.3-A**				

Table 5.3-6, *Expected Construction Emissions Summary (Pounds per Day) – NRS Substation Modifications~~Baylands Terminal~~* summarizes the construction emissions in pounds per day at the ~~proposed Baylands terminal based on the construction activities and equipment identified in **Section 3.0** and **Appendix 5.3-A**. Based on the modeling for the unmitigated case, the Proposed Project would not exceed BAAQMD significance thresholds.~~

~~Table 5.3-6: Expected Construction Emissions Summary (Pounds per Day) – Baylands Terminal~~				
	~~**ROG**~~	~~**NO_x**~~	~~**PM10 (Exhaust)**~~	~~**PM2.5 (Exhaust)**~~
~~Average Maximum Daily Emissions~~	~~1.32~~	~~12.5~~	~~0.29~~	~~0.28~~
~~BAAQMD Air Quality Thresholds~~	~~54~~	~~54~~	~~82~~	~~54~~
~~**Exceeds Thresholds?**~~	~~***NO***~~	~~***NO***~~	~~***NO***~~	~~***NO***~~
~~Source: **Appendix 5.3-A**~~				

~~**Table 5.3-7**, *Expected Construction Emissions Summary (Pounds per Day) – NRS Substation* summarizes the construction emissions in pounds per day at the~~ existing NRS substation based on the construction activities and equipment identified in **Section 3.0** and **Updated Appendix 5.3-A**. Based on the modeling for the unmitigated case, the Proposed Project would not exceed BAAQMD significance thresholds.

Table 5.3-6~~7~~: Expected Construction Emissions Summary (Pounds per Day) – NRS Substation Modifications				
	ROG	**NO_x**	**PM10 (Exhaust)**	**PM2.5 (Exhaust)**
Average Maximum Daily Emissions	0.47~~53~~	3.8~~4.5~~	0.10	0.09
BAAQMD Air Quality Thresholds	54	54	82	54
Exceeds Thresholds?	***NO***	***NO***	***NO***	***NO***
Source: Updated **Appendix 5.3-A**				

Table 5.3-7~~8~~, *Expected Construction Emissions Summary (Pounds per Day) – Transmission Line~~Lines~~* summarizes the construction emissions in pounds per day within the proposed transmission line area based on the construction activities and equipment identified in **Section**

3.0 and **Updated Appendix 5.3-A**. Based on the modeling for the unmitigated case, the Proposed Project would not exceed BAAQMD significance thresholds.

Table 5.3-7~~8~~: Expected Construction Emissions Summary (Pounds per Day) – Transmission Line~~Lines~~				
	ROG	**NO_x**	**PM10 (Exhaust)**	**PM2.5 (Exhaust)**
Average Maximum Daily Emissions	2.91~~43~~	23~~20~~.4	0.82~~69~~	0.77~~64~~
BAAQMD Air Quality Thresholds	54	54	82	54
Exceeds Thresholds?	***NO***	***NO***	***NO***	***NO***
Source: **Updated Appendix 5.3-A**				

Regional emissions from all three~~four~~ construction areas combined could be considered additive even though the construction at~~of~~ the ~~proposed Albrae terminal and~~ existing Newark substation, and ~~proposed Baylands terminal, and existing~~ NRS substation are ~~each~~ separated by distances of approximately seven miles~~1.7 miles (NRS substation to Baylands terminal) to approximately five miles (Baylands terminal to Albrae terminal/Newark substation),~~ with the proposed transmission lines geographically between the various sites identified. Given this, the total cumulative emissions from both~~all three~~ areas and the proposed transmissions lines are added and shown in **Table 5.3-8~~9~~**, *Combined Expected Construction Emissions Summary (Pounds per Day).* Based on the expected emissions output, the cumulative unmitigated emission would not exceed BAAQMD thresholds.

Table 5.3-8~~9~~: Combined Expected Construction Emissions Summary (Pounds per Day)				
	ROG	**NO_x**	**PM10 (Exhaust)**	**PM2.5 (Exhaust)**
~~Albrae Terminal and~~ Newark Substation Construction	0.47~~1.37~~	3.95~~12.9~~	0.10~~30~~	0.09~~29~~
~~Baylands Terminal Construction~~	~~1.32~~	~~12.5~~	~~0.29~~	~~0.28~~
NRS Substation Construction	0.47~~53~~	3.8~~4.5~~	0.10	0.09
Transmission Line Construction	2.91~~43~~	23~~20~~.4	0.82~~69~~	0.77~~64~~
Combined Total Emissions	**3.85~~5.65~~**	**31.15~~50.3~~**	**1.02~~38~~**	**0.95~~1.3~~**
BAAQMD Air Quality Thresholds	54	54	82	54
Exceeds Thresholds?	***NO***	***NO***	***NO***	***NO***
Source: **Updated Appendix 5.3-A**				

Therefore, the Proposed Project construction would not conflict with any air quality management plans, and construction-related impacts would be less than significant under this criterion.

The Proposed Project would implement **APM AQ-2,** *Dust Control BMPs* during construction activities. **APM AQ-2** would include BMPs consistent with BAAQMD Guidelines during construction to reduce fugitive dust generation as follows:

BMP-1 All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day. The watering regiment may be adjusted during rain events as needed.

BMP-2 All haul trucks transporting soil, sand, or other loose material off-site shall be covered.

BMP-3 All visible mud or dirt tracked out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited.

BMP-4 All vehicle speeds on unpaved roads shall be limited to 15 miles per hour (mph).

BMP-5 All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible.

BMP-6 Building pads shall be laid as soon as possible after grading unless seeding or soil binders are used.

BMP-7 All excavation, grading, and/or demolition activities shall be suspended when average wind speeds exceed 20 mph.

BMP-8 All trucks and equipment, including their tires, shall be washed off or otherwise cleaned prior to leaving the site if dirty.

BMP-9 Unpaved roads providing access to sites located 100 feet or further from a paved road shall be treated with a 6- to 12-inch layer of compacted layer of wood chips, mulch, or gravel.

BMP-10 Publicly visible signs shall be posted with the telephone number and name of the person to contact at the lead agency regarding dust complaints. This person shall respond and take corrective action within 48 hours. The Air District's General Air Pollution Complaints number shall also be visible to ensure compliance with applicable regulations.

~~Operations~~

~~Proposed Project operations are expected to begin in June 2028.~~ Once operational, the Proposed Project would generate very low air quality emissions from daily operations. ~~Anticipated operations emissions are limited to sources such as worker trips, area sources such as landscaping, and energy usage from on-site HVDC cooling equipment and auxiliary equipment usage (e.g., control room heating, ventilation, and air conditioning [HVAC] units, communications equipment, and facility lighting). The total demand at each terminal location site would be approximately 200 kilowatts (kW) continuous, which would consume 1,752,000 kilowatt hours (kWh) annually, or a combined 3,504,000 kWh annually for the entire Proposed Project.~~

~~Since the Proposed Project would use only electrical energy, the energy source air quality emissions would be zero. Mobile vehicle visits to the Proposed Project site associated with periodic O&M would also generate air emissions. It is estimated that monthly O&M visits would not be greater than 10,000 vehicle miles per year per site or 20,000 miles annually. These annual~~

~~emissions were included within the analysis. The expected daily pollutant generation from these sources is estimated in CalEEMod using the assumptions above and shown in Attachments 1A and 1B in **Appendix 5.3-A**.~~

~~The average daily operational emissions during operations for each area are summarized in **Table 5.3-10**, *Combined Expected Average Daily Emissions During Operations (Pounds per Day)* below. Based upon these calculations, the Proposed Project operations would produce less-than-significant air quality impacts during operations.~~

~~Table 5.3-10: Combined Expected Average Daily Emissions During Operations (Pounds per Day)~~				
	~~ROG~~	~~NO_x~~	~~PM10 (Exhaust)~~	~~PM2.5 (Exhaust)~~
~~Albrae Terminal~~	~~0.29~~	~~0.01~~	~~0.02~~	~~0.01~~
~~Baylands Terminal~~	~~0.29~~	~~0.01~~	~~0.02~~	~~0.01~~
~~Combined Operational Emissions~~	**~~0.58~~**	**~~0.02~~**	**~~0.04~~**	**~~0.02~~**
~~BAAQMD Air Quality Thresholds~~	~~54~~	~~54~~	~~82~~	~~54~~
~~Exceeds Thresholds?~~	***~~NO~~***	***~~NO~~***	***~~NO~~***	***~~NO~~***
~~Source: Appendix 5.3-A~~				

~~As shown in **Table 5.3-10**, the Proposed Project would not exceed BAAQMD air quality thresholds for emissions of criteria pollutants during the operations phase. Therefore, the Proposed Project operations would not conflict with any air quality management plans, and operations-related impacts would be less than significant under this criterion.~~

PG&E Newark Substation Modifications

In order to integrate the proposed ~~HVDC terminals and new Albrae to Baylands 320 kV DC~~ transmission line into the existing transmission system, PG&E would be required to perform modifications at their existing Newark substation (refer to **Section 3.3.5**, *Other Potentially Required Facilities*).The Newark substation modifications would occur within and adjacent to the existing substation (located entirely on PG&E fee-owned property – see the **Updated GIS Database**).~~**Figure 5.3-1**).~~ PG&E would implement construction **BMPs AQ-1** through **AQ-4** relating to air quality emissions. **BMP AQ-1**, *Vehicle Idling* would place restrictions on construction vehicles idling, which would reduce emissions. **BMP AQ-2**, *Fugitive Dust – General* would be implemented to ensure fugitive dust emissions from PG&E construction are minimized. **BMP AQ-3**, *Portable Equipment Registration Program* would require PG&E construction crews and contractors to only use applicable equipment registered in the CARB Statewide Portable Equipment Registration Program. **BMP AQ-3** would ensure that equipment is registered and older, high emission equipment is not used. Finally, **BMP AQ-4**, *Tier 4 Construction Equipment* would ensure that PG&E construction fleets would be consistent with the emissions modeling completed for this Proponent's Environmental Assessment (PEA), which concluded that impacts related to air quality would be less than significant. Specifically, implementation of **BMP AQ-4** would ensure that emission of criteria pollutants remain below BAAQMD thresholds. ~~.~~ By the nature of criteria pollutant emissions and impact analysis, all Proposed Project activities are modeled cumulatively for comparison to daily emissions thresholds (refer to **Table 5.3-~~8~~9**). Emissions from the Newark substation modifications were modeled separately for~~with the Albrae~~

~~terminal~~ construction (refer to **Table 5.3-5**). Impacts at the Newark substation would be less than significant, as are impacts from all Proposed Project construction combined. Therefore, impacts associated with construction of the Newark substation modifications would be less than significant if considered individually.

Impacts from operation of the Newark substation modifications are not anticipated to change from existing conditions, as the operational sources of emissions, such as inspections, repairs, and maintenance, would not change following the substation modifications. Impacts would be less than significant.

SVP Substation Modifications

In order to integrate the proposed ~~HVDC terminals and new Albrae to Baylands 320 kV DC~~ transmission lines~~line~~ into the existing transmission system, SVP would be required to perform modifications at their existing NRS substation (refer to **Section 3.3.5**). The NRS substation modifications would occur within the existing substation. SVP would implement Proposed Project **APM AQ-1** to ensure that construction fleet engine tiers are consistent with the emissions modeling performed for this PEA, and impacts would remain less than significant. By the nature of criteria pollutant emissions and impact analysis, all Proposed Project activities are modeled cumulatively for comparison to daily emissions thresholds (refer to **Table 5.3-8~~9~~**). Emissions from the NRS substation were modeled separately due to the proximity to sensitive receptors (refer to **Table 5.3-6~~7~~**). Emissions of criteria pollutants from construction of the NRS substation modifications would be below applicable thresholds. Therefore, impacts associated with construction of the NRS substation modifications would be less than significant if considered individually.

Impacts from operation of the NRS substation modifications are not anticipated to change from existing conditions, as the operational sources of emissions, such as inspections, repairs, and maintenance, would not change following the substation modifications. Impacts would be less than significant.

Operations

Proposed Project operations are expected to begin later in 2028. ~~Once operational, the Proposed Project would generate very low air quality emissions from daily operations.~~ Operational emissions would be expected to remain the same at both existing Newark and NRS substations. Operation of the new transmission line would be remote, and inspection and maintenance activities would be infrequent and would not generate daily emissions. Given this, no additional operations analysis is warranted and a less than significant operational impact is expected.

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

Less-Than-Significant Impact. The Proposed Project was analyzed for construction ~~and operational~~ air quality emissions and operational emissions would not increase from existing levels from either the Newark or NRS substations.~~,~~ Under this analysis, the Proposed Project would generate less-than-significant air quality direct impacts. With respect to an analysis of the Proposed Project's impacts under this criterion, it is important to note that air quality impacts relating to criteria pollutants are inherently cumulative. Emissions from various sources throughout the SFAB are additive and cumulatively contribute to the basin's attainment status with respect to NAAQS and CAAQS.

Because of this, most significance thresholds are developed such that an individual project's significance determination can also determine its cumulative impact. Thus, if a project's individual emissions exceed applicable significance thresholds, such impact would be considered individually significant as well as resulting in a cumulatively considerable contribution to a significant cumulative impact. The BAAQMD thresholds of significance that are used as the basis for determining the Proposed Project's impacts relating to criteria pollutants were developed with respect to the fact that air quality impacts are inherently cumulative.

Therefore, while additional projects and other emissions sources would be active concurrently with the Proposed Project (see **Section 7.0**, *Cumulative and Other CEQA Considerations*), the severity of the Proposed Project's cumulative effect on air quality can be determined by its comparison to the BAAQMD significance thresholds. As described above and summarized in **Tables 5.3-5** through **5.3-8~~10~~**, the Proposed Project would not exceed any of the BAAQMD thresholds which would ensure compliance with the Cities of Fremont, Milpitas, San José, and Santa Clara CEQA requirements.

Additionally, as described above, the Proposed Project would be required to implement BMPs per BAAQMD requirements during construction. BMPs identified above, which would be implemented during construction, would typically reduce emissions further below what was captured within the Proposed Project modeling and also below the applicable CEQA thresholds. Therefore, the Proposed Project's contribution to potential significant cumulative criteria pollutant impacts is considered to be less than significant.

PG&E Substation Modifications

The PG&E Newark substation modifications would occur within and adjacent to the existing substation (located entirely on PG&E fee-owned property). By the nature of criteria pollutant emissions and impact analysis, all Proposed Project activities are modeled cumulatively for comparison to daily emissions thresholds (refer to **Table 5.3-8~~9~~**). Emissions from the Newark substation modifications were modeled for~~with the proposed Albrae terminal~~ construction (refer to **Table 5.3-5**). Impacts at the Newark substation would be less than significant, as are impacts from all Proposed Project construction combined. PG&E would implement **BMPs AQ-1** through **AQ-4**, which would further reduce impacts. Therefore, impacts associated with construction of the Newark substation modifications would be less than significant if considered individually. As described above and summarized in **Tables 5.3-5** and **5.3-8~~9~~**, the PG&E substation modifications would not exceed any of the BAAQMD thresholds which would ensure compliance with the City of Fremont CEQA requirements. Therefore, the PG&E substation modifications contribution to potential significant cumulative criteria pollutant impacts is considered to be less than significant.

SVP Substation Modifications

The SVP NRS substation modifications would occur within the existing substation. By the nature of criteria pollutant emissions and impact analysis, all Proposed Project activities are modeled cumulatively for comparison to daily emissions thresholds (refer to **Table 5.3-8~~9~~**). Emissions from the NRS substation were modeled separately due to the proximity to sensitive receptors (refer to **Table 5.3-6~~7~~**). SVP would implement Proposed Project **APM AQ-1**, and emissions of criteria pollutants from construction of the NRS substation modifications would be below applicable thresholds. Therefore, impacts associated with construction of the NRS substation modifications would be less than significant if considered individually. Thus, the SVP substation modifications would not exceed any of the BAAQMD thresholds which would ensure compliance with the City of Santa Clara CEQA requirements, and the modifications contribution to potential significant cumulative criteria pollutant impacts is considered to be less than significant.

Would the project expose sensitive receptors to substantial pollutant concentrations?

Less-Than-Significant Impact. The BAAQMD thresholds of significance were used as the basis for determining the Proposed Project's impacts relating to air quality pollutants and were developed to identify when pollutant concentrations would expose sensitive receptors to substantial pollutant concentrations. As described above and summarized in **Table 5.3-8~~9~~**, the Proposed Project would not exceed any of the BAAQMD thresholds of significance, which would ensure compliance with the local jurisdictions identified in this analysis. Therefore, the Proposed Project's air quality emissions would not expose sensitive receptors to substantial pollutant concentrations, and a less-than-significant air quality impact is expected.

The BAAQMD has a requirement to ensure health risks and health hazards are also less than significant. The only Proposed Project site which would include prolonged construction activities or other activities resulting in emissions located near sensitive residential receptors is the existing NRS substation. Potential impacts associated with the NRS substation modifications are discussed below.

Since the Proposed Project would not expose sensitive residential receptors to either significant cancer or significant chronic non-cancer risks during operations, impacts under this criterion would be less than significant.

PG&E Substation Modifications

The PG&E Newark substation modifications would occur within and adjacent to the existing substation (located entirely on PG&E fee-owned property). The existing Newark substation is not located within proximity to any sensitive receptors. Therefore, the Newark substation modifications would not expose sensitive receptors to substantial pollutant concentrations. No impacts would occur.

Impacts from operation of the Newark substation modifications are not anticipated to change from existing conditions, as the operational sources of emissions, such as inspections, repairs, and maintenance, would not change following the substation modifications. No impacts would occur.

SVP Substation Modifications

The SVP NRS substation modifications would occur within the existing substation. As shown on **Figure 5.3-5**, the existing NRS substation is located in close proximity to sensitive receptors. Therefore, the potential for human health impacts was analyzed for construction of the NRS substation modifications. As noted above, SVP would implement Proposed Project **APM AQ-1** during construction at the existing NRS substation. Based on calculations shown in **Updated Appendix 5.3-A**, the highest DPM concentrations at the existing NRS substation location would be at Receptor 3, which is approximately 82 feet south of the NRS substation as identified in the **Updated GIS Database**.~~**Figure 5.3-5.**~~ Emission concentrations at this location are 0.036 μg/m^3. Based on this, the increased cancer risk is 9.28~~23~~ people per million exposed at the closest sensitive receptor, which is below the threshold of 10 in one million. Given this, all cancer risks at all other receptors would be less than 9.28~~23~~ per million exposed (30-year exposure). In addition, non-cancer risks are less than one (0.036 $\mu g/m^3$ / 5 $\mu g/m^3$ <1). It should also be noted that the highest risk during the construction duration at Receptor 3 is 9.28~~7.76~~ per one million exposed, which is below the threshold of 10 in one million.

Therefore, the SVP NRS substation modifications would not expose sensitive residential receptors to either significant cancer or significant chronic non-cancer risks during construction and impacts under this criterion would be less than significant.

DPM from construction could also expose off-site workers not affiliated with the Proposed Project. Calculations for health risks for off-site workers are similar, though do not include age sensitivity factors between the third trimester up to age 16. In addition, the exposure concentration is for only a typical workday (eight hours) which would significantly reduce health risks compared to residential uses. Based on review of the construction sites, the potential for off-site workers not affiliated with the Proposed Project working either adjacent to or closer than identified sensitive residential receptors is not expected. Given this, since the calculated health risks for sensitive residential receptors is less than significant, any potential risks to off-site workers would also be less than significant assuming workers may exist at the nearby residential homes.

Cumulative cancer risk thresholds established by BAAQMD are less than 100 people per million exposed. Based upon modeling, as distances are increased beyond the Proposed Project site, cancer risks drop quickly. A cumulative health risk during construction could exist if a large project was occurring simultaneously to the Proposed Project using diesel construction equipment in addition, equipment would essentially need to be as much as 10 times more intense to generate emissions close to 100 per million exposed. Based on review of the site, no nearby construction projects would be expected to meet these diesel equipment conditions. Given this, a less-than-significant cumulative health risk would be expected during SVP NRS modifications.

DPM from construction could also expose offsite workers not affiliated with the Proposed Project. Calculations for health risks for off-site workers are similar though do not include age sensitivity factors between the third trimester up to age 16. In addition, the exposure concentration is for only a typical workday (eight hours) which would significantly reduce health risks compared to residential uses. Based on review of the construction sites, the potential for off-site workers not affiliated with the Proposed Project working either adjacent to or closer than identified sensitive residential receptors is not expected. Given this, since the calculated health risks for sensitive residential receptors is less than significant, any potential risks to off-site workers would also be less than significant assuming workers may exist at the nearby residential homes.

Again, Impacts from operation of the SVP NRS modifications are not anticipated to change from existing conditions, as the operational sources of emissions, such as inspections, repairs, and maintenance, would not change following the substation modifications. Impacts would be less than significant. **Would the project result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?**

Less-Than-Significant Impact. The Proposed Project may create temporary construction odors resulting from combustion engine equipment but would not be considered significant due to the highly dispersive nature of diesel exhaust and the short-term nature of construction.

The Proposed Project is not anticipated to result in emissions that could cause odors or other adverse effects during O&M. Therefore, construction and operation impacts related to odors would be less than significant.

PG&E Substation Modifications

The PG&E Newark substation modifications would occur within and adjacent to the existing substation (located entirely on PG&E fee-owned property). While construction of the Newark substation modifications would result in temporary construction odors from combustion engine equipment, the area surrounding the existing Newark substation is undeveloped with only industrial and heavy commercial and manufacturing land uses in the vicinity. Therefore, impacts from other emissions, such as those leading to odors, would be less than significant for construction of the Newark substation modifications.

Impacts from operation of the Newark substation modifications are not anticipated to change from existing conditions, as the operational sources of other emissions, such as inspections, repairs, and maintenance, would not change following the substation modifications. Impacts would be less than significant.

SVP Substation Modifications

The SVP NRS substation modifications would occur within the existing substation. While the existing NRS substation is located in close proximity to residential and recreational land uses, the temporary construction odors from combustion engine equipment would not be considered significant due to the highly dispersive nature of diesel exhaust and the short-term nature of construction. Impacts from other emissions, such as those leading to odors, would be less than significant for construction of the NRS substation modifications.

Impacts from operation of the NRS substation modifications are not anticipated to change from existing conditions, as the operational sources of other emissions, such as inspections, repairs, and maintenance, would not change following the substation modifications. Impacts would be less than significant.

5.3.5 CPUC Draft Environmental Measures

While the CPUC includes a Draft Environmental Measure for dust control within the Proponent's Environmental Assessment Guidelines document (CPUC, 2019), it is not included within this document. Rather, the Proposed Project has included **APM AQ-2**, which incorporates required BMPs identified by BAAQMD. All building plans and grading drawings would specifically have these measures included within the notes. Since fugitive dust emissions, as demonstrated by the construction modeling, do not exceed BAAQMD significance thresholds, mitigation was not specifically called out in **Section 5.3.4**, *Impact Analysis*.

5.3.6 Applicant Proposed Measures

The Proposed Project includes the following APMs relating to air quality, as outlined below.

APM AQ-1: Construction Fleet Minimum Requirements and Tracking

LS Power shall ensure that at least 75 percent of equipment horsepower hours related to off-road construction equipment include Tier 4 interim or Tier 4 final emissions controls. An initial listing that identifies each off-road unit's certified tier specification to be operated on the Proposed Project shall be submitted to the CPUC before the start of construction activities. Construction activities shall not begin until the equipment listing has been submitted to the CPUC.

As LS Power requires new or replacement construction equipment on the Proposed Project, LS Power shall document verification of the certified engine tier before their use on Proposed Project sites. Before the start of construction, LS Power shall develop a diesel-powered equipment-use hours tracking tool and procedure. The tracking tool shall be utilized by LS Power to keep track of the certified engine tier and daily equipment use hours of all off-road diesel-powered equipment. If all diesel-powered equipment is Tier 4 certified, the tracking tool is not required. The tracking tool shall be maintained by LS Power, and tracking updates shall be submitted to the CPUC on a monthly basis to track the Proposed Project's compliance. The updated tracking tool shall be submitted to the CPUC no later than the tenth day of the following month.

APM AQ-2: Dust Control Best Management Practices

LS Power shall implement the following measures to control fugitive dust during construction activities:

- All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day. The watering regiment may be adjusted during rain events as needed.
- All haul trucks transporting soil, sand, or other loose material off-site shall be covered.
- All visible mud or dirt tracked out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited.
- All vehicle speeds on unpaved roads shall be limited to 15 mph.
- All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible.
- Building pads shall be laid as soon as possible after grading unless seeding or soil binders are used.
- All excavation, grading, and/or demolition activities shall be suspended when average wind speeds exceed 20 mph.
- All trucks and equipment, including their tires, shall be washed off or otherwise cleaned prior to leaving the site.
- Unpaved roads providing access to sites located 100 feet or further from a paved road shall be treated with a 6- to 12-inch layer of compacted layer of wood chips, mulch, or gravel.
- Publicly visible signs shall be posted with the telephone number and name of the person to contact at the lead agency regarding dust complaints. This person shall respond and take corrective action within 48 hours. The Air District's General Air Pollution Complaints number shall also be visible to ensure compliance with applicable regulations.

5.3.7 PG&E BEST MANAGEMENT PRACTICES

The following air quality-specific BMPs would be implemented by PG&E for the activities to be completed by PG&E and/or their contractors.

BMP AQ-1: Vehicle Idling

A vehicle operator is prohibited from idling an on-road diesel-fueled vehicle with a Gross Vehicle Weight of ≥10,001 pounds, or an off-road diesel-fueled vehicle with a primary engine ≥25 horsepower, in excess of 5 minutes unless conducting one or more of the following activities:

- Doing work for which the vehicle was intended;
- Powering equipment necessary to perform a job function
- Operating lights or signals to direct traffic at a PG&E job site;
- Service, testing or maintenance on the vehicle;
- Regenerating an exhaust filter;
- Idling for safety reasons, including providing light when working after dark, defrosting windows, keeping the cabin warm to avoid a health hazard, and providing air conditioning to avoid heat illness;
- Idling due to traffic conditions beyond the vehicle operator's control;
- Warming an engine up to operating temperatures, as specified by the equipment manufacturer;
- Queuing, such as when a line of off-road trucks forms to receive materials from an excavator. Queuing does not include a vehicle waiting for another vehicle to perform a task. Idling while queuing is not allowed within 100 feet of a residential home.

BMP AQ-2: Fugitive Dust – General

Field crews must limit fugitive dust from PG&E project work at all times. Types work activities where water trucks or other dust abatement methods are typically required include:

- Construction;
- Demolition;
- Excavation;
- Trenching;
- Grading;
- Sand blasting;
- and other earthmoving activities

Visible emissions of fugitive dust from PG&E project activities must be maintained within the project boundary. The crew shall abate dust by:

- Applying water to disturbed areas and to storage stockpiles;

- Covering and securing stockpiled soil at the end of each workday;
- Applying water in sufficient quantities to prevent dust plumes during activities such as clearing & grubbing, backfilling, trenching and other earth moving activities;
- Limit vehicle speed to 15 miles per hour within approved unpaved work areas and along unpaved roads;
- Vehicles and equipment used to transport bulk materials must be wetted, covered, and provide at least 6 inches of free board (space between top of truck and load) during transport;
- Clean-up track-out at least daily;
- Escalate preventative measures as needed to match conditions
- Consider postponing construction activities during high wind events; and
- The crew shall not generate dust in amounts that create a nuisance to wildlife or people, particularly where sensitive receptors such as neighborhoods, schools, and hospitals are located nearby or down-wind. During inactive periods (e.g. after normal working hours, weekends, and holidays), the crew shall apply water or other approved material to form a visible crust on the soil and restrict vehicle access.

BMP AQ-3: Portable Equipment Registration Program

PG&E requires that portable engines be registered into the Statewide Portable Equipment Registration Program (PERP) administered by the California Air Resources Board (CARB), if:

- the engine is portable (mounted on a truck, trailer, skids, or wheels);
- the engine is 50 brake horsepower or greater, and;
- the engine does not provide motive force for a vehicle.

Auxiliary engines mounted on vehicles need to be registered if they are 50 brake horsepower or greater. For PG&E-owned units, PG&E Environmental Management Air Program is responsible for maintaining valid PERP registration with support from Transportation Services. For rental units, the rental vendor is responsible for the PERP registration and to provide PG&E with a copy of the current registration, permit, and placard before use.

Greenhouse Gas (GHG) Facility Requirements:

If diesel portable engines greater than 50 brake horsepower (bhp) are operated onsite at a GHG facility subject to the Mandatory Reporting Rule for GHGs (MRR) at any time, the AB617 PERP Log must be completed.

BMP AQ-4: Tier 4 Construction Equipment

At least 75 percent of construction equipment with a rating between 100 and 750 hp would be required to use engines compliant with EPA Tier 4 non-road engine standards. In the event enough Tier 4 equipment are not available to meet the 75-percent threshold, documentation of the unavailability would be provided and engines utilizing a lower standard would be used.

5.3.8 SVP BEST MANAGEMENT PRACTICES

SVP would implement Proposed Project **APM AQ-1**, as described above. No SVP BMPs for air quality would be implemented for SVP's scope of work.

5.8 GREENHOUSE GAS EMISSIONS

Would the project:		Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a.	Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?			X	
b.	Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases?			X	

This section describes the greenhouse gas (GHG) emissions within the vicinity of the Proposed Project as well as potential impacts that could result from construction of the Proposed Project. The Proposed Project intends to install transmission lines and connect them to existing substations. Operations at the existing substations would not increase from this Proposed Project. Operation of the new transmission line would be remote, and the transmission line would not require regular inspection or maintenance. Therefore,~~and~~ operation and maintenance (O&M) emissions would be considered to be consistent with existing inventories, and would have a less than significant GHG impact.~~of the Proposed Project.~~

5.8.1 ENVIRONMENTAL SETTING

The Proposed Project is located in the Cities of Fremont, Milpitas, San José, and Santa Clara, California, and the Proposed Project encompasses four ~~GHG~~ zonal areas. The Proposed Project includes the construction of a~~ to include two~~ new 230 kilovolt (kV) alternating~~high-voltage direct~~ current (AC)~~HVDC) terminals (the proposed Albrae and Baylands terminals) and associated~~ transmission line~~lines~~ between the existing ~~Pacific Gas and Electric Company (PG&E) Newark substation and the existing~~ Silicon Valley Power (SVP) Northern Receiving Station (NRS) substation and the existing Pacific Gas and Electric Company (PG&E) Newark substation~~, which would encompass work along an approximately 12-mile alignment between the existing Newark and NRS substations. Modifications to PG&E's Newark and SVP's NRS substations would occur to accommodate integration of the new Albrae to Baylands 320 kV direct current (DC) transmission line and HVDC terminals. The existing NRS substation modifications would be similar to the existing Newark substation. However, since the NRS substation is approximately 1.77 miles from the proposed Baylands terminal, the NRS substation is modeled separately~~.

5.8.1.1 GHG Setting

GHGs, such as water vapor and carbon dioxide, are abundant in the earth's atmosphere. These gases are called "Greenhouse Gases" because they absorb and emit thermal infrared radiation, which acts like an insulator to the planet. Without these gases, the earth's ambient temperature would either be extremely hot during the day or blistering cold at night. However, because these gases can both absorb and emit heat, the earth's temperature does not sway too far in either direction.

Over the years, scientists have measured a rise in carbon dioxide, and the general consensus is that human activities contribute to the heating of the planet. Other GHGs, such as methane and nitrous oxide, also contribute to global warming.

GHGs of concern are Carbon Dioxide (CO_2), Methane (CH_4), Nitrous Oxide (N_2O), and Sulfur Hexafluoride (SF_6). To simplify GHG calculations, CH_4, N_2O, and SF_6 are converted to equivalent amounts of CO_2 and are identified as carbon dioxide equivalent of metric tons (MT) of CO_2e. CO_2e is calculated by multiplying the calculated levels of CH_4~~, N_2O,~~ and ~~N_2O~~SF_6 by a Global Warming Potential (GWP). The latest California Emissions Estimator Model (CalEEMod 2022.1) developed by South Coast Air Quality Management District uses the Intergovernmental Panel on Climate Change (IPCC) 2007 report as source data for GWP factors for both CH_4 and N_2O (California Air Pollution Control Officers Association [CAPCOA], 2016), using the 100-year periods of 25~~, 298,~~ and 298~~22,800, respectively~~ (IPCC, 2007).

~~The proposed HVDC terminals (the Albrae and Baylands terminals) would convert alternating current (AC) to DC or the reverse. To facilitate this conversion, each new HVDC terminal would include Voltage Source Converter HVDC equipment, an AC switchyard using gas-insulated switchgear (GIS) in a breaker-and-a-half (BAAH) configuration, and converter transformers (with space for an on-site spare).~~

~~The GIS equipment located at both the proposed Albrae and Baylands terminals would require a combined total of approximately 6,000 pounds of SF_6, which is a GHG as described above. Primary sources of GHG emissions resulting from the Proposed Project are anticipated from SF_6 leakage, energy consumption, and, to a much lesser extent, vehicular trips from O&M activities.~~ Also, as part of the Proposed Project, PG&E would perform modifications to their existing Newark substation. In doing so, PG&E would install clean air gas-insulated switchgear (GIS) breakers. Clean air GIS does not contain a GHG for insulation but instead utilizes clean air as the insulation medium. Similarly, SVP would modify their existing NRS substation to accommodate the interconnection of the Proposed Project.

5.8.2 Regulatory Setting

Federal, state, and local regulations were evaluated with respect to the Proposed Project.

5.8.2.1 GHG Regulatory Setting

Federal

Clean Air Act

On April 2, 2007, in *Massachusetts v. Environmental Protection Agency (EPA)*, the Supreme Court directed the EPA Administrator to determine whether GHG emissions from new motor vehicles cause or contribute to air pollution that may reasonably be anticipated to endanger public health or welfare. In making these decisions, the EPA Administrator is required to follow the language of Section 202(a) of the Federal Clean Air Act. On December 7, 2009, the EPA Administrator signed a final rule with two distinct findings regarding GHGs under Section 202(a) of the Clean Air Act:

- The Administrator found that elevated concentrations of GHGs—CO_2, CH_4, N_2O, hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and SF_6—in the atmosphere threaten the public health and welfare of current and future generations. This is referred to as the "endangerment finding."

- The Administrator further found the combined emissions of GHGs from new motor vehicles and new motor vehicle engines contribute to the GHG air pollution that endangers public health and welfare. This is referred to as the "cause or contribute finding."

These two findings were necessary to establish the foundation for regulation of GHGs from new motor vehicles as air pollutants under the Clean Air Act.

State

Executive Order (EO) S-3-05

EO S-3-05 (June 2005) established the following Statewide goals: GHG emissions should be reduced to 2000 levels by 2010, 1990 levels by 2020, and 80 percent below 1990 levels by 2050.

Assembly Bill (AB) 32 and California's Air Resources Board Climate Change Scoping Plan

In furtherance of the goals established in EO S-3-05, the Legislature enacted AB 32, the California Global Warming Solutions Act of 2006. AB 32 requires California to reduce its GHG emissions to 1990 levels by 2020.

Under AB 32, the California Air Resources Board (CARB) is responsible for and is recognized as having the expertise to carry out and develop the programs and regulations necessary to achieve the GHG emissions reduction mandate of AB 32. Therefore, in furtherance of AB 32, CARB adopted regulations requiring the reporting and verification of GHG emissions from specified sources, such as industrial facilities, fuel suppliers, and electricity importers (see Health & Safety Code Section 35830; Cal. Code Regs., tit. 17, §§95100 et seq.). CARB is also required to adopt rules and regulations to achieve the maximum technologically feasible and cost-effective GHG emission reductions. AB 32 relatedly authorized CARB to adopt market-based compliance mechanisms to meet the specified requirements. Finally, at the State level, CARB will continue monitoring compliance and enforcing rules, regulation, emission limitations, emission reduction measures, or market-based compliance mechanisms adopted.

In 2007, CARB approved a limit on the Statewide GHG emissions level for the year 2020 consistent with the determined 1990 baseline (427 million metric tons [MMT] CO_2e). CARB's adoption of this limit is in accordance with Health and Safety Code Section 38550.

Further, in 2008, CARB adopted the *Climate Change Scoping Plan: A Framework for Change* ("*Scoping Plan"*) in accordance with Health and Safety Code Section 38561. The *Scoping Plan* established an overall framework for the measures that will be implemented to reduce California's GHG emissions for various emission sources/sectors to 1990 levels by 2020. The 2008 *Scoping Plan* evaluated opportunities for sector-specific reductions, integrated all CARB and Climate Action Team[1] early actions and additional GHG reduction features by both entities, identified additional measures to be pursued as regulations, and outlined the role of a Cap-and-Trade program. The key elements of the 2008 *Scoping Plan* include the following:

[1] The Climate Action Team is comprised of state agency secretaries and heads of state agencies, boards, and departments; these members work to coordinate Statewide efforts to implement GHG emissions reduction programs and adaptation programs.

1. Expanding and strengthening existing energy efficiency programs as well as building and appliance standards.

2. Achieving a Statewide renewable energy mix of 33 percent.

3. Developing a California Cap-and-Trade Program that links with other Western Climate Initiative partner programs to create a regional market system and caps sources contributing 85 percent of California's GHG emissions.

4. Establishing targets for transportation-related GHG emissions for regions throughout California and pursuing policies and incentives to achieve those targets.

5. Adopting and implementing measures pursuant to existing state laws and policies, including California's clean car standards, goods movement measures, and the Low Carbon Fuel Standard.

6. Creating targeted fees, including a public goods charge on water use, fees on high GWP gases, and a fee to fund the administrative costs of the State of California's long-term commitment to AB 32 implementation.

In the 2008 *Scoping Plan*, CARB determined that achieving the 1990 emissions level in 2020 would require a reduction in GHG emissions of approximately 28.5 percent from the otherwise projected 2020 emissions level; i.e., those emissions that would occur in 2020, absent GHG-reducing laws and regulations (referred to as "Business-As-Usual" [BAU]). For purposes of calculating this percent reduction, CARB assumed that all new electricity generation would be supplied by natural gas plants, no further regulatory action would impact vehicle fuel efficiency, and building energy efficiency codes would be held at 2005 standards.

In the 2011 Final Supplement to the *Scoping Plan's* Functional Equivalent Document, CARB revised its estimates of the projected 2020 emissions level in light of the economic recession and the availability of updated information about GHG reduction regulations. Based on the new economic data, CARB determined that achieving the 1990 emissions level by 2020 would require a reduction in GHG emissions of 21.7 percent (down from 28.5 percent) from the BAU conditions. When the 2020 emissions level projection was updated to account for newly implemented regulatory measures, including Pavley I (model years 2009 to 2016) and the Renewables Portfolio Standard (12 percent to 20 percent), CARB determined that achieving the 1990 emissions level in 2020 would require a reduction in GHG emissions of 16 percent (down from 28.5 percent) from the BAU conditions.

In 2014, CARB adopted the *First Update to the Climate Change Scoping Plan: Building on the Framework* ("*First Update*"). The stated purpose of the *First Update* was to "highlight California's success to date in reducing its GHG emissions and lay the foundation for establishing a broad framework for continued emission reductions beyond 2020, on the path to 80 percent below 1990 levels by 2050." The *First Update* found that California is on track to meet the 2020 emissions reduction mandate established by AB 32, and it also noted that California could reduce emissions further by 2030 to levels squarely in line with those needed to stay on track to reduce emissions to 80 percent below 1990 levels by 2050 if the state realizes the expected benefits of existing policy goals.

In conjunction with the *First Update*, CARB identified "six key focus areas comprising major components of the state's economy to evaluate and describe the larger transformative actions that will be needed to meet the State's more expansive emission reduction needs by 2050." Those six areas are: (1) energy; (2) transportation (vehicles/equipment, sustainable communities, housing, fuels, and infrastructure); (3) agriculture; (4) water; (5) waste management; and (6) natural and working lands. The *First Update* identified key recommended actions for each sector that will facilitate achievement of EO S-3-05's 2050 reduction goal.

Based on CARB's research efforts presented in the *First Update*, the update has a "strong sense of the mix of technologies needed to reduce emissions through 2050." Those technologies include energy demand reduction through efficiency and activity changes; large-scale electrification of on-road vehicles, buildings, and industrial machinery; decarbonizing electricity and fuel supplies; and the rapid market penetration of efficient and clean energy technologies.

As part of the *First Update*, CARB recalculated the State's 1990 emissions level using more recent global warming potentials identified by the IPCC. Using the recalculated 1990 emissions level (431 MMT CO_2e) and the revised 2020 emissions level projection identified in the 2011 Final Supplement, CARB determined that achieving the 1990 emissions level by 2020 would require a reduction in GHG emissions of approximately 15 percent (instead of 28.5 percent or 16 percent) from the BAU conditions.

In November 2017, CARB released *California's 2017 Climate Change Scoping Plan* ("*Second Update*") for public review and comment (CARB, 2017a). This update proposes CARB's strategy for achieving the State's 2030 GHG target as established in Senate Bill (SB) 32 (discussed below). The strategy includes continuing the Cap-and-Trade Program through 2030[2], inclusive policies and broad support for clean technologies, enhanced industrial efficiency and competitiveness, prioritization of transportation sustainability, continued leadership on clean energy, putting waste resources to beneficial use, supporting resilient agricultural and rural economics and natural and working lands, securing California's water supplies, and cleaning the air and public health.

When discussing project-level GHG emissions reduction actions and thresholds, the *Second Update* states "[a]chieving no additional increase in GHG emissions, resulting in no contribution to GHG impacts, is an appropriate overall objective for new development." However, the *Second Update* also recognizes that such an achievement "may not be feasible or appropriate for every project … and the inability of a project to mitigate its GHG emissions to net zero does not imply the project results in a substantial contribution to the cumulatively significant environmental impact of climate change under [the California Environmental Quality Act] CEQA." CARB's Governing Board adopted the *Second Update* in December 2017.

CARB's Climate Change Scoping Plan Update 2022

In 2022 California released the latest scoping plan update which lays out the sector-by-sector roadmap for California to achieve carbon neutrality by 2045. This plan, addressing recent legislation and direction from Governor Newsom, extends and expands upon these earlier plans with a target of reducing anthropogenic emissions to 85 percent below 1990 levels by 2045 (CARB, 2022a). The plan suggests that bold steps are required by the State and calls for the need of vast research and development with respect to methods of capturing CO_2. The plan calls for a need to take an unprecedented transformation and aggressively seek reductions to reduce

[2] In July 2017, AB 398 was enacted into law, thereby extending the legislatively authorized lifetime of the Cap-and-Trade Program to December 31, 2030.

the need of fossil fuels by moving to zero emission transportation, electrifying the cars, buses, trucks, and trains. The plan relies on external controls and requires partnership and collaboration with the Federal government, other U.S. states, and other jurisdictions around the world for California to succeed in achieving its climate targets.

The 2022 Scoping Plan includes key actions to support success in the necessary transition away from fossil combustion. Among the actions listed is decarbonizing the electricity sector, which depends on both using energy more efficiently and replacing fossil-fueled generation with renewable and zero carbon resources, including solar, wind, energy storage, geothermal, biomass, and hydroelectric power. Another action includes expanding incentive programs to support the holistic retrofit of existing buildings. Buildings have cross-sector interactions that influence public health and well-being and affect energy use. There are about 14 million existing homes and over 7.5 billion square feet of existing commercial buildings in California. Fossil gas supplies about half of the energy consumed by end users in these buildings. In achieving carbon neutrality, transitioning away from fossil gas in existing residential and commercial buildings is an important action item.

SB 32 and AB 197

SB 32 and AB 197 (enacted in 2016) are companion bills that set a new Statewide GHG reduction target—made changes to CARB's membership and increased legislative oversight of CARB's climate change-based activities; and expand dissemination of GHG and other air quality-related emissions data to enhance transparency and accountability. More specifically, SB 32 codified the 2030 emissions reduction goal of EO B-30-15 by requiring CARB to ensure that Statewide GHG emissions are reduced to 40 percent below 1990 levels by 2030. AB 197 established the Joint Legislative Committee on Climate Change Policies, consisting of at least three members of the Senate and three members of the Assembly, in order to provide ongoing oversight over implementation of the State of California's climate policies.

AB 197 also added two members of the Legislature to CARB as nonvoting members. The legislation further requires CARB to make available and update (at least annually via its website) emissions data for GHGs, criteria air pollutants, and Toxic Air Contaminants (TACs) from reporting facilities; and identify specific information for GHG emissions reduction measures when updating the scoping plan, including information regarding the range of projected GHG emissions and air pollution reductions that result from each measure and the cost-effectiveness (including avoided social costs) of each measure (see Health & Safety Code Section 38562.7).

EO B-55-18

In 2018, the Governor expanded upon EO S-3-05 by issuing EO B-55-18 and creating a Statewide goal of carbon neutrality by 2045. EO B-55-18 identifies CARB as the lead agency to develop a framework for implementation and progress tracking toward this goal. It should be noted that consistency with a Statewide carbon neutrality target by 2045 represents the Governor's policy goal but is not required to make a significance determination. The State of California has already determined that 80 percent below 1990 levels by 2050 is a long-term target that represents California's share of emissions reductions to stabilize and limit global warming and "avoid dangerous climate change". EO B-30-15 sets forth the 2050 target endorsed by the IPCC's findings and notes that the State's 2050 target would "attain a level of emissions necessary to avoid dangerous climate change" because it may limit global warming to two degrees Celsius by 2050.

AB 1279

In 2022, the Governor approved AB 1279 (State of California, 2022) which requires the state board to prepare and approve a scoping plan for achieving the maximum technologically feasible and cost-effective reductions in GHG emissions and to update the scoping plan at least once every five years. This bill, the California Climate Crisis Act, would declare the policy of the State both to achieve net zero GHG emissions as soon as possible, but no later than 2045, and achieve and maintain net negative GHG emissions thereafter, and to ensure that by 2045, Statewide anthropogenic GHG emissions are reduced to at least 85 percent below the 1990 levels.

AB 1493

In response to the transportation sector accounting for more than half of California's CO_2 emissions, AB 1493 was enacted in July 2002. AB 1493 required CARB to set GHG emission standards for passenger vehicles, light-duty trucks, and other vehicles determined by CARB to be vehicles that are primarily used for noncommercial personal transportation in the State. The bill required that CARB set GHG emission standards for motor vehicles manufactured in 2009 and all subsequent model years. CARB adopted the standards in September 2004 (CARB, 2017b).

SB 375

SB 375 (2008) addresses GHG emissions associated with the transportation sector through regional transportation and sustainability plans. SB 375 required CARB to adopt regional GHG reduction targets for the automobile and light-truck sector for 2020 and 2035. Regional metropolitan planning organizations (MPOs) are then responsible for preparing a Sustainable Communities Strategy (SCS) within their Regional Transportation Plan. The goal of the SCS is to establish a forecasted development pattern for the region that, after considering transportation measures and policies, would achieve, if feasible and if implemented, the GHG reduction targets. If a SCS is unable to achieve the GHG reduction target, an MPO must prepare an Alternative Planning Strategy demonstrating how the GHG reduction target would be achieved through alternative development patterns, infrastructure, or additional transportation measures or policies.

Advanced Clean Cars Program

In January 2012, CARB approved the Advanced Clean Cars program, a new emissions-control program for model years 2015 through 2025. The program combines the control of smog- and soot-causing pollutants and GHG emissions into a single coordinated package. The package includes elements to reduce smog-forming pollution, reduce GHG emissions, promote clean cars, and provide the fuels for clean cars To reduce GHG emissions, CARB, in conjunction with the EPA and the National Highway Traffic Safety Administration (NHTSA), also has adopted new GHG standards for model years 2017 to 2025 vehicles; the new standards are estimated to reduce GHG emissions by 34 percent in 2025 compared to 2017 (CARB, 2012).

The Zero Emission Vehicle (ZEV) program acts as the focused technology of the Advanced Clean Cars program by requiring manufacturers to produce increasing numbers of ZEVs and plug-in hybrid electric vehicles (PHEVs) in the 2018 to 2025 model years (CARB, 2017c).

This program was recently updated and is known as the Advanced Clean Cars II Program ("ACC II"). The ACC II regulations will rapidly scale down emissions of light-duty passenger cars, pickup trucks, and SUVs starting with the 2026 model year through 2035. The regulations are two-pronged. First, it amends the ZEV regulation to require an increasing number of ZEVs, and relies on currently available advanced vehicle technologies, including battery-electric, hydrogen fuel cell electric, and PHEVs, to meet air quality and climate change emissions standards. Second, the Low-Emission Vehicle Regulations were amended to include increasingly stringent standards for gasoline cars and heavier passenger trucks to continue to reduce smog-forming emissions (CARB, 2023a).

EO B-16-12

EO B-16-12 (March 2012) directs state entities under the Governor's direction and control to support and facilitate development and distribution of ZEVs. This EO also sets a long-term target of reaching 1.5 million ZEVs on California's roadways by 2025. On a Statewide basis, EO B-16-12 also establishes a GHG emissions reduction target from the transportation sector equaling 80 percent less than 1990 levels by 2050. In furtherance of this EO, the Governor convened an Interagency Working Group on Zero-Emission Vehicles that has published multiple reports regarding the progress made on the penetration of ZEVs in the Statewide vehicle fleet. As of January 2018, the Governor has called for as many as 1.5 million ZEVs by 2025 and up to five million ZEVs by 2030.

EO N-79-20

EO N-79-20 (September 2020) was signed by Governor Gavin Newsom in 2020, and it requires that 100 percent of new car sales in California be ZEVs by 2035. The plan targets 35 percent ZEV sales by 2026, 68 percent by 2030, and 100 percent by 2035 (CARB, 2023b).

AB 1236

AB 1236 (2015), as enacted in California's Planning and Zoning Law, requires local land use jurisdictions to approve applications for the installation of electric vehicle charging stations, as defined, through the issuance of specified permits unless there is substantial evidence in the record that the proposed installation would have a specific, adverse impact upon the public health or safety, and there is no feasible method to satisfactorily mitigate or avoid the specific, adverse impact. The bill requires local land use jurisdictions with a population of 200,000 or more residents to adopt an ordinance, by September 30, 2016, that creates an expedited and streamlined permitting process for electric vehicle charging stations, as specified.

~~***SF_6 Leakage Requirements***~~

~~In 2010, the CARB published final regulations for SF_6 and outlined requirements for equipment operational from 2011 to beyond 2020. The purpose of this regulation is to achieve GHG emission reductions by reducing SF_6 emissions from GIS. Based on the requirements, the allowable leakage rate in 2011 was 10 percent. The allowable leakage rate in 2020 and each calendar year thereafter is one percent or a 90 percent reduction (CARB, 2010) from the 2011 allowable rate. Per CARBs latest rules, SF_6 gas-insulated electronics (GIE) are to be phased out over time. CARB has developed Phase-Out Dates for GIE and shall not be purchased after these dates without exemptions further spelled out by CARB. The phase-out dates are identified in **Table 5.8-1**, *Phase-Out Dates for SF_6 GIE* (CARB, 2022b).~~

~~Table 5.8-1: Phase-Out Dates for SF_6 GIE~~			
~~Phase-Out Dates for SF_6 GIE with Voltage Capacity ≤ 38 kilovolt (kV)~~			
~~Configuration~~	**~~Voltage Capacity (kV)~~**	**~~Short-Circuit Current Rating (kV)~~**	**~~Phase-Out Date~~**
~~Aboveground~~	~~< 38~~	~~All~~	~~January 1, 2025~~
	~~38~~	~~All~~	~~January 1, 2028~~
~~Belowground~~	~~< 38~~	~~< 25~~	~~January 1, 2025~~
	~~< 38~~	~~> 25~~	~~January 1, 2028~~
~~Phase-Out Dates for SF_6 GIE with Voltage Capacity > 38 kV~~			
~~Configuration~~	**~~Voltage Capacity (kV)~~**	**~~Short-Circuit Current Rating (kV)~~**	**~~Phase-Out Date~~**
~~Any~~	~~38 < kV ≤ 145~~	~~< 63~~	~~January 1, 2025~~
		~~≥ 63~~	~~January 1, 2028~~
~~Any~~	~~145 < kV ≤ 245~~	~~< 63~~	~~January 1, 2027~~
		~~≥ 63~~	~~January 1, 2031~~
~~Any~~	~~> 245~~	~~All~~	~~January 1, 2033~~
~~Source: CARB, 2022b.~~			

SB 1078

SB 1078 (2002) established the Renewables Portfolio Standard (RPS) program, which requires an annual increase in renewable generation by the utilities equivalent to at least one percent of sales, with an aggregate goal of 20 percent by 2017. This goal was subsequently accelerated, requiring utilities to obtain 20 percent of their power from renewable sources by 2010.

SB X1 2

SB X1 2 (2011) expanded the RPS by establishing that 20 percent of the total electricity sold to retail customers in California per year by December 31, 2013, and 33 percent by December 31, 2020, and in subsequent years be secured from qualifying renewable energy sources. Under the bill, a renewable electrical generation facility is one that uses biomass, solar thermal, photovoltaic, wind, geothermal, fuel cells using renewable fuels, small hydroelectric generation of 30 megawatts or less, digester gas, municipal solid waste conversion, landfill gas, ocean wave, ocean thermal, or tidal current, and that meets other specified requirements with respect to its location. In addition to the retail sellers previously covered by the RPS, SB X1 2 added local, publicly owned electric utilities to the RPS.

SB 350

SB 350 (2015) further expanded the RPS by establishing that 50 percent of the total electricity sold to retail customers in California per year by December 31, 2030, be secured from qualifying renewable energy sources. In addition, SB 350 includes the goal to double the energy efficiency savings in electricity and natural gas final end uses (such as heating, cooling, lighting, or class of energy uses on which an energy-efficiency program is focused) of retail customers through energy conservation and efficiency.

SB 100

SB 100 (2018) has further accelerated and expanded the RPS, requiring achievement of a 50 percent RPS by December 31, 2026, and a 60 percent RPS by December 31, 2030. SB 100 also established a new Statewide policy goal that calls for eligible renewable energy resources and zero-carbon resources to supply 100 percent of electricity retail sales and 100 percent of electricity procured to serve all state agencies by December 31, 2045.

Local

The California Public Utilities Commission (CPUC) has sole and exclusive state jurisdiction over the siting and design of the Proposed Project. Pursuant to CPUC General Order (GO) 131-D, Section XIV.B, "Local jurisdictions acting pursuant to local authority are preempted from regulating electric power line projects, distribution lines, substations, or electric facilities constructed by public utilities subject to the CPUC's jurisdiction. However, in locating such projects, the public utilities shall consult with local agencies regarding land use matters" (CPUC, 2023). Consequently, public utilities are directed to consider local regulations and consult with local agencies, but City and County regulations are not applicable as the Cities of Fremont, Milpitas, San José, and Santa Clara do not have jurisdiction over the Proposed Project. Because the CPUC has exclusive jurisdiction over the Proposed Project siting, design, and construction, the Proposed Project is not subject to local land use and zoning regulations or discretionary permits. This section identifies local GHG plans and regulations for informational purposes. Although LS Power Grid California, LLC ("LS Power") is not subject to local discretionary permitting, ministerial permits would be secured as appropriate.

The Proposed Project areas are located in the Cities of Fremont, Milpitas, San José, and Santa Clara, which are all located within the jurisdiction of the Bay Area Air Quality Management District (BAAQMD). The BAAQMD recommends local jurisdictions develop Greenhouse Gas Reduction Strategies (GHGRS) which can be used for GHG emission reduction planning. The Cities of Fremont, Milpitas, San José, and Santa Clara adopted a GHGRS. Per the plans and draft concepts for each jurisdiction however, reliance on BAAQMDs guidance as it relates to CEQA.

BAAQMD Project – Level Climate Impacts – 2022 CEQA Guidelines

The BAAQMD recommends that lead agencies use a "fair share" approach for determining whether an individual project's GHG emissions would be cumulatively considerable. If the project is doing its "fair share" to implement California's plans to address the cumulative problem, its contribution can be treated as less than cumulatively considerable.

The BAAQMD has thresholds for both a land use project and stationary source type projects. When a project has GHG emissions associated with natural gas appliances or vehicle miles traveled (VMT), the land use thresholds would apply. However, if the project has GHG emissions from sources permitted by the Air District, such as generators, boilers, or other relevant equipment, the GHG emissions from permitted sources would not be subject to the land use threshold of significance but instead would be subject to the stationary source thresholds. Many projects will require the use of both land use and stationary source thresholds (BAAQMD, 2022).

Land Use Projects

For a land use project to have a less-than-significant impact related to operational GHG emissions, it must include, at a minimum, the following project design elements:

1) Buildings

   a. The project will not include natural gas appliances or natural gas plumbing (in both residential and nonresidential development).

   b. The project will not result in any wasteful, inefficient, or unnecessary energy use as determined by the analysis required under CEQA Section 21100(b)(3) and Section 15126.2(b) of the State CEQA Guidelines

2) Transportation

   a. The project will achieve a reduction in project-generated VMT below the regional average consistent with the current version of the California Climate Change Scoping Plan (currently 15 percent) or meet a locally adopted Senate Bill 743 VMT target that reflects the recommendations provided in the Governor's Office of Planning and Research's Technical Advisory on Evaluating Transportation Impacts in CEQA:

      i. Residential projects: 15 percent below the existing VMT per capita

      ii. Office projects: 15 percent below the existing VMT per employee

      iii. Retail projects: no net increase in existing VMT

   b. The project will achieve compliance with off-street electric vehicle requirements in the most recently adopted version of California Green Building Standards Code ("CALGreen") Tier 2.

If the project includes, at a minimum, these design elements, there would be a less-than-significant climate impact related to GHG emissions, and the project would not be likely to conflict with applicable initiatives to reduce GHG emissions.

Because construction emissions are temporary and variable, the Air District has not developed a quantitative threshold of significance for construction-related GHG emissions. However, the Lead Agency should quantify and disclose GHG emissions that would occur during construction. The BAAQMD does suggest that projects should implement Best Management Practices (BMPs) to reduce GHG emissions, if necessary, which are presented in **Table 5.8-2**, *Best Management Practices for Construction-Related GHG Emissions.*

Table 5.8-2: Best Management Practices for Construction-Related GHG Emissions
Use zero-emission and hybrid-powered equipment to the greatest extent possible, particularly if emissions are occurring near sensitive receptors or located within a BAAQMD-designated Community Air Risk Evaluation (CARE) area or AB 617 community.
Require all diesel-fueled off-road construction equipment be equipped with EPA Tier 4 Final compliant engines or better as a condition of contract.
Require that all on-road heavy-duty trucks to be zero emissions or meet the most stringent emissions standard, such as model year (MY) 2024 to 2026, as a condition of contract.
Minimize idling time either by shutting equipment off when not in use or reducing the time of idling to no more than two minutes (A five-minute limit is required by the state airborne toxics control measure [Title 13, Sections 2449(d)(3) and 2485 of the California Code of Regulations]). Provide clear signage that posts this requirement for workers at the entrances to the site and develop an enforceable mechanism to monitor idling time to ensure compliance with this measure.
Prohibit off-road diesel-powered equipment from being in the "on" position for more than 10 hours per day.
Use CARB–approved renewable diesel fuel in off-road construction equipment and on-road trucks.
Use U.S. EPA SmartWay certified trucks for deliveries and equipment transport.
Require all that construction equipment is maintained and properly tuned in accordance with manufacturer's specifications. Equipment should be checked by a certified mechanic and determined to be running in proper condition prior to operation.
Where grid power is available, prohibit portable diesel engines and provide electrical hook ups for electric construction tools, such as saws, drills, and compressors, and use electric tools whenever feasible.
Where grid power is not available, use alternative fuels, such as propane or solar electrical power, for generators at construction sites.
Encourage and provide carpools, shuttle vans, transit passes, and/or secure bicycle parking to construction workers and offer meal options on-site or shuttles to nearby meal destinations for construction employees.
Reduce electricity use in the construction office by using light emitting diode (LED) bulbs, powering off computers every day, and replacing heating and cooling units with more efficient ones.
Minimize energy used during site preparation by deconstructing existing structures to the greatest extent feasible.
Recycle or salvage nonhazardous construction and demolition debris, with a goal of recycling at least 15 percent more by weight than the diversion requirement in Title 24.
Use locally sourced or recycled materials for construction materials (goal of at least 20 percent based on costs for building materials and based on volume for roadway, parking lot, sidewalk, and curb materials). Wood products used should be certified through a sustainable forestry program.
Use low-carbon concrete, minimize the amount of concrete used, and produce concrete on-site if it is more efficient and lower emitting than transporting ready-mix.
Develop a plan to efficiently use water for adequate dust control since substantial amounts of energy can be consumed during the pumping of water.
Include all requirements in applicable bid documents, purchase orders, and contracts, with successful contractors demonstrating the ability to supply the compliant on- or off-road construction equipment for use prior to any ground-disturbing and construction activities.
Source: BAAQMD, 2022.

Stationary Sources of GHG Emissions

The BAAQMD is responsible for issuing permits for the construction and operation of stationary sources to reduce air pollution and to attain and maintain the national and California ambient air quality standards in the Greater Bay Area. A stationary source consists of an emission source with an identified emission point, such as a stack at a facility. It should include mobile sources that are associated with the stationary source, such as trucks, ships, and rail. Facilities can have multiple emission point sources located on-site. Major stationary sources typically associated with industrial processes, such as refineries and power plants (BAAQMD, 2022) would fit this category.

If GHG emissions for a stationary source are greater than 10,000 $MTCO_2e$ per year, the project would have significant impact related to GHG emissions. If emissions are less than 10,000 $MTCO_2e$ per year, the impact would be less than significant (BAAQMD, 2022).

City of Fremont General Plan

Chapter 7 of the City of Fremont's General Plan (City of Fremont, 2011) outlines general GHG goals and policies geared towards reducing GHG impacts within the City. This document includes several related policies with implementation measures (IMP) that pertain to this Proposed Project located within the City of Fremont.

Goal 7-8 **Greenhouse Gas Emissions.** GHG reduced by 25 percent from 2005 levels by 2020. This goal is aspirational and not meant to supersede AB 32 targets as a standard for project review.

Policy 7-8.1 **Climate Action Plan.** Maintain a Climate Action Plan (CAP) that outlines the specific strategies the City will implement to achieve its 2020 reduction goals.

Implementation 7-8.1.A **CAP Implementation.** Implement strategies in the CAP to achieve the City's GHG reduction target.

Implementation 7-8.1.B **CAP Updates.** Update the CAP every five years to reflect updated GHG emissions data; review the appropriateness and adequacy of the City's GHG reduction target and determine whether revisions to the goals and strategies in the CAP are necessary.

Implementation 7-8.1.C **Consistency with CAP.** Review and adjust City policies and programs to be consistent with the CAP.

Implementation 7-8.1.D **Take Leadership Role on Climate Action.** Take a leadership role in working with other local agencies including Fremont Unified School District, Alameda County Water District, Union Sanitary District, and Washington Hospital to maximize GHG emission reductions.

Policy 7-8.2 **Development Trends.** Review development trends for consistency with targets of AB 32: Global Warming Solutions Act of 2006.

Implementation 7-8.2.A **Report to City Council.** Provide a development trend report to the City Council in 2015 to determine consistency with greenhouse gas reduction strategy analysis of the Draft

Environmental Impact Report (EIR) and target reductions of AB 32.

Implementation 7-8.2.B Monitoring. Monitor actions of the State Scoping Plan and Regional Climate Change planning activities, including SB 375, related to reduction targets for the year 2035 and 2050.

City of Fremont Climate Action Plan

Consistent with Policy 7-8.1 of the City of Fremont's General Plan, the City adopted their first CAP in 2012 as a means to assist the City in reducing GHG emissions by 25 percent from a 2005 baseline level by the year 2020 (City of Fremont, 2011). In 2019, the City adopted a Carbon Neutrality Resolution for the City of Fremont to achieve a 55 percent GHG emission reduction from a 2005 baseline level by the year 2030 and to become a carbon neutral city no later than 2045. The latest CAP was adopted in October 2023 (City of Fremont, 2023). The General Plan has developed a framework of key strategies to serve as a foundation for the CAP and is aligned with the State's GHG emission targets.

The City's community GHG reduction targets for *Climate Ready Fremont* are as follows:

- 2030 target: 55 percent below 2005 levels (approximately 30 percent below 2018 levels); and
- 2045 target: carbon neutrality.

To achieve these goals, the City of Fremont outlined 31 strategies that will both mitigate GHG emissions and enhance the City's ability to adapt to the impacts of climate change. The strategies are organized under the following eight focus areas.

1) Buildings and Energy
2) Infrastructure and Equipment
3) Land Use and Mobility
4) Materials and Waste
5) Natural and Urban Landscapes
6) Adaptation and Resiliency
7) Green and Circular Economy
8) Public Participation and Engagement

Based upon review or the strategies, the industrial project to enhance and stabilize the electrical grid would support the City's efforts in electrification and decarbonization of energy usage.

City of Milpitas General Plan

The Conservation and Sustainability chapter of the City of Milpitas General Plan (City of Milpitas, 2021) outlines general climate action goals, policies, and actions geared towards reducing GHG impacts within the City.

Goal CON-1 Ensure a sustainable future for the City of Milpitas by promoting a carbon free energy future that increases renewable resources, conservation, and efficiency throughout the City.

Policy CON 1-1 Ensure that new development is consistent with the energy objectives and targets identified by the City's CAP.

Policy CON 1-2 Ensure all development projects comply with the mandatory energy efficiency requirements of the CALGreen.

Policy CON 1-3 Support innovative green building BMPs including, but not limited to, Leadership in Energy and Environmental Design (LEED) certification, and encourage project applicants to exceed the most current "green" development standards in the California Code of Regulations (CCR), Title 24, as feasible.

Policy CON 1-4 Require large-scale industrial and manufacturing energy users to implement an energy conservation plan as part of the project review and approval process.

Policy CON 1-5 Consider lifecycle costs when identifying opportunities for the replacement and retrofit of energy efficient technologies when upgrading or maintaining City facilities.

Policy CON 1-6 Reduce the City's energy demand by pursuing the use of alternative energy and fuel-efficient City vehicles and equipment and strive for a zero-emission City vehicle fleet to the extent feasible and practical.

Policy CON 1-7 Require large-scale industrial and manufacturing energy users to implement an energy conservation plan as part of the project review and approval process.

Policy CON 1-8 Encourage energy efficiency and conservation through public awareness and educational opportunities.

Policy CON 1-9 Encourage site planning and building techniques that promote energy conservation. Where feasible, encourage projects to take advantage of shade, prevailing winds, landscaping, sunscreens, building orientations, and material choices that reduce energy use.

Policy CON 1-10 Encourage distributed energy resources including solar, fuel cells etc. to provide environmental benefits, as well as energy security, and the support of the grid during peak energy use periods.

Policy CON 1-11 Consider incentive programs such as reduced fees, and permit expedition for projects that exceed mandatory energy requirements, incorporate alternative energy technologies, or support the City's energy objectives.

Policy CON 1-12 Promote incentives from local, state, and federal agencies for improving energy efficiency and expanding renewable energy installations.

Policy CON 1-13 Support projects and programs such as appliance upgrades and the use of electric appliances, and energy storage options that reduce the use of and reliance on natural gas.

Action CON-1a Update the City's CAP to achieve the GHG reduction targets for 2030, and 2050. Updates to the CAP should align the City's GHG reduction targets with the statewide GHG reduction targets of Assembly Bill 32, SB 375, and Executive Orders S-03-05 and B-30-15.

Action CON-1b Adopt a City Green-Fleet policy to guide the City in purchasing energy efficient and clean emissions vehicles.

Action CON-1c Display energy conservation and energy efficiency information including state and local programs, community choice aggregation opportunities, and rebate opportunities on the City's web page.

Action CON-1d Continue to participate in Silicon Valley Clean Energy (SVCE) whereby City-owned facilities, parks, and streetlights will run on renewable energy sources like wind and solar and educate and encourage Milpitas residents and businesses to participate in SVCE to reduce GHG emissions and support statewide alternative energy use.

Action CON-1e Continue to review all new public and private development projects to ensure compliance with the California CCR, Title 24 standards as well as the energy efficiency standards established by California CALGreen, the General Plan, and the Milpitas Municipal Code Chapter 20 Green Building Regulations.

Action CON-1f Continue to require all development project applications for new buildings to include a completed LEED or CALGreen Mandatory Measures Checklist.

Action CON-1g Annually audit and report on the progress toward achieving the Milpitas CAP goals of reducing community-wide emissions levels by 2030 and 2050. The audit should be publicly available on the City's website and shall also be presented to the Milpitas Planning Commission and City Council.

Action CON–1h Periodically review and report on the effectiveness of the measures outlined in the CAP and the strategies in this Element. Institutionalize sustainability by developing a methodology to ensure all environmental, social and lifecycle costs are considered in project, program, policy, and budget decisions.

City of San José General Plan

The City of San José General Plan addresses climate change directly (City of San José, 2024). The General Plan sets guiding policies for minimizing impacts on resources and ensuring that the City of San José is able to maintain the infrastructure and services necessary to sustain its economy and quality of life.

Policy MS-14.3 Consistent with the CPUC's California Long Term Energy Efficiency Strategic Plan, as revised, and when technological advances make it feasible, require all new residential and commercial construction to be designed for zero net energy use.

City of Santa Clara General Plan

Chapter 5 of the City of Santa Clara's General Plan (City of Santa Clara, 2010) outlines general goals and policies geared towards reducing GHG impacts within the City. This document includes several GHG-related goals and policies that pertain to this Proposed Project located within the City of Santa Clara.

Goal 5.10.2-G2 Reduced GHG emissions that meet the State and regional goals and requirements to combat climate change.

Policy 5.10.2-P2 Encourage development patterns that reduce vehicle miles traveled and air pollution.

Policy 5.10.2-P4 Encourage measures to reduce GHG emissions to reach 30 percent below 1990 levels by 2020.

City of Santa Clara Climate Action Plan

The City of Santa Clara adopted their first CAP in 2013 as a means to assist the City in reducing GHG emissions. The latest CAP was adopted in October 2023 (City of Santa Clara, 2022). The Plan has developed a framework of key strategies to serve as a foundation for the CAP and is aligned with the State's GHG emission targets and has outlined 65 strategies that will both mitigate GHG emissions and enhance the City's ability to adapt to the impacts of climate change. The strategies are organized under the following five focus areas.

1) Buildings and Energy
2) Transportation and Land Use
3) Materials and Consumption
4) Natural Systems and Water Resources
5) Community Resilience and Wellbeing

5.8.3 Impact Questions

5.8.3.1 CEQA Impact Questions

The significance criteria for assessing the impacts of GHG emissions come from the CEQA, Appendix G Environmental Checklist. According to the CEQA Environmental Checklist, a project may cause a potentially significant impact if it would:

- Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment; or
- Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases.

5.8.3.2 Additional CEQA Impact Questions

Pursuant to the *Guidelines for Energy Project Applications Requiring CEQA Compliance: Pre-filing Proponent's Environmental Assessments* (CPUC, 2019), there are no additional CEQA Impact Questions required for GHG emissions.

5.8.4 Impact Analysis

5.8.4.1 GHG Impact Analysis

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

Less-Than-Significant Impact. The Proposed Project seeks to construct a transmission line between the existing Newark and NRS substations~~two stationary electrical HVDC terminals~~, and the primary sources of GHG emissions would be attributed to construction only. Operational activities at both existing substations would remain as is.~~operation of SF_6 insulated switchgear and, to a lesser extent, vehicle trips associated with maintaining the terminals.~~ The Proposed Project's estimated GHG emissions are analyzed based on stationary source recommendations provided in the 2022 CEQA Guidelines established by the BAAQMD (BAAQMD, 2022). Based on this guidance, if GHG emissions are less than 10,000 $MTCO_2e$ per year, impacts would be less than significant.

~~The Proposed Project would generate direct GHG emissions from the Proposed Project construction, SF_6 leakage from GIS, and vehicle emissions from maintenance activities which may be necessary on-site each year. In addition, the Proposed Project would generate indirect GHG emissions from electrical energy use on-site. The total demand at each proposed HVDC terminal location would be approximately 200 kilowatts (kW) continuous or 1,752,000 kilowatt hours (kWh) annually, and both proposed HVDC terminals combined would consume 3,504,000 kWh annually.~~

For construction emissions, O&M activities, and operations energy usage, CalEEMod (version 2022.1) was used to model emissions. A specific model was created for the proposed work~~Albrae terminal and existing Newark substation,~~ for the ~~proposed Baylands terminal, for the existing NRS substation, and for the entire proposed~~ transmission lines and interconnections between the Newark and NRS ~~line alignments connecting the terminals and~~ substations. GHG models for each of the areas are provided as Attachments 1A, 1B, ~~1C,~~ and ~~1C~~1D of **Updated Appendix 5.3-A**, *Updated Air Quality and GHG Modeling Files***.** The Proposed Project plans to start construction in 2026, with work assumed to be scheduled to occur six days per week and be completed in 2028.

Construction emissions for all three areas were combined and were then amortized over 30 years based on the projected operational life of the Proposed Project.

~~Based on the preliminary Proposed Project design, the SF_6 volume on-site for the proposed HVDC terminal sites is expected to be approximately 6,000 pounds of SF_6. The Proposed Project would be required to comply with CARB regulations regarding SF_6 leakage rates, which are limited to one percent per year or roughly 60 pounds of SF_6 annually.~~

Construction Emissions Modeling and Results

The Proposed Project plans to start grading and construction in 2026 and be completed in 2028. Material hauling/truck details along with worker trips are provided in **Section 3.0**, *Proposed Project Description* (see **Table 3-8**, *Estimated Average Daily Construction Traffic)* and was manually updated within the CalEEMod software (refer to **Updated Appendix 5.3-A**). **Updated Appendix 5.3-A** includes detailed equipment and usage as provided by the Proposed Project engineer.

In addition, CARB regulations require that, starting in 2012, all off-road equipment produced needs to meet the basic requirements for Tier 4 compliance (CARB, 2023c). Off-road equipment fleets are managed by CARB and are typically based on total horsepower owned. Owners are limited to what types of equipment they must maintain as their fleet and can include equipment from rental companies. For this reason, it is assumed that the Proposed Project equipment would conservatively be made up of at least 75 percent Tier 4 during the construction years of 2026 through 2028 and would be achievable since most equipment operators already maintain fleets consisting of mostly Tier 4 equipment (refer to **Applicant Proposed Measure [APM] AQ-1**, *Construction Fleet Minimum Requirements and Tracking* in **Section 5.3**, *Air Quality*).

Table 5.8-3, *Expected Annual Construction CO_2e Emissions* summarizes the construction emissions in metric tons per year for the Proposed Project, which includes construction of the proposed ~~HVDC terminals,~~ new transmission line~~lines,~~ and existing substation modifications. Emissions are amortized over a 30-year lifecycle. Based on the modeling, the Proposed Project construction would generate 179.92~~236.47~~ $MTCO_2$e per year from construction. Based on BAAQMD Guidelines, construction thresholds do not exist. However, to reduce construction GHG emissions, the Proposed Project may implement additional BMPs as identified in **Table 5.8-2**, above.

Table 5.8-3: Expected Annual Construction CO_2e Emissions

Year	CO_2e (MT/Year)
~~Albrae Terminal and~~ Newark Substation 2026	25.90~~1,394.00~~
~~Albrae Terminal and~~ Newark Substation 2027	304~~374~~.00
~~Albrae Terminal and~~ Newark Substation 2028	38.20~~33.90~~
~~Baylands Terminal 2026~~	~~1,372.00~~
~~Baylands Terminal 2027~~	~~103.00~~
~~Baylands Terminal 2028~~	~~33.00~~

Table 5.8-3: Expected Annual Construction CO_2e Emissions	
Year	**CO_2e (MT/Year)**
NRS Substation 2026	88.90~~91.80~~
NRS Substation 2027	300~~274~~.00
NRS Substation 2028	37.60~~34.30~~
Transmission Lines 2026	2826~~2,121~~.00
Transmission Lines 2027	1562~~1,073~~.00
Transmission Lines 2028	215~~190~~.00
Total	**5,397.60~~7,094.00~~**
Yearly Average Construction Emissions (MT/year over 30 years)	**179.92~~236.47~~**
Notes: Expected construction emissions are based upon CalEEMod modeling assumptions (refer to **Updated Appendix 5.3-A**) through years 2026 to 2028.	

Operations Emissions and Modeling Results

Operations of the Proposed Project would not increase~~begin in 2028 once construction is completed. Operational emissions sources would include the consumption of energy on-site~~ from current existing levels at both the Newark~~HVDC cooling equipment~~ and NRS substations ~~auxiliary equipment, such~~ as a result of ~~control room heating, ventilation, and air conditioning (HVAC) units, communications equipment, and lighting. The total energy consumption from~~ the Proposed Project. Operation ~~would be 3,504,000 kWh annually and was modeled using CalEEMod.~~

~~Additional emissions during the Proposed Project operations would occur from mobile vehicle visits to the Proposed Project site associated with periodic O&M activities. It is estimated that monthly O&M visits would not be greater than 10,000 vehicle miles per year per site or 20,000 miles annually. These parameters were utilized for the GHG emission modeling (refer to Attachments 1A, 1B, 1C, and 1D~~ of ~~**Appendix 5.3-A**).~~

~~Finally, the Proposed Project would maintain a combined total of approximately 6,000 pounds of SF_6 for GIS. Based on CARB's older regulations, the allowable SF_6 leak rate for circuit breakers is limited to one percent or 60 pounds per year. The revised plans removed the leakage rate limitations but is still a design strategy.~~ The new ~~regulations require that new GIS after specific dates will not be allowed and would not generate GHGs. Given this, the 60 pounds per year was used within this analysis. In addition, a GWP of 22,800 for SF_6 was also utilized.~~

~~Under this scenario, operational emissions would only be expected at the proposed Albrae and Baylands terminals since the~~ transmission line~~lines~~ would be remote, and inspection and~~not require significant~~ maintenance activities would be infrequent and would not be expected to result emissions beyond existing conditions. Based on this, GHG emissions from operations would not exceed~~and would not consume energy. The Proposed Project emissions would be expected to generate 1,190.98 MTCO~~$_2$~~e per year (see **Table 5.8-4**, *Operational Emissions Summary MT/Year*). The Proposed Project scenario analyzed herein includes both annualized construction and operational emissions combined to reflect the total annual GHG emission produced by the Proposed Project.~~

~~Based on~~ BAAQMD guidance.~~,~~ since the Proposed Project would generate less than 10,000 $MTCO_2e$ per year, the impact would be considered less than significant. It should be noted that

BAAQMD does not have construction significance thresholds as it relates to GHG emissions, though such emissions were included in this analysis which represent the worst-case scenario. Impacts would be less than significant.

Table 5.8-4: Operational Emissions Summary MT/Year	
Site Locations	**CO_2e (MT/Year)**
Newark~~Albrae Terminal~~ Operations (Exceeding Existing Emissions)	0~~167.00~~
~~Baylands Terminal Operations~~	~~167.00~~
NRS Substation operations (Exceeding Existing~~SF_6~~ Emissions ~~(Total allowed one percent or 60 pounds per year~~)	0~~620.51~~
Amortized Construction Emissions (**Table 5.8-3** above)	179.92~~236.47~~
Total Construction and Operations (MT/Year)	**179.92~~1,190.98~~**
Threshold	**10,000**
Exceeds Threshold?	***NO***
Data is in MT. Conversion rate is 1 pound = 0.000453592 MT. ~~GWP SF_6 = 22,800~~ Data is presented in decimal format and may have rounding errors. Source: **Updated Appendix 5.3-A**	

PG&E Substation Modifications

In order to integrate the proposed ~~HVDC terminals and new Albrae to Baylands 320 kV DC~~ transmission line~~ into the existing transmission system~~, PG&E would be required to perform modifications at their existing Newark substation (refer to **Section 3.3.5**, *Other Potentially Required Facilities*). The PG&E Newark substation modifications would occur within and adjacent to the existing substation (located entirely within PG&E fee-owned property). By the nature of GHG emissions and impact analysis, all Proposed Project activities are modeled as one action. As shown above, impacts from all Proposed Project actions, including the Newark substation modifications, are less than significant. Therefore, impacts associated with construction and operation of the Newark substation modifications would be less than significant if considered individually.

SVP Substation Modifications

In order to integrate the proposed ~~HVDC terminals and new Albrae to Baylands 320 kV DC~~ transmission line~~ into the existing transmission system~~, SVP would be required to perform modifications at their existing NRS substation (refer to **Section 3.3.5**). The NRS substation modifications would occur within the existing substation. By the nature of GHG emissions and impact analysis, all Proposed Project activities are modeled as one action. As shown above, impacts from all Proposed Project actions, including the NRS substation modifications, are less than significant. Therefore, impacts associated with construction and operation of the NRS substation modifications would be less than significant if considered individually.

Would the project conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

Less-Than-Significant Impact. BAAQMD published the 2022 CEQA Guidelines so that cities and counties within the BAAQMD jurisdictional boundaries could point to significance thresholds as the basis for developing applicable plans, policies, and regulations. Since the Proposed Project would not exceed BAAQMD screening thresholds, the Proposed Project would not conflict with the Cities of Fremont, Milpitas, San José, or Santa Clara's plans to reduce the emissions of GHGs. Since the Proposed Project is designed to stabilize the electric grid, the Proposed Project would enhance the utility provider's ability to provide a resilient electrical infrastructure, which is a requirement for electrification and decarbonization and which is a key goal and strategy for these Cities to reduce GHGs. Given this, the Proposed Project would not conflict with any City's plans to reduce GHG emissions.

Based on findings shown in **Table 5.8-4**, the Proposed Project would generate 179.92~~1,190.98~~ $MTCO_2e$ per year, which includes provisions for construction emissions to be converted to an annual rate similar to an annual operational estimate.~~and operation within the estimate.~~ Therefore, a conservative analysis was used as the emissions include both construction and operation of the Proposed Project. The BAAQMD significance threshold is 10,000 $MTCO_2e$ per year for projects of this type. As shown in **Table 5.8-4**, GHG impacts from the Proposed Project would be less than significant under this criterion.

PG&E Substation Modifications

The PG&E Newark substation modifications would occur within and adjacent to the existing substation (located entirely within PG&E fee-owned property). Similar to the remainder of the Proposed Project elements, the Newark substation modifications would not conflict with the City of Fremont's plans to reduce the emissions of GHGs. Therefore, impacts associated with construction and operation of the Newark substation modifications would be less than significant.

SVP Substation Modifications

The SVP NRS substation modifications would occur within the existing substation. Similar to the remainder of the Proposed Project elements, the NRS substation modifications would not conflict with the City of Santa Clara's plans to reduce the emissions of GHGs. Therefore, impacts associated with construction and operation of the NRS substation modifications would be less than significant.

5.8.4.2 Natural Gas Storage Accident Conditions

The Proposed Project does not involve the storage or transmission of natural gas. Therefore, no impact would occur.

5.8.4.3 Monitoring and Contingency Plan

The Proposed Project does not involve the storage or transmission of natural gas. Therefore, no impact would occur.

5.8.5 CPUC DRAFT ENVIRONMENTAL MEASURES

The CPUC includes one Environmental Measure for GHG. The Proposed Project is not anticipated to result in potentially significant impacts relating to GHG. Therefore, the Draft Environmental Measure is not included as part of the Proposed Project.

5.8.6 APPLICANT PROPOSED MEASURES

No APMs for GHG emissions would be implemented for the Proposed Project.

5.8.7 PG&E BEST MANAGEMENT PRACTICES

No PG&E BMPs for GHG emissions would be implemented for PG&E's scope of work.

5.8.8 SVP BEST MANAGEMENT PRACTICES

No SVP BMPs or Proposed Project APMs for GHG emissions would be implemented for SVP's scope of work.

PGE Upgrades Newark - HVDC Tier 4 Final (11-10-24 Update) Detailed Report

Table of Contents

1. Basic Project Information

1.1. Basic Project Information

Data Field	Value
Project Name	PGE Upgrades Newark - HVDC Tier 4 Final (11-10-24 Update)
Construction Start Date	12/15/2026
Lead Agency	—
Land Use Scale	Project/site
Analysis Level for Defaults	County
Windspeed (m/s)	4.20
Precipitation (days)	25.8
Location	37.50616549232012, -121.98839557092066
County	Alameda
City	Fremont
Air District	Bay Area AQMD
Air Basin	San Francisco Bay Area
TAZ	1894
EDFZ	1
Electric Utility	Pacific Gas & Electric Company
Gas Utility	Pacific Gas & Electric
App Version	2022.1.1.28

1.2. Land Use Types

Land Use Subtype	Size	Unit	Lot Acreage	Building Area (sq ft)	Landscape Area (sq ft)	Special Landscape Area (sq ft)	Population	Description
User Defined Industrial	1.00	User Defined Unit	13.8	10,000	0.00	—	—	Electrical Substation no buildings

1.3. User-Selected Emission Reduction Measures by Emissions Sector

No measures selected

2. Emissions Summary

2.1. Construction Emissions Compared Against Thresholds

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

Un/Mit.	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.66	5.51	14.0	0.02	0.14	0.21	0.35	0.13	0.05	0.18	—	2,559	2,559	0.10	0.07	2,583
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.69	5.68	14.0	0.02	0.15	0.21	0.36	0.14	0.05	0.20	—	2,557	2,557	0.10	0.07	2,580
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.47	3.95	9.95	0.02	0.10	0.15	0.25	0.09	0.04	0.13	—	1,822	1,822	0.07	0.05	1,839
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.09	0.72	1.82	< 0.005	0.02	0.03	0.05	0.02	0.01	0.02	—	302	302	0.01	0.01	304

2.2. Construction Emissions by Year, Unmitigated

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

Year	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	0.66	5.51	14.0	0.02	0.14	0.21	0.35	0.13	0.05	0.18	—	2,559	2,559	0.10	0.07	2,583

Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2026	0.69	5.68	14.0	0.02	0.15	0.21	0.36	0.14	0.05	0.20	—	2,557	2,557	0.10	0.07	2,580
2027	0.66	5.54	14.0	0.02	0.14	0.21	0.35	0.13	0.05	0.18	—	2,550	2,550	0.10	0.07	2,573
2028	0.64	5.44	13.9	0.02	0.13	0.21	0.34	0.12	0.05	0.17	—	2,537	2,537	0.10	0.07	2,559
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2026	0.04	0.34	0.85	< 0.005	0.01	0.01	0.02	0.01	< 0.005	0.01	—	155	155	0.01	< 0.005	157
2027	0.47	3.95	9.95	0.02	0.10	0.15	0.25	0.09	0.04	0.13	—	1,822	1,822	0.07	0.05	1,839
2028	0.06	0.49	1.25	< 0.005	0.01	0.02	0.03	0.01	< 0.005	0.02	—	228	228	0.01	0.01	230
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2026	0.01	0.06	0.15	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	25.7	25.7	< 0.005	< 0.005	25.9
2027	0.09	0.72	1.82	< 0.005	0.02	0.03	0.05	0.02	0.01	0.02	—	302	302	0.01	0.01	304
2028	0.01	0.09	0.23	< 0.005	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	—	37.8	37.8	< 0.005	< 0.005	38.2

3. Construction Emissions Details

3.1. PGE Upgrades Newark (2026) - Unmitigated

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

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.63	5.24	13.4	0.02	0.15	—	0.15	0.14	—	0.14	—	2,124	2,124	0.09	0.02	2,131

Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.04	0.32	0.81	< 0.005	0.01	—	0.01	0.01	—	0.01	—	129	129	0.01	< 0.005	129
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.06	0.15	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	21.3	21.3	< 0.005	< 0.005	21.4
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.04	0.04	0.48	0.00	0.00	0.12	0.12	0.00	0.03	0.03	—	118	118	< 0.005	0.01	120
Vendor	0.01	0.40	0.17	< 0.005	< 0.005	0.08	0.09	< 0.005	0.02	0.03	—	314	314	0.01	0.05	329
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.03	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	7.22	7.22	< 0.005	< 0.005	7.32
Vendor	< 0.005	0.02	0.01	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	19.1	19.1	< 0.005	< 0.005	20.0
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	1.20	1.20	< 0.005	< 0.005	1.21
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	3.16	3.16	< 0.005	< 0.005	3.30
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00

3.3. PGE Upgrades Newark (2027) - Unmitigated

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

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.61	5.12	13.3	0.02	0.14	—	0.14	0.13	—	0.13	—	2,126	2,126	0.09	0.02	2,133
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.61	5.12	13.3	0.02	0.14	—	0.14	0.13	—	0.13	—	2,126	2,126	0.09	0.02	2,133
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.44	3.66	9.53	0.02	0.10	—	0.10	0.09	—	0.09	—	1,519	1,519	0.06	0.01	1,524
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.08	0.67	1.74	< 0.005	0.02	—	0.02	0.02	—	0.02	—	251	251	0.01	< 0.005	252
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Worker	0.04	0.03	0.51	0.00	0.00	0.12	0.12	0.00	0.03	0.03	—	125	125	< 0.005	< 0.005	127
Vendor	0.01	0.36	0.16	< 0.005	< 0.005	0.08	0.09	< 0.005	0.02	0.03	—	308	308	0.01	0.05	323
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.04	0.04	0.45	0.00	0.00	0.12	0.12	0.00	0.03	0.03	—	116	116	< 0.005	0.01	118
Vendor	0.01	0.38	0.16	< 0.005	< 0.005	0.08	0.09	< 0.005	0.02	0.03	—	308	308	0.01	0.05	322
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.03	0.02	0.31	0.00	0.00	0.09	0.09	0.00	0.02	0.02	—	83.4	83.4	< 0.005	< 0.005	84.7
Vendor	0.01	0.27	0.12	< 0.005	< 0.005	0.06	0.06	< 0.005	0.02	0.02	—	220	220	0.01	0.03	230
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	< 0.005	0.06	0.00	0.00	0.02	0.02	0.00	< 0.005	< 0.005	—	13.8	13.8	< 0.005	< 0.005	14.0
Vendor	< 0.005	0.05	0.02	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	36.4	36.4	< 0.005	0.01	38.2
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00

3.5. PGE Upgrades Newark (2028) - Unmitigated

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

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.59	5.04	13.3	0.02	0.12	—	0.12	0.12	—	0.12	—	2,122	2,122	0.09	0.02	2,129

Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.05	0.45	1.20	< 0.005	0.01	—	0.01	0.01	—	0.01	—	191	191	0.01	< 0.005	192
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.08	0.22	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	31.6	31.6	< 0.005	< 0.005	31.7
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.04	0.03	0.42	0.00	0.00	0.12	0.12	0.00	0.03	0.03	—	114	114	< 0.005	0.01	116
Vendor	0.01	0.37	0.16	< 0.005	< 0.005	0.08	0.09	< 0.005	0.02	0.03	—	301	301	0.01	0.04	314
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.04	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	10.3	10.3	< 0.005	< 0.005	10.5
Vendor	< 0.005	0.03	0.01	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	27.1	27.1	< 0.005	< 0.005	28.3
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	1.71	1.71	< 0.005	< 0.005	1.74
Vendor	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	4.48	4.48	< 0.005	< 0.005	4.69
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00

4. Operations Emissions Details

4.10. Soil Carbon Accumulation By Vegetation Type

4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

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

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

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

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

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

Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

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

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

Sequeste	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

5. Activity Data

5.1. Construction Schedule

Phase Name	Phase Type	Start Date	End Date	Days Per Week	Work Days per Phase	Phase Description
PGE Upgrades Newark	Building Construction	12/1/2026	2/15/2028	5.00	316	—

5.2. Off-Road Equipment

5.2.1. Unmitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
PGE Upgrades Newark	Tractors/Loaders/Backhoes	Diesel	Tier 4 Final	1.00	5.00	275	0.27
PGE Upgrades Newark	Excavators	Diesel	Tier 4 Final	1.00	8.00	70.0	0.23
PGE Upgrades Newark	Bore/Drill Rigs	Diesel	Average	2.00	10.0	125	0.25
PGE Upgrades Newark	Rough Terrain Forklifts	Diesel	Tier 4 Final	1.00	10.0	130	0.24
PGE Upgrades Newark	Welders	Diesel	Average	2.00	2.00	395	0.23

5.3. Construction Vehicles

5.3.1. Unmitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
PGE Upgrades Newark	—	—	—	—
PGE Upgrades Newark	Worker	15.0	11.7	LDA,LDT1,LDT2
PGE Upgrades Newark	Vendor	12.0	8.40	HHDT,MHDT
PGE Upgrades Newark	Hauling	0.00	20.0	HHDT
PGE Upgrades Newark	Onsite truck	—	—	HHDT

5.4. Vehicles

5.4.1. Construction Vehicle Control Strategies

Non-applicable. No control strategies activated by user.

5.5. Architectural Coatings

Phase Name	Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)

5.6. Dust Mitigation

5.6.1. Construction Earthmoving Activities

Phase Name	Material Imported (cy)	Material Exported (cy)	Acres Graded (acres)	Material Demolished (sq. ft.)	Acres Paved (acres)

5.6.2. Construction Earthmoving Control Strategies

Non-applicable. No control strategies activated by user.

5.7. Construction Paving

Land Use	Area Paved (acres)	% Asphalt
User Defined Industrial	0.00	0%

5.8. Construction Electricity Consumption and Emissions Factors

kWh per Year and Emission Factor (lb/MWh)

Year	kWh per Year	CO2	CH4	N2O
2026	0.00	204	0.03	< 0.005
2027	0.00	204	0.03	< 0.005
2028	0.00	204	0.03	< 0.005

5.18. Vegetation

5.18.1. Land Use Change

5.18.1.1. Unmitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres

5.18.1. Biomass Cover Type

5.18.1.1. Unmitigated

Biomass Cover Type	Initial Acres	Final Acres

5.18.2. Sequestration

5.18.2.1. Unmitigated

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

6. Climate Risk Detailed Report

6.1. Climate Risk Summary

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

Climate Hazard	Result for Project Location	Unit
Temperature and Extreme Heat	14.2	annual days of extreme heat
Extreme Precipitation	3.25	annual days with precipitation above 20 mm
Sea Level Rise	—	meters of inundation depth
Wildfire	0.00	annual hectares burned

Temperature and Extreme Heat data are for grid cell in which your project are located. The projection is based on the 98th historical percentile of daily maximum/minimum temperatures from observed historical data (32 climate model ensemble from Cal-Adapt, 2040–2059 average under RCP 8.5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Extreme Precipitation data are for the grid cell in which your project are located. The threshold of 20 mm is equivalent to about ¾ an inch of rain, which would be light to moderate rainfall if received over a full day or heavy rain if received over a period of 2 to 4 hours. Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Sea Level Rise data are for the grid cell in which your project are located. The projections are from Radke et al. (2017), as reported in Cal-Adapt (Radke et al., 2017, CEC-500-2017-008), and consider inundation location and depth for the San Francisco Bay, the Sacramento-San Joaquin River Delta and California coast resulting different increments of sea level rise coupled with extreme storm events. Users may select from four scenarios to view the range in potential inundation depth for the grid cell. The four scenarios are: No rise, 0.5 meter, 1.0 meter, 1.41 meters
Wildfire data are for the grid cell in which your project are located. The projections are from UC Davis, as reported in Cal-Adapt (2040–2059 average under RCP 8.5), and consider historical data of climate, vegetation, population density, and large (> 400 ha) fire history. Users may select from four model simulations to view the range in potential wildfire probabilities for the grid cell. The four simulations make different assumptions about expected rainfall and temperature are: Warmer/drier (HadGEM2-ES), Cooler/wetter (CNRM-CM5), Average conditions (CanESM2), Range of different rainfall and temperature possibilities (MIROC5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.

6.2. Initial Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	N/A	N/A	N/A	N/A
Extreme Precipitation	1	0	0	N/A
Sea Level Rise	1	0	0	N/A
Wildfire	1	0	0	N/A
Flooding	N/A	N/A	N/A	N/A
Drought	N/A	N/A	N/A	N/A
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	0	0	0	N/A

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.
The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.

The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores do not include implementation of climate risk reduction measures.

6.3. Adjusted Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	N/A	N/A	N/A	N/A
Extreme Precipitation	1	1	1	2
Sea Level Rise	1	1	1	2
Wildfire	1	1	1	2
Flooding	N/A	N/A	N/A	N/A
Drought	N/A	N/A	N/A	N/A
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	1	1	1	2

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

6.4. Climate Risk Reduction Measures

7. Health and Equity Details

7.1. CalEnviroScreen 4.0 Scores

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

Indicator	Result for Project Census Tract
Exposure Indicators	—
AQ-Ozone	13.7
AQ-PM	24.0
AQ-DPM	92.7
Drinking Water	10.2

Lead Risk Housing	5.14
Pesticides	5.17
Toxic Releases	50.8
Traffic	87.3
Effect Indicators	—
CleanUp Sites	99.9
Groundwater	95.4
Haz Waste Facilities/Generators	99.5
Impaired Water Bodies	33.2
Solid Waste	93.0
Sensitive Population	—
Asthma	25.4
Cardio-vascular	40.4
Low Birth Weights	70.6
Socioeconomic Factor Indicators	—
Education	20.9
Housing	2.79
Linguistic	53.9
Poverty	3.54
Unemployment	40.6

7.2. Healthy Places Index Scores

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

Indicator	Result for Project Census Tract
Economic	—
Above Poverty	98.24201206
Employed	82.72808931
Median HI	97.34377005

Education	—
Bachelor's or higher	97.47209034
High school enrollment	100
Preschool enrollment	67.21416656
Transportation	—
Auto Access	76.73553189
Active commuting	55.34453997
Social	—
2-parent households	98.75529321
Voting	51.93122033
Neighborhood	—
Alcohol availability	69.39561145
Park access	32.96548184
Retail density	79.5970743
Supermarket access	40.89567561
Tree canopy	51.64891569
Housing	—
Homeownership	77.96740665
Housing habitability	96.39419992
Low-inc homeowner severe housing cost burden	94.99550879
Low-inc renter severe housing cost burden	93.13486462
Uncrowded housing	63.4800462
Health Outcomes	—
Insured adults	91.18439625
Arthritis	98.6
Asthma ER Admissions	74.4
High Blood Pressure	98.4
Cancer (excluding skin)	94.8

Asthma	99.9
Coronary Heart Disease	99.1
Chronic Obstructive Pulmonary Disease	99.7
Diagnosed Diabetes	96.7
Life Expectancy at Birth	78.5
Cognitively Disabled	66.4
Physically Disabled	87.9
Heart Attack ER Admissions	65.2
Mental Health Not Good	99.6
Chronic Kidney Disease	98.6
Obesity	99.9
Pedestrian Injuries	90.9
Physical Health Not Good	99.5
Stroke	99.1
Health Risk Behaviors	—
Binge Drinking	93.5
Current Smoker	98.5
No Leisure Time for Physical Activity	88.3
Climate Change Exposures	—
Wildfire Risk	0.0
SLR Inundation Area	25.4
Children	17.1
Elderly	88.2
English Speaking	34.4
Foreign-born	97.3
Outdoor Workers	98.2
Climate Change Adaptive Capacity	—
Impervious Surface Cover	21.5

Traffic Density	83.1
Traffic Access	60.6
Other Indices	—
Hardship	8.8
Other Decision Support	—
2016 Voting	55.3

7.3. Overall Health & Equity Scores

Metric	Result for Project Census Tract
CalEnviroScreen 4.0 Score for Project Location (a)	45.0
Healthy Places Index Score for Project Location (b)	97.0
Project Located in a Designated Disadvantaged Community (Senate Bill 535)	No
Project Located in a Low-Income Community (Assembly Bill 1550)	No
Project Located in a Community Air Protection Program Community (Assembly Bill 617)	No

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

7.4. Health & Equity Measures

No Health & Equity Measures selected.

7.5. Evaluation Scorecard

Health & Equity Evaluation Scorecard not completed.

7.6. Health & Equity Custom Measures

No Health & Equity Custom Measures created.

8. User Changes to Default Data

Screen	Justification
Land Use	Approx. 10KSF control enclosure/building
Construction: Construction Phases	Construction Schedule from Applicant List

Construction: Off-Road Equipment	Newark PGE Upgrades Construction from Applicant PD
Construction: Trips and VMT	Updated per Traffic Identified in construction spreadsheet
Operations: Energy Use	200 kW load so 1,752,000 kWH

NRS Substation Location - HVDC Tier 4 Final (11-10-24 Update) Detailed Report

Table of Contents

1. Basic Project Information

1.1. Basic Project Information

Data Field	Value
Project Name	NRS Substation Location - HVDC Tier 4 Final (11-10-24 Update)
Construction Start Date	6/1/2026
Lead Agency	—
Land Use Scale	Project/site
Analysis Level for Defaults	County
Windspeed (m/s)	4.20
Precipitation (days)	25.8
Location	37.50616549232012, -121.98839557092066
County	Alameda
City	Fremont
Air District	Bay Area AQMD
Air Basin	San Francisco Bay Area
TAZ	1894
EDFZ	1
Electric Utility	Pacific Gas & Electric Company
Gas Utility	Pacific Gas & Electric
App Version	2022.1.1.28

1.2. Land Use Types

Land Use Subtype	Size	Unit	Lot Acreage	Building Area (sq ft)	Landscape Area (sq ft)	Special Landscape Area (sq ft)	Population	Description
User Defined Industrial	1.00	User Defined Unit	13.8	10,000	0.00	—	—	Electrical Substation no buildings

1.3. User-Selected Emission Reduction Measures by Emissions Sector

No measures selected

2. Emissions Summary

2.1. Construction Emissions Compared Against Thresholds

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

Un/Mit.	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.68	5.44	13.8	0.02	0.15	0.21	0.36	0.14	0.05	0.20	—	2,525	2,525	0.10	0.07	2,549
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.68	5.47	13.7	0.02	0.15	0.21	0.36	0.14	0.05	0.20	—	2,516	2,516	0.10	0.07	2,539
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.47	3.80	9.75	0.02	0.10	0.15	0.25	0.09	0.04	0.13	—	1,793	1,793	0.07	0.05	1,809
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.09	0.69	1.78	< 0.005	0.02	0.03	0.05	0.02	0.01	0.02	—	297	297	0.01	0.01	300

2.2. Construction Emissions by Year, Unmitigated

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

Year	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2026	0.68	5.44	13.8	0.02	0.15	0.21	0.36	0.14	0.05	0.20	—	2,525	2,525	0.10	0.07	2,549

2027	0.66	5.30	13.7	0.02	0.14	0.21	0.35	0.13	0.05	0.18	—	2,518	2,518	0.10	0.07	2,542
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2026	0.68	5.47	13.7	0.02	0.15	0.21	0.36	0.14	0.05	0.20	—	2,516	2,516	0.10	0.07	2,539
2027	0.66	5.33	13.7	0.02	0.14	0.21	0.35	0.13	0.05	0.18	—	2,509	2,509	0.10	0.07	2,532
2028	0.63	5.23	13.6	0.02	0.13	0.21	0.34	0.12	0.05	0.17	—	2,497	2,497	0.10	0.07	2,519
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2026	0.14	1.15	2.90	< 0.005	0.03	0.04	0.08	0.03	0.01	0.04	—	532	532	0.02	0.01	537
2027	0.47	3.80	9.75	0.02	0.10	0.15	0.25	0.09	0.04	0.13	—	1,793	1,793	0.07	0.05	1,809
2028	0.06	0.47	1.22	< 0.005	0.01	0.02	0.03	0.01	< 0.005	0.02	—	225	225	0.01	0.01	227
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2026	0.03	0.21	0.53	< 0.005	0.01	0.01	0.01	0.01	< 0.005	0.01	—	88.1	88.1	< 0.005	< 0.005	88.9
2027	0.09	0.69	1.78	< 0.005	0.02	0.03	0.05	0.02	0.01	0.02	—	297	297	0.01	0.01	300
2028	0.01	0.09	0.22	< 0.005	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	—	37.2	37.2	< 0.005	< 0.005	37.6

3. Construction Emissions Details

3.1. NRS Upgrades (2026) - Unmitigated

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

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.63	5.04	13.1	0.02	0.15	—	0.15	0.14	—	0.14	—	2,083	2,083	0.08	0.02	2,090
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.63	5.04	13.1	0.02	0.15	—	0.15	0.14	—	0.14	—	2,083	2,083	0.08	0.02	2,090
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.13	1.06	2.76	< 0.005	0.03	—	0.03	0.03	—	0.03	—	440	440	0.02	< 0.005	442
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.19	0.50	< 0.005	0.01	—	0.01	0.01	—	0.01	—	72.9	72.9	< 0.005	< 0.005	73.1
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.04	0.03	0.54	0.00	0.00	0.12	0.12	0.00	0.03	0.03	—	127	127	< 0.005	< 0.005	129
Vendor	0.01	0.37	0.17	< 0.005	< 0.005	0.08	0.09	< 0.005	0.02	0.03	—	314	314	0.01	0.05	329
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.04	0.04	0.48	0.00	0.00	0.12	0.12	0.00	0.03	0.03	—	118	118	< 0.005	0.01	120
Vendor	0.01	0.40	0.17	< 0.005	< 0.005	0.08	0.09	< 0.005	0.02	0.03	—	314	314	0.01	0.05	329
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.10	0.00	0.00	0.03	0.03	0.00	0.01	0.01	—	25.2	25.2	< 0.005	< 0.005	25.5

Vendor	< 0.005	0.08	0.04	< 0.005	< 0.005	0.02	0.02	< 0.005	< 0.005	0.01	—	66.4	66.4	< 0.005	0.01	69.5
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.02	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	4.16	4.16	< 0.005	< 0.005	4.22
Vendor	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	11.0	11.0	< 0.005	< 0.005	11.5
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00

3.3. NRS Upgrades (2027) - Unmitigated

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

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.60	4.91	13.1	0.02	0.14	—	0.14	0.13	—	0.13	—	2,085	2,085	0.08	0.02	2,092
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.60	4.91	13.1	0.02	0.14	—	0.14	0.13	—	0.13	—	2,085	2,085	0.08	0.02	2,092
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.43	3.51	9.33	0.01	0.10	—	0.10	0.09	—	0.09	—	1,489	1,489	0.06	0.01	1,494
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	0.08	0.64	1.70	< 0.005	0.02	—	0.02	0.02	—	0.02	—	247	247	0.01	< 0.005	247
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.04	0.03	0.51	0.00	0.00	0.12	0.12	0.00	0.03	0.03	—	125	125	< 0.005	< 0.005	127
Vendor	0.01	0.36	0.16	< 0.005	< 0.005	0.08	0.09	< 0.005	0.02	0.03	—	308	308	0.01	0.05	323
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.04	0.04	0.45	0.00	0.00	0.12	0.12	0.00	0.03	0.03	—	116	116	< 0.005	0.01	118
Vendor	0.01	0.38	0.16	< 0.005	< 0.005	0.08	0.09	< 0.005	0.02	0.03	—	308	308	0.01	0.05	322
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.03	0.02	0.31	0.00	0.00	0.09	0.09	0.00	0.02	0.02	—	83.4	83.4	< 0.005	< 0.005	84.7
Vendor	0.01	0.27	0.12	< 0.005	< 0.005	0.06	0.06	< 0.005	0.02	0.02	—	220	220	0.01	0.03	230
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	< 0.005	0.06	0.00	0.00	0.02	0.02	0.00	< 0.005	< 0.005	—	13.8	13.8	< 0.005	< 0.005	14.0
Vendor	< 0.005	0.05	0.02	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	36.4	36.4	< 0.005	0.01	38.2
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00

3.5. NRS Upgrades (2028) - Unmitigated

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

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.58	4.83	13.0	0.02	0.12	—	0.12	0.11	—	0.11	—	2,082	2,082	0.08	0.02	2,089
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.05	0.43	1.17	< 0.005	0.01	—	0.01	0.01	—	0.01	—	187	187	0.01	< 0.005	188
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.08	0.21	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	31.0	31.0	< 0.005	< 0.005	31.1
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.04	0.03	0.42	0.00	0.00	0.12	0.12	0.00	0.03	0.03	—	114	114	< 0.005	0.01	116
Vendor	0.01	0.37	0.16	< 0.005	< 0.005	0.08	0.09	< 0.005	0.02	0.03	—	301	301	0.01	0.04	314
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.04	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	10.3	10.3	< 0.005	< 0.005	10.5

Vendor	< 0.005	0.03	0.01	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	27.1	27.1	< 0.005	< 0.005	28.3
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	1.71	1.71	< 0.005	< 0.005	1.74
Vendor	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	4.48	4.48	< 0.005	< 0.005	4.69
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00

4. Operations Emissions Details

4.10. Soil Carbon Accumulation By Vegetation Type

4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

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

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

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

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

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

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

4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

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

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

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

5. Activity Data

5.1. Construction Schedule

Phase Name	Phase Type	Start Date	End Date	Days Per Week	Work Days per Phase	Phase Description
NRS Upgrades	Building Construction	9/15/2026	2/15/2028	5.00	371	—

5.2. Off-Road Equipment

5.2.1. Unmitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
NRS Upgrades	Tractors/Loaders/Backhoes	Diesel	Tier 4 Final	1.00	5.00	275	0.27
NRS Upgrades	Excavators	Diesel	Tier 4 Final	1.00	5.00	70.0	0.27
NRS Upgrades	Bore/Drill Rigs	Diesel	Average	2.00	10.0	125	0.25

NRS Upgrades	Rough Terrain Forklifts	Diesel	Tier 4 Final	1.00	10.0	130	0.24
NRS Upgrades	Welders	Diesel	Average	2.00	2.00	395	0.23

5.3. Construction Vehicles

5.3.1. Unmitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
NRS Upgrades	—	—	—	—
NRS Upgrades	Worker	15.0	11.7	LDA,LDT1,LDT2
NRS Upgrades	Vendor	12.0	8.40	HHDT,MHDT
NRS Upgrades	Hauling	0.00	20.0	HHDT
NRS Upgrades	Onsite truck	—	—	HHDT

5.4. Vehicles

5.4.1. Construction Vehicle Control Strategies

Non-applicable. No control strategies activated by user.

5.5. Architectural Coatings

Phase Name	Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)

5.6. Dust Mitigation

5.6.1. Construction Earthmoving Activities

Phase Name	Material Imported (cy)	Material Exported (cy)	Acres Graded (acres)	Material Demolished (sq. ft.)	Acres Paved (acres)

5.6.2. Construction Earthmoving Control Strategies

Non-applicable. No control strategies activated by user.

5.7. Construction Paving

Land Use	Area Paved (acres)	% Asphalt
User Defined Industrial	0.00	0%

5.8. Construction Electricity Consumption and Emissions Factors

kWh per Year and Emission Factor (lb/MWh)

Year	kWh per Year	CO2	CH4	N2O
2026	0.00	204	0.03	< 0.005
2027	0.00	204	0.03	< 0.005
2028	0.00	204	0.03	< 0.005

5.18. Vegetation

5.18.1. Land Use Change

5.18.1.1. Unmitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres

5.18.1. Biomass Cover Type

5.18.1.1. Unmitigated

Biomass Cover Type	Initial Acres	Final Acres

5.18.2. Sequestration

5.18.2.1. Unmitigated

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

6. Climate Risk Detailed Report

6.1. Climate Risk Summary

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

Climate Hazard	Result for Project Location	Unit
Temperature and Extreme Heat	14.2	annual days of extreme heat
Extreme Precipitation	3.25	annual days with precipitation above 20 mm
Sea Level Rise	—	meters of inundation depth
Wildfire	0.00	annual hectares burned

Temperature and Extreme Heat data are for grid cell in which your project are located. The projection is based on the 98th historical percentile of daily maximum/minimum temperatures from observed historical data (32 climate model ensemble from Cal-Adapt, 2040–2059 average under RCP 8.5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Extreme Precipitation data are for the grid cell in which your project are located. The threshold of 20 mm is equivalent to about ¾ an inch of rain, which would be light to moderate rainfall if received over a full day or heavy rain if received over a period of 2 to 4 hours. Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Sea Level Rise data are for the grid cell in which your project are located. The projections are from Radke et al. (2017), as reported in Cal-Adapt (Radke et al., 2017, CEC-500-2017-008), and consider inundation location and depth for the San Francisco Bay, the Sacramento-San Joaquin River Delta and California coast resulting different increments of sea level rise coupled with extreme storm events. Users may select from four scenarios to view the range in potential inundation depth for the grid cell. The four scenarios are: No rise, 0.5 meter, 1.0 meter, 1.41 meters
Wildfire data are for the grid cell in which your project are located. The projections are from UC Davis, as reported in Cal-Adapt (2040–2059 average under RCP 8.5), and consider historical data of climate, vegetation, population density, and large (> 400 ha) fire history. Users may select from four model simulations to view the range in potential wildfire probabilities for the grid cell. The four simulations make different assumptions about expected rainfall and temperature are: Warmer/drier (HadGEM2-ES), Cooler/wetter (CNRM-CM5), Average conditions (CanESM2), Range of different rainfall and temperature possibilities (MIROC5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.

6.2. Initial Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	N/A	N/A	N/A	N/A
Extreme Precipitation	1	0	0	N/A
Sea Level Rise	1	0	0	N/A
Wildfire	1	0	0	N/A
Flooding	N/A	N/A	N/A	N/A
Drought	N/A	N/A	N/A	N/A
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	0	0	0	N/A

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

6.3. Adjusted Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	N/A	N/A	N/A	N/A
Extreme Precipitation	1	1	1	2
Sea Level Rise	1	1	1	2
Wildfire	1	1	1	2
Flooding	N/A	N/A	N/A	N/A
Drought	N/A	N/A	N/A	N/A
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	1	1	1	2

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

6.4. Climate Risk Reduction Measures

7. Health and Equity Details

7.1. CalEnviroScreen 4.0 Scores

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

Indicator	Result for Project Census Tract
Exposure Indicators	—
AQ-Ozone	13.7

AQ-PM	24.0
AQ-DPM	92.7
Drinking Water	10.2
Lead Risk Housing	5.14
Pesticides	5.17
Toxic Releases	50.8
Traffic	87.3
Effect Indicators	—
CleanUp Sites	99.9
Groundwater	95.4
Haz Waste Facilities/Generators	99.5
Impaired Water Bodies	33.2
Solid Waste	93.0
Sensitive Population	—
Asthma	25.4
Cardio-vascular	40.4
Low Birth Weights	70.6
Socioeconomic Factor Indicators	—
Education	20.9
Housing	2.79
Linguistic	53.9
Poverty	3.54
Unemployment	40.6

7.2. Healthy Places Index Scores

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

Indicator	Result for Project Census Tract
Economic	—

Above Poverty	98.24201206
Employed	82.72808931
Median HI	97.34377005
Education	—
Bachelor's or higher	97.47209034
High school enrollment	100
Preschool enrollment	67.21416656
Transportation	—
Auto Access	76.73553189
Active commuting	55.34453997
Social	—
2-parent households	98.75529321
Voting	51.93122033
Neighborhood	—
Alcohol availability	69.39561145
Park access	32.96548184
Retail density	79.5970743
Supermarket access	40.89567561
Tree canopy	51.64891569
Housing	—
Homeownership	77.96740665
Housing habitability	96.39419992
Low-inc homeowner severe housing cost burden	94.99550879
Low-inc renter severe housing cost burden	93.13486462
Uncrowded housing	63.4800462
Health Outcomes	—
Insured adults	91.18439625
Arthritis	98.6

Asthma ER Admissions	74.4
High Blood Pressure	98.4
Cancer (excluding skin)	94.8
Asthma	99.9
Coronary Heart Disease	99.1
Chronic Obstructive Pulmonary Disease	99.7
Diagnosed Diabetes	96.7
Life Expectancy at Birth	78.5
Cognitively Disabled	66.4
Physically Disabled	87.9
Heart Attack ER Admissions	65.2
Mental Health Not Good	99.6
Chronic Kidney Disease	98.6
Obesity	99.9
Pedestrian Injuries	90.9
Physical Health Not Good	99.5
Stroke	99.1
Health Risk Behaviors	—
Binge Drinking	93.5
Current Smoker	98.5
No Leisure Time for Physical Activity	88.3
Climate Change Exposures	—
Wildfire Risk	0.0
SLR Inundation Area	25.4
Children	17.1
Elderly	88.2
English Speaking	34.4
Foreign-born	97.3

Outdoor Workers	98.2
Climate Change Adaptive Capacity	—
Impervious Surface Cover	21.5
Traffic Density	83.1
Traffic Access	60.6
Other Indices	—
Hardship	8.8
Other Decision Support	—
2016 Voting	55.3

7.3. Overall Health & Equity Scores

Metric	Result for Project Census Tract
CalEnviroScreen 4.0 Score for Project Location (a)	45.0
Healthy Places Index Score for Project Location (b)	97.0
Project Located in a Designated Disadvantaged Community (Senate Bill 535)	No
Project Located in a Low-Income Community (Assembly Bill 1550)	No
Project Located in a Community Air Protection Program Community (Assembly Bill 617)	No

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

7.4. Health & Equity Measures

No Health & Equity Measures selected.

7.5. Evaluation Scorecard

Health & Equity Evaluation Scorecard not completed.

7.6. Health & Equity Custom Measures

No Health & Equity Custom Measures created.

8. User Changes to Default Data

Screen	Justification
Land Use	Approx. 10KSF control enclosure/building
Construction: Construction Phases	Construction Schedule from Applicant List
Construction: Off-Road Equipment	NRS Upgrades Construction from Applicant PD
Construction: Trips and VMT	Updated per Traffic Identified in construction spreadsheet
Operations: Energy Use	Energy Usage would remain the same at the NRS Substation

Newark - NRS Transmission Line Work (11-10-24) Detailed Report

Table of Contents

1. Basic Project Information

1.1. Basic Project Information

Data Field	Value
Project Name	Newark - NRS Transmission Line Work (11-10-24)
Construction Start Date	6/1/2026
Lead Agency	—
Land Use Scale	Project/site
Analysis Level for Defaults	County
Windspeed (m/s)	2.70
Precipitation (days)	28.2
Location	37.43227346021219, -121.9649371427572
County	Santa Clara
City	San Jose
Air District	Bay Area AQMD
Air Basin	San Francisco Bay Area
TAZ	1796
EDFZ	1
Electric Utility	Pacific Gas & Electric Company
Gas Utility	Pacific Gas & Electric
App Version	2022.1.1.28

1.2. Land Use Types

Land Use Subtype	Size	Unit	Lot Acreage	Building Area (sq ft)	Landscape Area (sq ft)	Special Landscape Area (sq ft)	Population	Description
User Defined Linear	14.0	Mile	17.0	0.00	0.00	—	—	Transmission Lines (UnderGround)

1.3. User-Selected Emission Reduction Measures by Emissions Sector

No measures selected

2. Emissions Summary

2.1. Construction Emissions Compared Against Thresholds

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

Un/Mit.	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	8.63	65.8	189	0.43	2.43	10.6	13.0	2.28	3.85	6.13	—	48,854	48,854	2.05	1.21	49,284
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	4.01	35.6	102	0.23	1.06	2.38	3.45	1.01	0.62	1.63	—	27,569	27,569	1.19	1.02	27,902
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	2.91	23.4	63.7	0.15	0.82	2.81	3.63	0.77	0.95	1.72	—	16,901	16,901	0.72	0.49	17,067
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.53	4.28	11.6	0.03	0.15	0.51	0.66	0.14	0.17	0.31	—	2,798	2,798	0.12	0.08	2,826

2.2. Construction Emissions by Year, Unmitigated

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

Year	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2026	8.63	65.8	189	0.43	2.43	10.6	13.0	2.28	3.85	6.13	—	48,854	48,854	2.05	1.21	49,284

2027	1.59	14.1	49.8	0.12	0.34	1.59	1.93	0.33	0.41	0.75	—	14,191	14,191	0.62	0.64	14,408
2028	0.30	6.13	9.98	0.02	0.03	0.21	0.24	0.03	0.05	0.08	—	1,689	1,689	0.07	0.03	1,702
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2026	4.01	35.6	102	0.23	1.06	2.38	3.45	1.01	0.62	1.63	—	27,569	27,569	1.19	1.02	27,902
2027	3.96	34.3	102	0.23	1.02	2.38	3.40	0.97	0.62	1.59	—	27,441	27,441	1.18	1.01	27,773
2028	0.39	7.83	13.5	0.02	0.05	0.36	0.40	0.04	0.09	0.13	—	2,519	2,519	0.10	0.09	2,549
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2026	2.91	23.4	63.7	0.15	0.82	2.81	3.63	0.77	0.95	1.72	—	16,901	16,901	0.72	0.49	17,067
2027	1.16	11.3	32.8	0.08	0.27	1.06	1.32	0.25	0.27	0.53	—	9,296	9,296	0.41	0.42	9,436
2028	0.22	4.46	7.34	0.01	0.02	0.16	0.19	0.02	0.04	0.06	—	1,288	1,288	0.05	0.04	1,300
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2026	0.53	4.28	11.6	0.03	0.15	0.51	0.66	0.14	0.17	0.31	—	2,798	2,798	0.12	0.08	2,826
2027	0.21	2.06	5.98	0.01	0.05	0.19	0.24	0.05	0.05	0.10	—	1,539	1,539	0.07	0.07	1,562
2028	0.04	0.81	1.34	< 0.005	< 0.005	0.03	0.03	< 0.005	0.01	0.01	—	213	213	0.01	0.01	215

3. Construction Emissions Details

3.1. HVDC Cable Install (2027) - Unmitigated

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

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.06	1.28	3.17	< 0.005	0.01	—	0.01	0.01	—	0.01	—	478	478	0.02	< 0.005	479

Dust From Material Movement	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.06	1.28	3.17	< 0.005	0.01	—	0.01	0.01	—	0.01	—	478	478	0.02	< 0.005	479
Dust From Material Movement	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.46	1.14	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	172	172	0.01	< 0.005	172
Dust From Material Movement	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	0.08	0.21	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	28.4	28.4	< 0.005	< 0.005	28.5
Dust From Material Movement	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02	0.02	0.29	0.00	0.00	0.07	0.07	0.00	0.02	0.02	—	66.0	66.0	< 0.005	< 0.005	67.1
Vendor	0.01	0.38	0.19	< 0.005	< 0.005	0.08	0.09	< 0.005	0.02	0.03	—	312	312	0.02	0.05	327
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02	0.02	0.24	0.00	0.00	0.07	0.07	0.00	0.02	0.02	—	61.2	61.2	< 0.005	< 0.005	62.0
Vendor	0.01	0.40	0.19	< 0.005	< 0.005	0.08	0.09	< 0.005	0.02	0.03	—	312	312	0.02	0.05	326
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.09	0.00	0.00	0.02	0.02	0.00	0.01	0.01	—	22.2	22.2	< 0.005	< 0.005	22.5
Vendor	< 0.005	0.14	0.07	< 0.005	< 0.005	0.03	0.03	< 0.005	0.01	0.01	—	112	112	0.01	0.02	117
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.02	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	3.68	3.68	< 0.005	< 0.005	3.73
Vendor	< 0.005	0.03	0.01	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	18.5	18.5	< 0.005	< 0.005	19.4
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00

3.3. HVDC Cable Install (2028) - Unmitigated

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

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

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.06	1.28	3.17	< 0.005	0.01	—	0.01	0.01	—	0.01	—	477	477	0.02	< 0.005	479
Dust From Material Movement	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.23	0.56	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	84.0	84.0	< 0.005	< 0.005	84.3
Dust From Material Movement	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	0.04	0.10	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	13.9	13.9	< 0.005	< 0.005	14.0
Dust From Material Movement	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Worker	0.02	0.02	0.23	0.00	0.00	0.07	0.07	0.00	0.02	0.02	—	60.1	60.1	< 0.005	< 0.005	60.9
Vendor	0.01	0.38	0.18	< 0.005	< 0.005	0.08	0.09	< 0.005	0.02	0.03	—	304	304	0.02	0.04	318
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.04	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	10.7	10.7	< 0.005	< 0.005	10.9
Vendor	< 0.005	0.07	0.03	< 0.005	< 0.005	0.01	0.02	< 0.005	< 0.005	< 0.005	—	53.6	53.6	< 0.005	0.01	56.0
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	1.77	1.77	< 0.005	< 0.005	1.80
Vendor	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	8.87	8.87	< 0.005	< 0.005	9.27
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00

3.5. HVDC Survey / Potholing (2026) - Unmitigated

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

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.27	1.42	14.2	0.03	0.05	—	0.05	0.05	—	0.05	—	2,874	2,874	0.12	0.02	2,883
Dust From Material Movement	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	0.27	1.42	14.2	0.03	0.05	—	0.05	0.05	—	0.05	—	2,874	2,874	0.12	0.02	2,883
Dust From Material Movement	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.14	0.71	7.13	0.01	0.03	—	0.03	0.03	—	0.03	—	1,444	1,444	0.06	0.01	1,449
Dust From Material Movement	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.03	0.13	1.30	< 0.005	0.01	—	0.01	0.01	—	0.01	—	239	239	0.01	< 0.005	240
Dust From Material Movement	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.04	0.03	0.53	0.00	0.00	0.12	0.12	0.00	0.03	0.03	—	118	118	< 0.005	< 0.005	120
Vendor	0.01	0.26	0.13	< 0.005	< 0.005	0.06	0.06	< 0.005	0.02	0.02	—	212	212	0.01	0.03	222
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.04	0.04	0.46	0.00	0.00	0.12	0.12	0.00	0.03	0.03	—	109	109	< 0.005	< 0.005	111
Vendor	0.01	0.28	0.13	< 0.005	< 0.005	0.06	0.06	< 0.005	0.02	0.02	—	212	212	0.01	0.03	222
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02	0.02	0.23	0.00	0.00	0.06	0.06	0.00	0.01	0.01	—	55.4	55.4	< 0.005	< 0.005	56.2
Vendor	< 0.005	0.14	0.07	< 0.005	< 0.005	0.03	0.03	< 0.005	0.01	0.01	—	107	107	0.01	0.02	112
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.04	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	9.17	9.17	< 0.005	< 0.005	9.31
Vendor	< 0.005	0.02	0.01	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	17.7	17.7	< 0.005	< 0.005	18.5
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00

3.7. HVDC Survey / Potholing (2027) - Unmitigated

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

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.27	1.42	14.2	0.03	0.05	—	0.05	0.05	—	0.05	—	2,876	2,876	0.12	0.02	2,886
Dust From Material Movement	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—

Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.03	0.15	1.53	< 0.005	0.01	—	0.01	0.01	—	0.01	—	311	311	0.01	< 0.005	312
Dust From Material Movement	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.03	0.28	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	51.4	51.4	< 0.005	< 0.005	51.6
Dust From Material Movement	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.04	0.03	0.43	0.00	0.00	0.12	0.12	0.00	0.03	0.03	—	107	107	< 0.005	< 0.005	108
Vendor	0.01	0.26	0.13	< 0.005	< 0.005	0.06	0.06	< 0.005	0.02	0.02	—	208	208	0.01	0.03	217
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.05	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	11.7	11.7	< 0.005	< 0.005	11.9
Vendor	< 0.005	0.03	0.01	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	22.5	22.5	< 0.005	< 0.005	23.5

Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	1.94	1.94	< 0.005	< 0.005	1.96
Vendor	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	3.72	3.72	< 0.005	< 0.005	3.89
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00

3.9. Transmission Line Construction - Crossings (2026) - Unmitigated

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

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.61	4.32	31.2	0.06	0.12	—	0.12	0.12	—	0.12	—	6,234	6,234	0.25	0.05	6,256
Dust From Material Movement	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.61	4.32	31.2	0.06	0.12	—	0.12	0.12	—	0.12	—	6,234	6,234	0.25	0.05	6,256
Dust From Material Movement	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	0.22	1.55	11.2	0.02	0.04	—	0.04	0.04	—	0.04	—	2,240	2,240	0.09	0.02	2,248
Dust From Material Movement	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.04	0.28	2.04	< 0.005	0.01	—	0.01	0.01	—	0.01	—	371	371	0.02	< 0.005	372
Dust From Material Movement	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02	0.01	0.27	0.00	0.00	0.06	0.06	0.00	0.01	0.01	—	58.9	58.9	< 0.005	< 0.005	59.8
Vendor	0.02	0.66	0.32	< 0.005	0.01	0.14	0.15	0.01	0.04	0.05	—	530	530	0.03	0.08	555
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02	0.02	0.23	0.00	0.00	0.06	0.06	0.00	0.01	0.01	—	54.5	54.5	< 0.005	< 0.005	55.3
Vendor	0.02	0.70	0.33	< 0.005	0.01	0.14	0.15	0.01	0.04	0.05	—	531	531	0.03	0.08	554
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.08	0.00	0.00	0.02	0.02	0.00	< 0.005	< 0.005	—	19.8	19.8	< 0.005	< 0.005	20.1
Vendor	0.01	0.24	0.12	< 0.005	< 0.005	0.05	0.05	< 0.005	0.01	0.02	—	191	191	0.01	0.03	199

Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	3.28	3.28	< 0.005	< 0.005	3.33
Vendor	< 0.005	0.04	0.02	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	31.5	31.5	< 0.005	< 0.005	33.0
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00

3.11. Transmission Line Construction - Crossings (2027) - Unmitigated

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

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.61	4.26	31.2	0.06	0.12	—	0.12	0.12	—	0.12	—	6,234	6,234	0.25	0.05	6,255
Dust From Material Movement	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.61	4.26	31.2	0.06	0.12	—	0.12	0.12	—	0.12	—	6,234	6,234	0.25	0.05	6,255
Dust From Material Movement	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	0.28	1.96	14.3	0.03	0.05	—	0.05	0.05	—	0.05	—	2,869	2,869	0.12	0.02	2,879
Dust From Material Movement	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.05	0.36	2.62	< 0.005	0.01	—	0.01	0.01	—	0.01	—	475	475	0.02	< 0.005	477
Dust From Material Movement	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02	0.01	0.25	0.00	0.00	0.06	0.06	0.00	0.01	0.01	—	57.8	57.8	< 0.005	< 0.005	58.7
Vendor	0.02	0.63	0.31	< 0.005	0.01	0.14	0.15	0.01	0.04	0.05	—	519	519	0.03	0.08	544
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02	0.02	0.21	0.00	0.00	0.06	0.06	0.00	0.01	0.01	—	53.5	53.5	< 0.005	< 0.005	54.2
Vendor	0.02	0.66	0.32	< 0.005	0.01	0.14	0.15	0.01	0.04	0.05	—	520	520	0.03	0.08	544
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.10	0.00	0.00	0.03	0.03	0.00	0.01	0.01	—	24.9	24.9	< 0.005	< 0.005	25.3
Vendor	0.01	0.30	0.14	< 0.005	< 0.005	0.06	0.07	< 0.005	0.02	0.02	—	239	239	0.01	0.04	250

Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.02	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	4.12	4.12	< 0.005	< 0.005	4.18
Vendor	< 0.005	0.05	0.03	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	39.6	39.6	< 0.005	0.01	41.4
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00

3.13. HVDC and HVAC - Vaults (2026) - Unmitigated

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

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.35	2.80	11.6	0.02	0.09	—	0.09	0.08	—	0.08	—	2,565	2,565	0.10	0.02	2,574
Dust From Material Movement	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.35	2.80	11.6	0.02	0.09	—	0.09	0.08	—	0.08	—	2,565	2,565	0.10	0.02	2,574
Dust From Material Movement	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	0.15	1.21	5.00	0.01	0.04	—	0.04	0.04	—	0.04	—	1,108	1,108	0.04	0.01	1,112
Dust From Material Movement	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.03	0.22	0.91	< 0.005	0.01	—	0.01	0.01	—	0.01	—	183	183	0.01	< 0.005	184
Dust From Material Movement	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.05	0.03	0.61	0.00	0.00	0.13	0.13	0.00	0.03	0.03	—	135	135	< 0.005	0.01	137
Vendor	0.03	1.31	0.64	0.01	0.01	0.28	0.30	0.01	0.08	0.09	—	1,060	1,060	0.06	0.16	1,111
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.04	0.04	0.52	0.00	0.00	0.13	0.13	0.00	0.03	0.03	—	125	125	< 0.005	0.01	126
Vendor	0.03	1.39	0.65	0.01	0.01	0.28	0.30	0.01	0.08	0.09	—	1,061	1,061	0.06	0.16	1,109
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02	0.02	0.22	0.00	0.00	0.06	0.06	0.00	0.01	0.01	—	54.4	54.4	< 0.005	< 0.005	55.2
Vendor	0.01	0.59	0.28	< 0.005	0.01	0.12	0.13	0.01	0.03	0.04	—	458	458	0.03	0.07	479

Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.04	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	9.01	9.01	< 0.005	< 0.005	9.14
Vendor	< 0.005	0.11	0.05	< 0.005	< 0.005	0.02	0.02	< 0.005	0.01	0.01	—	75.9	75.9	< 0.005	0.01	79.4
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00

3.15. HVDC and HVAC - Vaults (2027) - Unmitigated

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

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.35	2.71	11.5	0.02	0.08	—	0.08	0.08	—	0.08	—	2,564	2,564	0.10	0.02	2,573
Dust From Material Movement	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.10	0.41	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	90.3	90.3	< 0.005	< 0.005	90.6
Dust From Material Movement	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00

Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	0.02	0.07	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	15.0	15.0	< 0.005	< 0.005	15.0
Dust From Material Movement	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.04	0.04	0.49	0.00	0.00	0.13	0.13	0.00	0.03	0.03	—	122	122	< 0.005	0.01	124
Vendor	0.03	1.32	0.64	0.01	0.01	0.28	0.30	0.01	0.08	0.09	—	1,040	1,040	0.06	0.16	1,087
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.02	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	4.36	4.36	< 0.005	< 0.005	4.42
Vendor	< 0.005	0.05	0.02	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	36.6	36.6	< 0.005	0.01	38.3
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.72	0.72	< 0.005	< 0.005	0.73
Vendor	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	6.06	6.06	< 0.005	< 0.005	6.34
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00

3.17. HVDC and HVAC - Duct Bank and Restoration (2026) - Unmitigated

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

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

Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.66	5.47	13.9	0.03	0.18	—	0.18	0.17	—	0.17	—	3,719	3,719	0.15	0.03	3,732
Dust From Material Movement	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.66	5.47	13.9	0.03	0.18	—	0.18	0.17	—	0.17	—	3,719	3,719	0.15	0.03	3,732
Dust From Material Movement	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.29	2.37	6.00	0.01	0.08	—	0.08	0.07	—	0.07	—	1,607	1,607	0.07	0.01	1,613
Dust From Material Movement	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.05	0.43	1.10	< 0.005	0.01	—	0.01	0.01	—	0.01	—	266	266	0.01	< 0.005	267

Dust From Material Movement	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.21	0.14	2.52	0.00	0.00	0.55	0.55	0.00	0.13	0.13	—	555	555	0.01	0.02	564
Vendor	0.10	3.94	1.93	0.02	0.04	0.85	0.89	0.04	0.23	0.28	—	3,181	3,181	0.18	0.47	3,332
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.18	0.18	2.15	0.00	0.00	0.55	0.55	0.00	0.13	0.13	—	514	514	0.01	0.02	521
Vendor	0.09	4.18	1.96	0.02	0.04	0.85	0.89	0.04	0.23	0.28	—	3,183	3,183	0.18	0.47	3,327
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.08	0.07	0.92	0.00	0.00	0.23	0.23	0.00	0.05	0.05	—	225	225	0.01	0.01	228
Vendor	0.04	1.76	0.85	0.01	0.02	0.36	0.38	0.02	0.10	0.12	—	1,375	1,375	0.08	0.20	1,438
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.17	0.00	0.00	0.04	0.04	0.00	0.01	0.01	—	37.2	37.2	< 0.005	< 0.005	37.7
Vendor	0.01	0.32	0.15	< 0.005	< 0.005	0.07	0.07	< 0.005	0.02	0.02	—	228	228	0.01	0.03	238
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00

3.19. HVDC and HVAC - Duct Bank and Restoration (2027) - Unmitigated

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

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.66	5.31	13.9	0.03	0.17	—	0.17	0.16	—	0.16	—	3,719	3,719	0.15	0.03	3,731
Dust From Material Movement	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.66	5.31	13.9	0.03	0.17	—	0.17	0.16	—	0.16	—	3,719	3,719	0.15	0.03	3,731
Dust From Material Movement	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.40	3.22	8.42	0.02	0.10	—	0.10	0.10	—	0.10	—	2,253	2,253	0.09	0.02	2,261
Dust From Material Movement	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	0.07	0.59	1.54	< 0.005	0.02	—	0.02	0.02	—	0.02	—	373	373	0.02	< 0.005	374
Dust From Material Movement	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.18	0.14	2.35	0.00	0.00	0.55	0.55	0.00	0.13	0.13	—	545	545	0.01	0.02	553
Vendor	0.10	3.77	1.86	0.02	0.04	0.85	0.89	0.04	0.23	0.28	—	3,117	3,117	0.18	0.46	3,266
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.18	0.16	2.01	0.00	0.00	0.55	0.55	0.00	0.13	0.13	—	505	505	0.01	0.02	511
Vendor	0.09	3.96	1.91	0.02	0.04	0.85	0.89	0.04	0.23	0.28	—	3,119	3,119	0.18	0.47	3,262
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.11	0.10	1.20	0.00	0.00	0.32	0.32	0.00	0.08	0.08	—	309	309	0.01	0.01	314
Vendor	0.06	2.35	1.14	0.01	0.03	0.50	0.53	0.03	0.14	0.17	—	1,889	1,889	0.11	0.28	1,977
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02	0.02	0.22	0.00	0.00	0.06	0.06	0.00	0.01	0.01	—	51.2	51.2	< 0.005	< 0.005	51.9
Vendor	0.01	0.43	0.21	< 0.005	< 0.005	0.09	0.10	< 0.005	0.03	0.03	—	313	313	0.02	0.05	327
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00

3.21. Overhead Transmission Line Construction - Clearing ROW Access (2026) - Unmitigated

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

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	2.93	20.9	20.6	0.07	0.88	—	0.88	0.81	—	0.81	—	7,835	7,835	0.32	0.06	7,862
Dust From Material Movement	—	—	—	—	—	1.19	1.19	—	0.13	0.13	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.74	5.27	5.19	0.02	0.22	—	0.22	0.20	—	0.20	—	1,975	1,975	0.08	0.02	1,982
Dust From Material Movement	—	—	—	—	—	0.30	0.30	—	0.03	0.03	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.13	0.96	0.95	< 0.005	0.04	—	0.04	0.04	—	0.04	—	327	327	0.01	< 0.005	328
Dust From Material Movement	—	—	—	—	—	0.05	0.05	—	0.01	0.01	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00

Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02	0.01	0.27	0.00	0.00	0.06	0.06	0.00	0.01	0.01	—	58.9	58.9	< 0.005	< 0.005	59.8
Vendor	< 0.005	0.20	0.10	< 0.005	< 0.005	0.04	0.04	< 0.005	0.01	0.01	—	159	159	0.01	0.02	167
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.06	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	13.9	13.9	< 0.005	< 0.005	14.1
Vendor	< 0.005	0.05	0.02	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	40.1	40.1	< 0.005	0.01	42.0
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	2.30	2.30	< 0.005	< 0.005	2.33
Vendor	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	6.64	6.64	< 0.005	< 0.005	6.95
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00

3.23. Overhead Transmission Line Construction Foundation/Structures/WIre (2026) - Unmitigated

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

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.64	14.1	24.2	0.05	0.55	—	0.55	0.50	—	0.50	—	5,795	5,795	0.24	0.05	5,814

Dust From Material Movement	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.64	14.1	24.2	0.05	0.55	—	0.55	0.50	—	0.50	—	5,795	5,795	0.24	0.05	5,814
Dust From Material Movement	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.82	7.07	12.2	0.03	0.27	—	0.27	0.25	—	0.25	—	2,912	2,912	0.12	0.02	2,922
Dust From Material Movement	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.15	1.29	2.22	< 0.005	0.05	—	0.05	0.05	—	0.05	—	482	482	0.02	< 0.005	484
Dust From Material Movement	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.03	0.02	0.30	0.00	0.00	0.07	0.07	0.00	0.02	0.02	—	67.3	67.3	< 0.005	< 0.005	68.3
Vendor	0.02	0.66	0.32	< 0.005	0.01	0.14	0.15	0.01	0.04	0.05	—	530	530	0.03	0.08	555
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02	0.02	0.26	0.00	0.00	0.07	0.07	0.00	0.02	0.02	—	62.3	62.3	< 0.005	< 0.005	63.2
Vendor	0.02	0.70	0.33	< 0.005	0.01	0.14	0.15	0.01	0.04	0.05	—	531	531	0.03	0.08	554
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.13	0.00	0.00	0.03	0.03	0.00	0.01	0.01	—	31.7	31.7	< 0.005	< 0.005	32.1
Vendor	0.01	0.34	0.16	< 0.005	< 0.005	0.07	0.07	< 0.005	0.02	0.02	—	267	267	0.01	0.04	279
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.02	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	5.24	5.24	< 0.005	< 0.005	5.32
Vendor	< 0.005	0.06	0.03	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	44.1	44.1	< 0.005	0.01	46.2
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00

3.25. Overhead Transmission Line Construction Foundation/Structures/WIre (2027) - Unmitigated

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

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

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.61	13.4	24.2	0.05	0.51	—	0.51	0.48	—	0.48	—	5,794	5,794	0.24	0.05	5,814
Dust From Material Movement	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.17	1.45	2.61	0.01	0.06	—	0.06	0.05	—	0.05	—	626	626	0.03	0.01	628
Dust From Material Movement	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.03	0.27	0.48	< 0.005	0.01	—	0.01	0.01	—	0.01	—	104	104	< 0.005	< 0.005	104
Dust From Material Movement	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Worker	0.02	0.02	0.24	0.00	0.00	0.07	0.07	0.00	0.02	0.02	—	61.2	61.2	< 0.005	< 0.005	62.0
Vendor	0.02	0.66	0.32	< 0.005	0.01	0.14	0.15	0.01	0.04	0.05	—	520	520	0.03	0.08	544
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.03	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	6.68	6.68	< 0.005	< 0.005	6.78
Vendor	< 0.005	0.07	0.03	< 0.005	< 0.005	0.01	0.02	< 0.005	< 0.005	< 0.005	—	56.1	56.1	< 0.005	0.01	58.8
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	1.11	1.11	< 0.005	< 0.005	1.12
Vendor	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	9.29	9.29	< 0.005	< 0.005	9.73
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00

3.27. Commissioning and Testing (2027) - Unmitigated

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

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.24	5.92	9.22	0.02	0.03	—	0.03	0.03	—	0.03	—	1,375	1,375	0.06	0.01	1,380
Dust From Material Movement	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00

Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.03	0.85	1.32	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	197	197	0.01	< 0.005	198
Dust From Material Movement	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.15	0.24	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	32.6	32.6	< 0.005	< 0.005	32.7
Dust From Material Movement	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.05	0.05	0.61	0.00	0.00	0.17	0.17	0.00	0.04	0.04	—	153	153	< 0.005	0.01	155
Vendor	< 0.005	0.20	0.10	< 0.005	< 0.005	0.04	0.04	< 0.005	0.01	0.01	—	156	156	0.01	0.02	163
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.09	0.00	0.00	0.02	0.02	0.00	0.01	0.01	—	22.2	22.2	< 0.005	< 0.005	22.5
Vendor	< 0.005	0.03	0.01	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	22.3	22.3	< 0.005	< 0.005	23.4
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00

Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.02	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	3.67	3.67	< 0.005	< 0.005	3.72
Vendor	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	3.70	3.70	< 0.005	< 0.005	3.87
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00

3.29. Commissioning and Testing (2028) - Unmitigated

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

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.24	5.92	9.22	0.02	0.03	—	0.03	0.03	—	0.03	—	1,375	1,375	0.06	0.01	1,380
Dust From Material Movement	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.24	5.92	9.22	0.02	0.03	—	0.03	0.03	—	0.03	—	1,375	1,375	0.06	0.01	1,380
Dust From Material Movement	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	0.16	4.01	6.26	0.01	0.02	—	0.02	0.02	—	0.02	—	933	933	0.04	0.01	936
Dust From Material Movement	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.03	0.73	1.14	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	155	155	0.01	< 0.005	155
Dust From Material Movement	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.05	0.04	0.67	0.00	0.00	0.17	0.17	0.00	0.04	0.04	—	162	162	< 0.005	< 0.005	163
Vendor	< 0.005	0.18	0.09	< 0.005	< 0.005	0.04	0.04	< 0.005	0.01	0.01	—	152	152	0.01	0.02	159
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.05	0.05	0.57	0.00	0.00	0.17	0.17	0.00	0.04	0.04	—	150	150	< 0.005	0.01	152
Vendor	< 0.005	0.19	0.09	< 0.005	< 0.005	0.04	0.04	< 0.005	0.01	0.01	—	152	152	0.01	0.02	159
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.03	0.03	0.38	0.00	0.00	0.11	0.11	0.00	0.03	0.03	—	103	103	< 0.005	< 0.005	105
Vendor	< 0.005	0.13	0.06	< 0.005	< 0.005	0.03	0.03	< 0.005	0.01	0.01	—	103	103	0.01	0.01	108

Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.07	0.00	0.00	0.02	0.02	0.00	< 0.005	< 0.005	—	17.1	17.1	< 0.005	< 0.005	17.3
Vendor	< 0.005	0.02	0.01	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	17.1	17.1	< 0.005	< 0.005	17.9
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00

3.31. Road Work, Site and Staging Preparation (2026) - Unmitigated

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

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.61	9.53	65.8	0.12	0.49	—	0.49	0.47	—	0.47	—	13,167	13,167	0.53	0.11	13,212
Dust From Material Movement	—	—	—	—	—	6.93	6.93	—	3.08	3.08	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.34	2.01	13.9	0.03	0.10	—	0.10	0.10	—	0.10	—	2,778	2,778	0.11	0.02	2,787
Dust From Material Movement	—	—	—	—	—	1.46	1.46	—	0.65	0.65	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00

Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.06	0.37	2.53	< 0.005	0.02	—	0.02	0.02	—	0.02	—	460	460	0.02	< 0.005	461
Dust From Material Movement	—	—	—	—	—	0.27	0.27	—	0.12	0.12	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00

4. Operations Emissions Details

4.10. Soil Carbon Accumulation By Vegetation Type

4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

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

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

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

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

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

4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

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

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

—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

5. Activity Data

5.1. Construction Schedule

Phase Name	Phase Type	Start Date	End Date	Days Per Week	Work Days per Phase	Phase Description
HVDC Cable Install	Linear, Drainage, Utilities, & Sub-Grade	8/1/2027	3/15/2028	6.00	195	—
HVDC Survey / Potholing	Linear, Drainage, Utilities, & Sub-Grade	6/1/2026	2/15/2027	6.00	223	—
Transmission Line Construction - Crossings	Linear, Drainage, Utilities, & Sub-Grade	8/1/2026	7/15/2027	6.00	299	—
HVDC and HVAC - Vaults	Linear, Drainage, Utilities, & Sub-Grade	7/1/2026	1/15/2027	6.00	171	—
HVDC and HVAC - Duct Bank and Restoration	Linear, Drainage, Utilities, & Sub-Grade	7/1/2026	9/15/2027	6.00	379	—
Overhead Transmission Line Construction - Clearing ROW Access	Linear, Drainage, Utilities, & Sub-Grade	6/1/2026	9/15/2026	6.00	92.0	—
Overhead Transmission Line Construction Foundation/Structures/WIre	Linear, Drainage, Utilities, & Sub-Grade	6/1/2026	2/15/2027	6.00	223	—
Commissioning and Testing	Linear, Drainage, Utilities, & Sub-Grade	11/1/2027	10/15/2028	6.00	300	—
Road Work, Site and Staging Preparation	Linear, Drainage, Utilities, & Sub-Grade	6/1/2026	9/15/2026	5.00	77.0	—

5.2. Off-Road Equipment

5.2.1. Unmitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
HVDC Cable Install	Off-Highway Trucks	Diesel	Tier 4 Final	2.00	6.00	70.0	0.23

HVDC Cable Install	Off-Highway Trucks	Diesel	Tier 4 Final	2.00	6.00	82.0	0.15
HVDC Cable Install	Off-Highway Trucks	Diesel	Tier 4 Final	1.00	3.00	300	0.08
HVDC Survey / Potholing	Off-Highway Tractors	Diesel	Tier 4 Final	2.00	8.00	525	0.29
Transmission Line Construction - Crossings	Excavators	Diesel	Tier 4 Final	2.00	6.00	275	0.30
Transmission Line Construction - Crossings	Tractors/Loaders/Backhoes	Diesel	Tier 4 Final	2.00	6.00	68.0	0.26
Transmission Line Construction - Crossings	Off-Highway Trucks	Diesel	Tier 4 Final	4.00	6.00	415	0.30
Transmission Line Construction - Crossings	Off-Highway Trucks	Diesel	Tier 4 Final	2.00	6.00	300	0.30
Transmission Line Construction - Crossings	Bore/Drill Rigs	Diesel	Average	1.00	6.00	67.0	0.03
HVDC and HVAC - Vaults	Excavators	Diesel	Tier 4 Final	1.00	6.00	275	0.30
HVDC and HVAC - Vaults	Tractors/Loaders/Backhoes	Diesel	Tier 4 Final	1.00	6.00	68.0	0.26
HVDC and HVAC - Vaults	Tractors/Loaders/Backhoes	Diesel	Average	1.00	6.00	275	0.26
HVDC and HVAC - Vaults	Cranes	Diesel	Tier 4 Final	2.00	2.00	260	0.04
HVDC and HVAC - Vaults	Off-Highway Trucks	Diesel	Tier 4 Final	2.00	3.00	415	0.30
HVDC and HVAC - Vaults	Off-Highway Trucks	Diesel	Tier 4 Final	1.00	4.00	300	0.30
HVDC and HVAC - Duct Bank and Restoration	Excavators	Diesel	Average	1.00	6.00	275	0.30

HVDC and HVAC - Duct Bank and Restoration	Tractors/Loaders/Backhoes	Diesel	Tier 4 Final	1.00	6.00	68.0	0.26
HVDC and HVAC - Duct Bank and Restoration	Tractors/Loaders/Backhoes	Diesel	Average	1.00	6.00	275	0.26
HVDC and HVAC - Duct Bank and Restoration	Pavers	Diesel	Average	1.00	2.00	235	0.38
HVDC and HVAC - Duct Bank and Restoration	Off-Highway Trucks	Diesel	Tier 4 Final	2.00	4.00	415	0.36
HVDC and HVAC - Duct Bank and Restoration	Off-Highway Trucks	Diesel	Tier 4 Final	1.00	4.00	300	0.30
HVDC and HVAC - Duct Bank and Restoration	Rollers	Diesel	Average	1.00	3.00	405	0.34
Overhead Transmission Line Construction - Clearing ROW Access	Off-Highway Tractors	Diesel	Tier 4 Final	1.00	8.00	525	0.05
Overhead Transmission Line Construction - Clearing ROW Access	Off-Highway Trucks	Diesel	Average	2.00	10.0	300	0.36
Overhead Transmission Line Construction - Clearing ROW Access	Tractors/Loaders/Backhoes	Diesel	Average	1.00	8.00	275	0.30
Overhead Transmission Line Construction - Clearing ROW Access	Off-Highway Trucks	Diesel	Average	3.00	5.00	415	0.30
Overhead Transmission Line Construction - Clearing ROW Access	Graders	Diesel	Average	1.00	8.00	250	0.33

Overhead Transmission Line Construction - Clearing ROW Access	Tractors/Loaders/Back	Diesel	Average	1.00	5.00	70.0	0.30
Overhead Transmission Line Construction - Clearing ROW Access	Skid Steer Loaders	Diesel	Average	2.00	4.00	74.3	0.30
Overhead Transmission Line Construction - Clearing ROW Access	Scrapers	Diesel	Average	1.00	5.00	407	0.43
Overhead Transmission Line Construction Foundation/Structures/WIre	Cranes	Diesel	Average	6.00	4.00	367	0.23
Overhead Transmission Line Construction Foundation/Structures/WIre	Aerial Lifts	Diesel	Tier 4 Final	1.00	8.00	250	0.23
Overhead Transmission Line Construction Foundation/Structures/WIre	Tractors/Loaders/Back hoes	Diesel	Average	1.00	8.00	125	0.30
Overhead Transmission Line Construction Foundation/Structures/WIre	Cranes	Diesel	Tier 4 Final	2.00	8.00	260	0.06
Overhead Transmission Line Construction Foundation/Structures/WIre	Off-Highway Trucks	Diesel	Tier 4 Final	2.00	3.00	415	0.19
Overhead Transmission Line Construction Foundation/Structures/WIre	Off-Highway Trucks	Diesel	Tier 4 Final	1.00	4.00	300	0.38
Overhead Transmission Line Construction Foundation/Structures/WIre	Cranes	Diesel	Average	1.00	4.00	400	0.23

Overhead Transmission Line Construction Foundation/Structures/WIre	Air Compressors	Diesel	Average	1.00	6.00	60.0	0.36
Overhead Transmission Line Construction Foundation/Structures/WIre	Off-Highway Trucks	Diesel	Average	2.00	3.00	300	0.10
Overhead Transmission Line Construction Foundation/Structures/WIre	Bore/Drill Rigs	Diesel	Average	1.00	6.00	82.0	0.30
Overhead Transmission Line Construction Foundation/Structures/WIre	Skid Steer Loaders	Diesel	Average	2.00	4.00	74.3	0.30
Commissioning and Testing	Generator Sets	Diesel	Tier 4 Final	2.00	10.0	45.0	0.74
Commissioning and Testing	Aerial Lifts	Diesel	Average	3.00	8.00	49.0	0.22
Commissioning and Testing	Rough Terrain Forklifts	Diesel	Tier 4 Final	1.00	5.00	130	0.23
Commissioning and Testing	Forklifts	Diesel	Tier 4 Final	1.00	5.00	49.0	0.12
Road Work, Site and Staging Preparation	Off-Highway Trucks	Diesel	Tier 4 Final	2.00	10.0	300	0.36
Road Work, Site and Staging Preparation	Tractors/Loaders/Backhoes	Diesel	Tier 4 Final	2.00	8.00	275	0.30
Road Work, Site and Staging Preparation	Off-Highway Trucks	Diesel	Tier 4 Final	6.00	5.00	415	0.30
Road Work, Site and Staging Preparation	Graders	Diesel	Tier 4 Final	1.00	8.00	250	0.30
Road Work, Site and Staging Preparation	Rollers	Diesel	Tier 4 Final	2.00	8.00	405	0.30
Road Work, Site and Staging Preparation	Off-Highway Tractors	Diesel	Tier 4 Final	1.00	9.00	640	0.02

Road Work, Site and Staging Preparation	Skid Steer Loaders	Diesel	Average	1.00	4.00	74.3	0.30
Road Work, Site and Staging Preparation	Off-Highway Tractors	Diesel	Tier 4 Final	1.00	8.00	525	0.05
Road Work, Site and Staging Preparation	Scrapers	Diesel	Tier 4 Final	1.00	5.00	407	0.43
Road Work, Site and Staging Preparation	Rubber Tired Dozers	Diesel	Tier 4 Final	1.00	7.00	170	0.12
Road Work, Site and Staging Preparation	Tractors/Loaders/Backhoes	Diesel	Average	1.00	5.00	70.0	0.30

5.3. Construction Vehicles

5.3.1. Unmitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
HVDC Cable Install	—	—	—	—
HVDC Cable Install	Worker	8.00	11.7	LDA,LDT1,LDT2
HVDC Cable Install	Vendor	12.0	8.40	HHDT,MHDT
HVDC Cable Install	Hauling	0.00	20.0	HHDT
HVDC Cable Install	Onsite truck	—	—	HHDT
HVDC Survey / Potholing	—	—	—	—
HVDC Survey / Potholing	Worker	14.0	11.7	LDA,LDT1,LDT2
HVDC Survey / Potholing	Vendor	8.00	8.40	HHDT,MHDT
HVDC Survey / Potholing	Hauling	0.00	20.0	HHDT
HVDC Survey / Potholing	Onsite truck	—	—	HHDT
Transmission Line Construction - Crossings	—	—	—	—
Transmission Line Construction - Crossings	Worker	7.00	11.7	LDA,LDT1,LDT2
Transmission Line Construction - Crossings	Vendor	20.0	8.40	HHDT,MHDT

Transmission Line Construction - Crossings	Hauling	0.00	20.0	HHDT
Transmission Line Construction - Crossings	Onsite truck	—	—	HHDT
HVDC and HVAC - Vaults	—	—	—	—
HVDC and HVAC - Vaults	Worker	16.0	11.7	LDA,LDT1,LDT2
HVDC and HVAC - Vaults	Vendor	40.0	8.40	HHDT,MHDT
HVDC and HVAC - Vaults	Hauling	0.00	20.0	HHDT
HVDC and HVAC - Vaults	Onsite truck	—	—	HHDT
HVDC and HVAC - Duct Bank and Restoration	—	—	—	—
HVDC and HVAC - Duct Bank and Restoration	Worker	66.0	11.7	LDA,LDT1,LDT2
HVDC and HVAC - Duct Bank and Restoration	Vendor	120	8.40	HHDT,MHDT
HVDC and HVAC - Duct Bank and Restoration	Hauling	0.00	20.0	HHDT
HVDC and HVAC - Duct Bank and Restoration	Onsite truck	—	—	HHDT
Overhead Transmission Line Construction - Clearing ROW Access	—	—	—	—
Overhead Transmission Line Construction - Clearing ROW Access	Worker	7.00	11.7	LDA,LDT1,LDT2
Overhead Transmission Line Construction - Clearing ROW Access	Vendor	6.00	8.40	HHDT,MHDT
Overhead Transmission Line Construction - Clearing ROW Access	Hauling	0.00	20.0	HHDT
Overhead Transmission Line Construction - Clearing ROW Access	Onsite truck	—	—	HHDT

Overhead Transmission Line Construction Foundation/Structures/WIre	—	—	—	—
Overhead Transmission Line Construction Foundation/Structures/WIre	Worker	8.00	11.7	LDA,LDT1,LDT2
Overhead Transmission Line Construction Foundation/Structures/WIre	Vendor	20.0	8.40	HHDT,MHDT
Overhead Transmission Line Construction Foundation/Structures/WIre	Hauling	0.00	20.0	HHDT
Overhead Transmission Line Construction Foundation/Structures/WIre	Onsite truck	—	—	HHDT
Commissioning and Testing	—	—	—	—
Commissioning and Testing	Worker	20.0	11.7	LDA,LDT1,LDT2
Commissioning and Testing	Vendor	6.00	8.40	HHDT,MHDT
Commissioning and Testing	Hauling	0.00	20.0	HHDT
Commissioning and Testing	Onsite truck	—	—	HHDT
Road Work, Site and Staging Preparation	—	—	—	—
Road Work, Site and Staging Preparation	Worker	0.00	11.7	LDA,LDT1,LDT2
Road Work, Site and Staging Preparation	Vendor	0.00	8.40	HHDT,MHDT
Road Work, Site and Staging Preparation	Hauling	0.00	20.0	HHDT
Road Work, Site and Staging Preparation	Onsite truck	—	—	HHDT

5.4. Vehicles

5.4.1. Construction Vehicle Control Strategies

Non-applicable. No control strategies activated by user.

5.5. Architectural Coatings

Phase Name	Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)

5.6. Dust Mitigation

5.6.1. Construction Earthmoving Activities

Phase Name	Material Imported (cy)	Material Exported (cy)	Acres Graded (acres)	Material Demolished (sq. ft.)	Acres Paved (acres)
HVDC Cable Install	—	—	17.0	0.00	—
HVDC Survey / Potholing	—	—	17.0	0.00	—
Transmission Line Construction - Crossings	—	—	17.0	0.00	—
HVDC and HVAC - Vaults	—	—	17.0	0.00	—
HVDC and HVAC - Duct Bank and Restoration	—	—	17.0	0.00	—
Overhead Transmission Line Construction - Clearing ROW Access	—	—	17.0	0.00	—
Overhead Transmission Line Construction Foundation/Structures/WIre	—	—	17.0	0.00	—
Commissioning and Testing	—	—	17.0	0.00	—
Road Work, Site and Staging Preparation	—	—	17.0	0.00	—

5.6.2. Construction Earthmoving Control Strategies

Non-applicable. No control strategies activated by user.

5.7. Construction Paving

Land Use	Area Paved (acres)	% Asphalt

User Defined Linear	17.0	100%

5.8. Construction Electricity Consumption and Emissions Factors

kWh per Year and Emission Factor (lb/MWh)

Year	kWh per Year	CO2	CH4	N2O
2026	0.00	204	0.03	< 0.005
2027	0.00	204	0.03	< 0.005
2028	0.00	204	0.03	< 0.005

5.18. Vegetation

5.18.1. Land Use Change

5.18.1.1. Unmitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres

5.18.1. Biomass Cover Type

5.18.1.1. Unmitigated

Biomass Cover Type	Initial Acres	Final Acres

5.18.2. Sequestration

5.18.2.1. Unmitigated

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

6. Climate Risk Detailed Report

6.1. Climate Risk Summary

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

Climate Hazard	Result for Project Location	Unit
Temperature and Extreme Heat	12.2	annual days of extreme heat
Extreme Precipitation	2.50	annual days with precipitation above 20 mm
Sea Level Rise	2.62	meters of inundation depth
Wildfire	10.5	annual hectares burned

Temperature and Extreme Heat data are for grid cell in which your project are located. The projection is based on the 98th historical percentile of daily maximum/minimum temperatures from observed historical data (32 climate model ensemble from Cal-Adapt, 2040–2059 average under RCP 8.5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Extreme Precipitation data are for the grid cell in which your project are located. The threshold of 20 mm is equivalent to about ¾ an inch of rain, which would be light to moderate rainfall if received over a full day or heavy rain if received over a period of 2 to 4 hours. Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Sea Level Rise data are for the grid cell in which your project are located. The projections are from Radke et al. (2017), as reported in Cal-Adapt (Radke et al., 2017, CEC-500-2017-008), and consider inundation location and depth for the San Francisco Bay, the Sacramento-San Joaquin River Delta and California coast resulting different increments of sea level rise coupled with extreme storm events. Users may select from four scenarios to view the range in potential inundation depth for the grid cell. The four scenarios are: No rise, 0.5 meter, 1.0 meter, 1.41 meters
Wildfire data are for the grid cell in which your project are located. The projections are from UC Davis, as reported in Cal-Adapt (2040–2059 average under RCP 8.5), and consider historical data of climate, vegetation, population density, and large (> 400 ha) fire history. Users may select from four model simulations to view the range in potential wildfire probabilities for the grid cell. The four simulations make different assumptions about expected rainfall and temperature are: Warmer/drier (HadGEM2-ES), Cooler/wetter (CNRM-CM5), Average conditions (CanESM2), Range of different rainfall and temperature possibilities (MIROC5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.

6.2. Initial Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	N/A	N/A	N/A	N/A
Extreme Precipitation	2	0	0	N/A
Sea Level Rise	1	0	0	N/A
Wildfire	1	0	0	N/A
Flooding	N/A	N/A	N/A	N/A
Drought	N/A	N/A	N/A	N/A
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	0	0	0	N/A

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.

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

6.3. Adjusted Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	N/A	N/A	N/A	N/A
Extreme Precipitation	2	1	1	3
Sea Level Rise	1	1	1	2
Wildfire	1	1	1	2
Flooding	N/A	N/A	N/A	N/A
Drought	N/A	N/A	N/A	N/A
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	1	1	1	2

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

6.4. Climate Risk Reduction Measures

7. Health and Equity Details

7.1. CalEnviroScreen 4.0 Scores

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

Indicator	Result for Project Census Tract
Exposure Indicators	—
AQ-Ozone	15.0
AQ-PM	19.4

AQ-DPM	29.0
Drinking Water	39.0
Lead Risk Housing	50.6
Pesticides	0.00
Toxic Releases	30.3
Traffic	94.1
Effect Indicators	—
CleanUp Sites	99.4
Groundwater	94.2
Haz Waste Facilities/Generators	93.2
Impaired Water Bodies	91.9
Solid Waste	100.0
Sensitive Population	—
Asthma	38.0
Cardio-vascular	40.0
Low Birth Weights	98.8
Socioeconomic Factor Indicators	—
Education	73.4
Housing	23.8
Linguistic	—
Poverty	27.9
Unemployment	36.4

7.2. Healthy Places Index Scores

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

Indicator	Result for Project Census Tract
Economic	—
Above Poverty	65.64865905

Employed	58.03926601
Median HI	67.43231105
Education	—
Bachelor's or higher	46.42627999
High school enrollment	100
Preschool enrollment	71.06377518
Transportation	—
Auto Access	50.77633774
Active commuting	35.32657513
Social	—
2-parent households	66.12344412
Voting	58.42422687
Neighborhood	—
Alcohol availability	48.03028359
Park access	58.14192224
Retail density	62.49197998
Supermarket access	14.28204799
Tree canopy	39.85628128
Housing	—
Homeownership	46.75991274
Housing habitability	62.22250738
Low-inc homeowner severe housing cost burden	75.25984858
Low-inc renter severe housing cost burden	47.02938535
Uncrowded housing	42.73065572
Health Outcomes	—
Insured adults	53.9715129
Arthritis	0.0
Asthma ER Admissions	20.1

High Blood Pressure	0.0
Cancer (excluding skin)	0.0
Asthma	0.0
Coronary Heart Disease	0.0
Chronic Obstructive Pulmonary Disease	0.0
Diagnosed Diabetes	0.0
Life Expectancy at Birth	80.1
Cognitively Disabled	95.5
Physically Disabled	78.7
Heart Attack ER Admissions	65.7
Mental Health Not Good	0.0
Chronic Kidney Disease	0.0
Obesity	0.0
Pedestrian Injuries	96.4
Physical Health Not Good	0.0
Stroke	0.0
Health Risk Behaviors	—
Binge Drinking	0.0
Current Smoker	0.0
No Leisure Time for Physical Activity	0.0
Climate Change Exposures	—
Wildfire Risk	0.0
SLR Inundation Area	3.9
Children	55.0
Elderly	87.4
English Speaking	31.8
Foreign-born	65.1
Outdoor Workers	23.6

Climate Change Adaptive Capacity	—
Impervious Surface Cover	21.5
Traffic Density	88.2
Traffic Access	46.8
Other Indices	—
Hardship	40.7
Other Decision Support	—
2016 Voting	69.9

7.3. Overall Health & Equity Scores

Metric	Result for Project Census Tract
CalEnviroScreen 4.0 Score for Project Location (a)	67.0
Healthy Places Index Score for Project Location (b)	64.0
Project Located in a Designated Disadvantaged Community (Senate Bill 535)	Yes
Project Located in a Low-Income Community (Assembly Bill 1550)	Yes
Project Located in a Community Air Protection Program Community (Assembly Bill 617)	No

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

7.4. Health & Equity Measures

No Health & Equity Measures selected.

7.5. Evaluation Scorecard

Health & Equity Evaluation Scorecard not completed.

7.6. Health & Equity Custom Measures

No Health & Equity Custom Measures created.

8. User Changes to Default Data

Screen	Justification

Land Use	Approx. 10KSF control enclosure/building
Construction: Construction Phases	Construction Schedule from Applicant
Construction: Off-Road Equipment	Construction Activity Input (UPDATE 11/1/2024)
Construction: Trips and VMT	Updated per Traffic Identified in construction spreadsheet 66 120

```
1                      AERMOD PRIME - (DATED 21112 )

                     AERMODPrMSPx VERSION
             (C) COPYRIGHT 1998-2021, Trinity Consultants

 *********************************************************************************************************
 *  CAUTION: There is a known bug in U.S. EPA AERMOD version 21112 that occurs when RLINE Roadway and   *
 *  RLINEXT Roadway sources are included in a model run and the order of the receptors is changed. Due  *
 *  to this bug, running the BREEZE-Enhanced version of AERMOD 21112 can result in differences in       *
 *  results when compared with U.S. EPA AERMOD 21112 if RLINE and/or RLINEXT Roadway sources are        *
 *  included. A new BREEZE-Enhanced version will be released as soon as U.S. EPA fixes the bug.         *
 *  Note: if RLINE and/or RLINEXT Roadway sources are not included in the model run, then the           *
 *  BREEZE-Enhanced version of AERMOD 21112 can be used without this caution.                           *
 *********************************************************************************************************

 Run Began on 11/10/2024 at  8:59:21

** BREEZE AERMOD
** Trinity Consultants
** VERSION  12.1

CO STARTING
CO TITLEONE  NRS Substation Construction DPM
CO MODELOPT  DFAULT  CONC  NODRYDPLT  NOWETDPLT
CO RUNORNOT  RUN
CO AVERTIME  ANNUAL
CO POLLUTID  PM10
CO FINISHED

SO STARTING
SO ELEVUNIT  METERS
SO LOCATION  EA0A8004  AREAPOLY  591639  4140062.9  0
** SRCDESCR  NRS Substation Work
SO SRCPARAM  EA0A8004  3.38E-08  3  13  1
SO AREAVERT  EA0A8004  591639 4140062.9  591623.7 4140054.6  591602 4140096.7  591516.6 4140051.4
SO AREAVERT  EA0A8004  591565.7 4139958.3  591651.7 4140006.2  591648.6 4140012.5  591659.4 4140018.9
SO AREAVERT  EA0A8004  591657.5 4140024  591643.5 4140018.3  591633.3 4140038.7  591648.6 4140046.9
SO AREAVERT  EA0A8004  591639 4140062.9
SO SRCGROUP  ALL
SO FINISHED

RE STARTING
RE ELEVUNIT  METERS
RE DISCCART  591670.2  4140141.9  0  0
** SENSITIV
** RCPDESCR  R1
RE DISCCART  591714.2  4140072.4  0  0
** SENSITIV
** RCPDESCR  R2
RE DISCCART  591657.5  4139928.4  0  0
** SENSITIV
** RCPDESCR  R3
RE DISCCART  591603.9  4139899.7  0  0
** SENSITIV
** RCPDESCR  R4
RE FINISHED

ME STARTING
ME SURFFILE  "C:\Users\ryan\My Drive (rmtaylor76@gmail.com)\City of San Jose\23-32 Newark HVDC PEA\111624\models\Northern Recieving Station
NRS\AERMOD\KSJC_2017.SFC"
** SURFFILE  "C:\Users\ryan\My Drive (rmtaylor76@gmail.com)\City of San Jose\23-32 Newark HVDC PEA\111624\models\Northern Recieving Station
NRS\AERMOD\KSJC_2017.SFC"
ME PROFFILE  "C:\Users\ryan\My Drive (rmtaylor76@gmail.com)\City of San Jose\23-32 Newark HVDC PEA\111624\models\Northern Recieving Station
NRS\AERMOD\KSJC_2017.PFL"
** PROFFILE  "C:\Users\ryan\My Drive (rmtaylor76@gmail.com)\City of San Jose\23-32 Newark HVDC PEA\111624\models\Northern Recieving Station
NRS\AERMOD\KSJC_2017.PFL"
ME SURFDATA  23293 2017
ME UAIRDATA  23230 2017
ME PROFBASE  0  METERS
ME FINISHED

OU STARTING
OU FILEFORM  FIX
OU PLOTFILE  ANNUAL  ALL  ALL`ANNUAL.plt  10000
OU FINISHED

** ********************************************************************************
** It is recommended that the user not edit any data below this line
** ********************************************************************************


** AMPTYPE
** AMPDATUM  -1
** AMPZONE  -1
** AMPHEMISPHERE

** PROJECTIONWKT
PROJCS["UTM_6326_Zone11",GEOGCS["WGS_84",DATUM["World_Geodetic_System_1984",SPHEROID["WGS_1984",6378137,298.257223563],TOWGS84[0,0,0,0,0,0,0]],PRIMEM["Gree
nwich",0],UNIT["Degree",0.0174532925199433]],PROJECTION["Universal_Transverse_Mercator"],PARAMETER["Zone",11],UNIT["Meter",1,AUTHORITY["EPSG","9001"]]]
** PROJECTION  UTM
** DATUM  WGE
```

```
** UNITS  METER
** ZONE  11
** HEMISPHERE  N
** ORIGINLON  0
** ORIGINLAT  0
** PARALLEL1  0
** PARALLEL2  0
** AZIMUTH  0
** SCALEFACT  0
** FALSEEAST  0
** FALSENORTH  0

** POSTFMT  UNFORM
** TEMPLATE USERDEFINED
** AERMODEXE  AERMOD_BREEZE_21112_64.EXE
** AERMAPEXE  AERMAP_EPA_18081_64.EXE


  *** Message Summary For AERMOD Model Setup ***

  --------- Summary of Total Messages --------

 A Total of           0 Fatal Error Message(s)
 A Total of           2 Warning Message(s)
 A Total of           0 Informational Message(s)


    ******** FATAL ERROR MESSAGES ********
               ***  NONE  ***


    ********   WARNING MESSAGES   ********
 ME W186      56       MEOPEN: THRESH_1MIN 1-min ASOS wind speed threshold used           0.50
 ME W187      56       MEOPEN: ADJ_U* Option for Stable Low Winds used in AERMET

 ***********************************
 *** SETUP Finishes Successfully ***
 ***********************************

 *** AERMOD - VERSION 21112  ***   ***  NRS Substation Construction DPM                                      ***        11/10/24
 *** AERMET - VERSION  18081 ***   ***                                                                      ***        08:59:21
                                                                                                                        PAGE   1
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  NODRYDPLT  NOWETDPLT  RURAL  ADJ_U*

                                         ***     MODEL SETUP OPTIONS SUMMARY       ***
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

 **Model Is Setup For Calculation of Average CONCentration Values.

   --  DEPOSITION LOGIC  --
 **NO GAS DEPOSITION Data Provided.
 **NO PARTICLE DEPOSITION Data Provided.
 **Model Uses NO DRY DEPLETION.  DRYDPLT  =  F
 **Model Uses NO WET DEPLETION.  WETDPLT  =  F

 **Model Uses RURAL Dispersion Only.

 **Model Uses Regulatory DEFAULT Options:
         1. Stack-tip Downwash.
         2. Model Accounts for ELEVated Terrain Effects.
         3. Use Calms Processing Routine.
         4. Use Missing Data Processing Routine.
         5. No Exponential Decay.

 **Other Options Specified:
         ADJ_U*   - Use ADJ_U* option for SBL in AERMET
         CCVR_Sub - Meteorological data includes CCVR substitutions
         TEMP_Sub - Meteorological data includes TEMP substitutions

 **Model Assumes No FLAGPOLE Receptor Heights.

 **The User Specified a Pollutant Type of:  PM10

 **Model Calculates ANNUAL Averages Only

 **This Run Includes:      1 Source(s);       1 Source Group(s); and       4 Receptor(s)

                with:      0 POINT(s), including
                           0 POINTCAP(s) and      0 POINTHOR(s)
                 and:      0 VOLUME source(s)
                 and:      1 AREA type source(s)
                 and:      0 LINE source(s)
                 and:      0 RLINE/RLINEXT source(s)
                 and:      0 OPENPIT source(s)
                 and:      0 BUOYANT LINE source(s) with a total of     0 line(s)


 **Model Set To Continue RUNning After the Setup Testing.

 **The AERMET Input Meteorological Data Version Date:  18081
```

```
 **Output Options Selected:
          Model Outputs Tables of ANNUAL Averages by Receptor
          Model Outputs External File(s) of High Values for Plotting (PLOTFILE Keyword)

 **NOTE:  The Following Flags May Appear Following CONC Values:  c for Calm Hours
                                                                 m for Missing Hours
                                                                 b for Both Calm and Missing Hours

 **Misc. Inputs:  Base Elev. for Pot. Temp. Profile (m MSL) =      0.00 ;  Decay Coef. =    0.000     ;  Rot. Angle =     0.0
                  Emission Units = GRAMS/SEC                                ;  Emission Rate Unit Factor =   0.10000E+07
                  Output Units   = MICROGRAMS/M**3

 **Approximate Storage Requirements of Model =      3.5 MB of RAM.

 **Input Runstream File:          aermod.inp
 **Output Print File:             aermod.out

 *** AERMOD - VERSION 21112  ***   ***  NRS Substation Construction DPM                                        ***        11/10/24
 *** AERMET - VERSION  18081 ***   ***                                                                         ***        08:59:21
                                                                                                                          PAGE   2
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  NODRYDPLT  NOWETDPLT  RURAL  ADJ_U*


                                                   *** AREAPOLY SOURCE DATA ***

               NUMBER EMISSION RATE   LOCATION OF AREA  BASE     RELEASE  NUMBER      INIT.   URBAN  EMISSION RATE
   SOURCE       PART.  (GRAMS/SEC       X         Y      ELEV.    HEIGHT  OF VERTS.     SZ     SOURCE  SCALAR VARY
     ID         CATS.   /METER**2)   (METERS) (METERS) (METERS) (METERS)            (METERS)             BY
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

 EA0A8004         0  0.33800E-07  591639.0 4140062.9     0.0    3.00      13         1.00     NO
 *** AERMOD - VERSION 21112  ***   ***  NRS Substation Construction DPM                                        ***        11/10/24
 *** AERMET - VERSION  18081 ***   ***                                                                         ***        08:59:21
                                                                                                                          PAGE   3
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  NODRYDPLT  NOWETDPLT  RURAL  ADJ_U*


                                              *** SOURCE IDs DEFINING SOURCE GROUPS ***

 SRCGROUP ID                                             SOURCE IDs
 -----------                                             ----------


  ALL        EA0A8004    ,
 *** AERMOD - VERSION 21112  ***   ***  NRS Substation Construction DPM                                        ***        11/10/24
 *** AERMET - VERSION  18081 ***   ***                                                                         ***        08:59:21
                                                                                                                          PAGE   4
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  NODRYDPLT  NOWETDPLT  RURAL  ADJ_U*

                                              *** METEOROLOGICAL DAYS SELECTED FOR PROCESSING ***
                                                                   (1=YES; 0=NO)

            1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
            1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
            1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
            1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
            1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
            1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
            1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
            1 1 1 1 1 1 1 1 1 1  1 1 1 1 1

                NOTE:  METEOROLOGICAL DATA ACTUALLY PROCESSED WILL ALSO DEPEND ON WHAT IS INCLUDED IN THE DATA FILE.



                                     *** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED CATEGORIES ***
                                                                (METERS/SEC)

                                                       1.54,   3.09,   5.14,   8.23,  10.80,
 *** AERMOD - VERSION 21112  ***   ***  NRS Substation Construction DPM                                        ***        11/10/24
 *** AERMET - VERSION  18081 ***   ***                                                                         ***        08:59:21
                                                                                                                          PAGE   5
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  NODRYDPLT  NOWETDPLT  RURAL  ADJ_U*

                                         *** UP TO THE FIRST 24 HOURS OF METEOROLOGICAL DATA ***

   Surface file:   C:\Users\ryan\My Drive (rmtaylor76@gmail.com)\City of San Jose\23-32 Newark HVDC   Met Version:  18081
   Profile file:   C:\Users\ryan\My Drive (rmtaylor76@gmail.com)\City of San Jose\23-32 Newark HVDC
   Surface format: FREE
   Profile format: FREE
   Surface station no.:     23293                 Upper air station no.:     23230
                  Name: UNKNOWN                                    Name: UNKNOWN
                  Year:   2017                                     Year:   2017

 First 24 hours of scalar data
 YR MO DY JDY HR     H0     U*     W*  DT/DZ ZICNV ZIMCH  M-O LEN    Z0  BOWEN ALBEDO  REF WS   WD     HT  REF TA     HT
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
 17 01 01   1 01  -22.4  0.219 -9.000 -9.000 -999.  246.     52.9  0.02   0.68   1.00    3.36  121.    7.9  277.5    2.0
 17 01 01   1 02  -12.5  0.138 -9.000 -9.000 -999.  125.     21.0  0.02   0.68   1.00    2.17  180.    7.9  278.1    2.0
 17 01 01   1 03  -16.7  0.164 -9.000 -9.000 -999.  160.     29.6  0.02   0.68   1.00    2.55  137.    7.9  278.8    2.0
```

```
 17 01 01   1 04  -17.5  0.172 -9.000 -9.000 -999.  172.     32.7  0.02   0.68   1.00    2.67  125.    7.9  279.2    2.0
 17 01 01   1 05  -21.8  0.215 -9.000 -9.000 -999.  239.     50.6  0.02   0.68   1.00    3.29  122.    7.9  279.2    2.0
 17 01 01   1 06  -15.2  0.153 -9.000 -9.000 -999.  145.     25.8  0.02   0.68   1.00    2.39  154.    7.9  279.9    2.0
 17 01 01   1 07  -18.9  0.187 -9.000 -9.000 -999.  194.     38.3  0.02   0.68   1.00    2.88  124.    7.9  279.9    2.0
 17 01 01   1 08  -17.7  0.175 -9.000 -9.000 -999.  176.     33.7  0.02   0.68   0.74    2.71  132.    7.9  279.9    2.0
 17 01 01   1 09    5.8  0.168  0.369  0.005  314.  166.    -74.7  0.02   0.68   0.39    2.32  134.    7.9  280.9    2.0
 17 01 01   1 10   35.9  0.138  0.923  0.018  792.  123.     -6.6  0.02   0.68   0.27    1.59  138.    7.9  282.0    2.0
 17 01 01   1 11   59.1  0.123  1.168  0.019  974.  104.     -2.9  0.02   0.68   0.23    1.28  129.    7.9  284.2    2.0
 17 01 01   1 12   72.0  0.252  1.293  0.020 1085.  304.    -20.1  0.02   0.68   0.21    3.34  280.    7.9  284.9    2.0
 17 01 01   1 13   87.9  0.389  1.384  0.019 1089.  582.    -60.3  0.05   0.68   0.21    4.65  263.    7.9  285.9    2.0
 17 01 01   1 14   65.5  0.353  1.256  0.019 1091.  504.    -60.5  0.05   0.68   0.22    4.22  270.    7.9  285.9    2.0
 17 01 01   1 15   46.1  0.403  1.118  0.018 1093.  613.   -128.0  0.05   0.68   0.25    4.97  244.    7.9  285.4    2.0
 17 01 01   1 16   18.2  0.370  0.820  0.018 1094.  542.   -252.7  0.02   0.68   0.33    5.44  281.    7.9  285.4    2.0
 17 01 01   1 17  -32.0  0.420 -9.000 -9.000 -999.  653.    209.2  0.02   0.68   0.57    6.43  279.    7.9  283.1    2.0
 17 01 01   1 18  -28.9  0.288 -9.000 -9.000 -999.  382.     91.1  0.05   0.68   1.00    3.85  243.    7.9  282.0    2.0
 17 01 01   1 19  -18.6  0.185 -9.000 -9.000 -999.  197.     37.6  0.05   0.68   1.00    2.52  246.    7.9  282.0    2.0
 17 01 01   1 20  -13.3  0.147 -9.000 -9.000 -999.  135.     23.7  0.05   0.68   1.00    2.03  225.    7.9  280.9    2.0
 17 01 01   1 21   -7.4  0.105 -9.000 -9.000 -999.   82.     14.3  0.02   0.68   1.00    1.69  116.    7.9  282.0    2.0
 17 01 01   1 22  -10.4  0.130 -9.000 -9.000 -999.  112.     19.0  0.05   0.68   1.00    1.76   94.    7.9  281.4    2.0
 17 01 01   1 23  -14.5  0.149 -9.000 -9.000 -999.  138.     24.5  0.02   0.68   1.00    2.33  133.    7.9  280.9    2.0
 17 01 01   1 24  -21.8  0.215 -9.000 -9.000 -999.  240.     51.0  0.02   0.68   1.00    3.30  114.    7.9  280.4    2.0


 First hour of profile data
 YR MO DY HR HEIGHT F  WDIR    WSPD AMB_TMP sigmaA  sigmaW  sigmaV
 17 01 01 01    7.9 1  121.    3.36   277.6   99.0  -99.00  -99.00

 F indicates top of profile (=1) or below (=0)
 *** AERMOD - VERSION 21112  ***   ***  NRS Substation Construction DPM                                          ***        11/10/24
 *** AERMET - VERSION  18081 ***   ***                                                                          ***        08:59:21
                                                                                                                           PAGE   6
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  NODRYDPLT  NOWETDPLT  RURAL  ADJ_U*

                  *** THE ANNUAL AVERAGE CONCENTRATION    VALUES AVERAGED OVER   1 YEARS FOR SOURCE GROUP: ALL      ***
                                 INCLUDING SOURCE(S):     EA0A8004    ,

                                            *** SENSITIVE DISCRETE RECEPTOR POINTS ***

                                      ** CONC OF PM10     IN MICROGRAMS/M**3                          **

       X-COORD (M)   Y-COORD (M)        CONC                       X-COORD (M)   Y-COORD (M)        CONC
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
         591670.20   4140141.90       0.01238                        591714.20   4140072.40       0.01494
         591657.50   4139928.40       0.03625                        591603.90   4139899.70       0.01108
 *** AERMOD - VERSION 21112  ***   ***  NRS Substation Construction DPM                                          ***        11/10/24
 *** AERMET - VERSION  18081 ***   ***                                                                          ***        08:59:21
                                                                                                                           PAGE   7
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  NODRYDPLT  NOWETDPLT  RURAL  ADJ_U*

                                  *** THE SUMMARY OF MAXIMUM ANNUAL RESULTS AVERAGED OVER   1 YEARS ***


                                  ** CONC OF PM10     IN MICROGRAMS/M**3                          **

                                                                                                            NETWORK
GROUP ID                      AVERAGE CONC               RECEPTOR  (XR, YR, ZELEV, ZHILL, ZFLAG)  OF TYPE  GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

ALL       1ST HIGHEST VALUE IS       0.03625 AT (  591657.50,  4139928.40,     0.00,     0.00,    0.00)  SR
          2ND HIGHEST VALUE IS       0.01494 AT (  591714.20,  4140072.40,     0.00,     0.00,    0.00)  SR
          3RD HIGHEST VALUE IS       0.01238 AT (  591670.20,  4140141.90,     0.00,     0.00,    0.00)  SR
          4TH HIGHEST VALUE IS       0.01108 AT (  591603.90,  4139899.70,     0.00,     0.00,    0.00)  SR
          5TH HIGHEST VALUE IS       0.00000 AT (       0.00,        0.00,     0.00,     0.00,    0.00)
          6TH HIGHEST VALUE IS       0.00000 AT (       0.00,        0.00,     0.00,     0.00,    0.00)
          7TH HIGHEST VALUE IS       0.00000 AT (       0.00,        0.00,     0.00,     0.00,    0.00)
          8TH HIGHEST VALUE IS       0.00000 AT (       0.00,        0.00,     0.00,     0.00,    0.00)
          9TH HIGHEST VALUE IS       0.00000 AT (       0.00,        0.00,     0.00,     0.00,    0.00)
         10TH HIGHEST VALUE IS       0.00000 AT (       0.00,        0.00,     0.00,     0.00,    0.00)


 *** RECEPTOR TYPES:  GC = GRIDCART
                      GP = GRIDPOLR
                      DC = DISCCART
                      DP = DISCPOLR
 *** AERMOD - VERSION 21112  ***   ***  NRS Substation Construction DPM                                          ***        11/10/24
 *** AERMET - VERSION  18081 ***   ***                                                                          ***        08:59:21
                                                                                                                           PAGE   8
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  NODRYDPLT  NOWETDPLT  RURAL  ADJ_U*

 *** Message Summary : AERMOD Model Execution ***

  --------- Summary of Total Messages --------

 A Total of           0 Fatal Error Message(s)
 A Total of           3 Warning Message(s)
 A Total of         194 Informational Message(s)

 A Total of        8784 Hours Were Processed

 A Total of          52 Calm Hours Identified
```

```
A Total of          142 Missing Hours Identified (  1.62 Percent)


   ******** FATAL ERROR MESSAGES ********
              ***  NONE  ***


   ********   WARNING MESSAGES   ********
ME W186      56       MEOPEN: THRESH_1MIN 1-min ASOS wind speed threshold used           0.50
ME W187      56       MEOPEN: ADJ_U* Option for Stable Low Winds used in AERMET
MX W481    8785         MAIN: Data Remaining After End of Year. Number of Hours=           24

   ************************************
   *** AERMOD Finishes Successfully ***
   ************************************
```

Air Quality Health Risk Calculations (Worst-Case)
NRS Substation Construction R1

From CalEE Annual Output	Emission per day (Ton/Total Construction Duration)	**0.0237**				
	Construction Start	**9/15/2026**				
	Construction Complete	**2/15/2028**				
	Days	**518**				
	Construction Emission per day (lb/day)	**0.091505792**				
	Annual Duration (Days)	**365**				
	Annualized Emission Rate (Grams/Second)	**0.00047977**				
	Project Site Size (Acres)	**3.51**				
	Project Site Size (meters^2)	**14204.46604**				
	Length of Smalles Side (meters)	**119.1824905**				
Used as an input to AERMOD	Emission Rate over Grading Area(g/s-m^2)	**3.38E-08**				
From AERMOD	Concentration Annual (Ug/M^3)	**0.01238**				
	Days	Days to years				
Duration	518	1.419178082				
Age (Years)	3rd Trimester (0.25)	0-2	2-9	2-16	16-30	16-70
Cair (annual) - From F15	0.01238	0.01238	0.01238	0.01238	0.01238	0.01238
Breathing Rate per agegroup BR/BW (Page 5-25)	361	1090	861	745	335	290
A (Default is 1)	1	1	1	1	1	1
Exposure Frequency = EF (days/365days)	0.96	0.96	0.96	0.96	0.96	0.96
10^-6 Microgram to Milligram / liters to m3	0.000001	0.000001	0.000001	0.000001	0.000001	0.000001
Dose-inh	0.00000429	0.00001295	0.00001023	0.00000885	0.00000398	0.00000345
Construction Days	518	1.419178082				
potency factor for Diesel	1.1	1.1	1.1	1.1	1.1	1.1
Age Sensitivity Factor	10	10	3	3	1	1
ED	0.25	1.419178082	1.419178082	1.419178082	1.419178082	1.419178082
AT	70	70	70	70	70	70
FAH	0.85	0.85	0.72	0.72	0.73	0.73
Risk for Each Age Group	1.43269E-07	2.45566E-06	4.92924E-07	4.26514E-07	6.48173E-08	5.61105E-08
Risk per million Exposed	0.143269142	2.455663425	0.492924405	0.426514148	0.064817322	0.056110518
Cancer Risk Per Million Construction Duration	2.60					
Cancer Risk Per Million 30-years	3.09					

Air Quality Health Risk Calculations (Worst-Case)
NRS Substation Construction R2

From CalEE Annual Output	Emission per day (Ton/Total Construction Duration)	**0.0237**				
	Construction Start	**9/1/2026**				
	Construction Complete	**2/15/2028**				
	Days	**532**				
	Construction Emission per day (lb/day)	**0.090977444**				
	Annual Duration (Days)	**365**				
	Annualized Emission Rate (Grams/Second)	**0.000477**				
	Project Site Size (Acres)	**3.51**				
	Project Site Size (meters^2)	**14204.46604**				
	Length of Smalles Side (meters)	**119.1824905**				
Used as an input to AERMOD	Emission Rate over Grading Area(g/s-m^2)	**3.36E-08**				
From AERMOD	Concentration Annual (Ug/M^3)	**0.01494**				
	Days	Days to years				
Duration	518	1.419178082				
Age (Years)	3rd Trimester (0.25)	0-2	2-9	2-16	16-30	16-70
Cair (annual) - From F15	0.01494	0.01494	0.01494	0.01494	0.01494	0.01494
Breathing Rate per agegroup BR/BW (Page 5-25)	361	1090	861	745	335	290
A (Default is 1)	1	1	1	1	1	1
Exposure Frequency = EF (days/365days)	0.96	0.96	0.96	0.96	0.96	0.96
10^-6 Microgram to Milligram / liters to m3	0.000001	0.000001	0.000001	0.000001	0.000001	0.000001
Dose-inh	0.00000518	0.00001563	0.00001235	0.00001069	0.00000480	0.00000416
Construction Days	518	1.419178082				
potency factor for Diesel	1.1	1.1	1.1	1.1	1.1	1.1
Age Sensitivity Factor	10	10	3	3	1	1
ED	0.25	1.419178082	1.419178082	1.419178082	1.419178082	1.419178082
AT	70	70	70	70	70	70
FAH	0.85	0.85	0.72	0.72	0.73	0.73
Risk for Each Age Group	1.72895E-07	2.96346E-06	5.94854E-07	5.14711E-07	7.82206E-08	6.77133E-08
Risk per million Exposed	0.172895071	2.963458123	0.594853846	0.514710935	0.078220581	0.067713339
Cancer Risk Per Million Construction Duration	3.14					
Cancer Risk Per Million 30-years	3.73					

Air Quality Health Risk Calculations (Worst-Case)
NRS Substation Construction R3

From CalEE Annual Output	Emission per day (Ton/Total Construction Duration)	**0.0237**
	Construction Start	**9/1/2026**
	Construction Complete	**2/15/2028**
	Days	**532**
	Construction Emission per day (lb/day)	**0.090977444**
	Annual Duration (Days)	**365**
	Annualized Emission Rate (Grams/Second)	**0.000477**
	Project Site Size (Acres)	**3.51**
	Project Site Size (meters^2)	**14204.46604**
	Length of Smalles Side (meters)	**119.1824905**
Used as an input to AERMOD	Emission Rate over Grading Area(g/s-m^2)	**3.36E-08**
From AERMOD	Concentration Annual (Ug/M^3)	**0.03625**

	Days	Days to years				
Duration	532	1.457534247				
Age (Years)	3rd Trimester (0.25)	0-2	2-9	2-16	16-30	16-70
Cair (annual) - From F15	0.03625	0.03625	0.03625	0.03625	0.03625	0.03625
Breathing Rate per agegroup BR/BW (Page 5-25)	361	1090	861	745	335	290
A (Default is 1)	1	1	1	1	1	1
Exposure Frequency = EF (days/365days)	0.96	0.96	0.96	0.96	0.96	0.96
10^-6 Microgram to Milligram / liters to m3	0.000001	0.000001	0.000001	0.000001	0.000001	0.000001
Dose-inh	0.00001256	0.00003793	0.00002996	0.00002593	0.00001166	0.00001009
Construction Days	532	1.457534247				
potency factor for Diesel	1.1	1.1	1.1	1.1	1.1	1.1
Age Sensitivity Factor	10	10	3	3	1	1
ED	0.25	1.457534247	1.457534247	1.457534247	1.457534247	1.457534247
AT	70	70	70	70	70	70
FAH	0.85	0.85	0.72	0.72	0.73	0.73
Risk for Each Age Group	4.19508E-07	7.38479E-06	1.48235E-06	1.28263E-06	1.94922E-07	1.68738E-07
Risk per million Exposed	0.419507786	7.384788822	1.48234591	1.282633802	0.19492176	0.16873824
Cancer Risk Per Million Construction Duration	7.80					
Cancer Risk Per Million 30-years	9.28					

Air Quality Health Risk Calculations (Worst-Case)
NRS Substation Construction R4

From CalEE Annual Output	Emission per day (Ton/Total Construction Duration)	**0.0237**
	Construction Start	**9/1/2026**
	Construction Complete	**2/15/2028**
	Days	**532**
	Construction Emission per day (lb/day)	**0.090977444**
	Annual Duration (Days)	**365**
	Annualized Emission Rate (Grams/Second)	**0.000477**
	Project Site Size (Acres)	**3.51**
	Project Site Size (meters^2)	**14204.46604**
	Length of Smalles Side (meters)	**119.1824905**
Used as an input to AERMOD	Emission Rate over Grading Area(g/s-m^2)	**3.36E-08**
From AERMOD	Concentration Annual (Ug/M^3)	**0.01108**

	Days	Days to years				
Duration	532	1.457534247				
Age (Years)	3rd Trimester (0.25)	0-2	2-9	2-16	16-30	16-70
Cair (annual) - From F15	0.01108	0.01108	0.01108	0.01108	0.01108	0.01108
Breathing Rate per agegroup BR/BW (Page 5-25)	361	1090	861	745	335	290
A (Default is 1)	1	1	1	1	1	1
Exposure Frequency = EF (days/365days)	0.96	0.96	0.96	0.96	0.96	0.96
10^-6 Microgram to Milligram / liters to m3	0.000001	0.000001	0.000001	0.000001	0.000001	0.000001
Dose-inh	0.00000384	0.00001159	0.00000916	0.00000792	0.00000356	0.00000308
Construction Days	532	1.457534247				
potency factor for Diesel	1.1	1.1	1.1	1.1	1.1	1.1
Age Sensitivity Factor	10	10	3	3	1	1
ED	0.25	1.457534247	1.457534247	1.457534247	1.457534247	1.457534247
AT	70	70	70	70	70	70
FAH	0.85	0.85	0.72	0.72	0.73	0.73
Risk for Each Age Group	1.28225E-07	2.2572E-06	4.53087E-07	3.92044E-07	5.95788E-08	5.15757E-08
Risk per million Exposed	0.128224725	2.257198901	0.453086695	0.392043656	0.059578844	0.051575716

Cancer Risk Per Million Construction Duration	2.39
Cancer Risk Per Million 30-years	2.84

Attachment 4A - PM2.5 Dispersion Model Input Calculation

NRS Substation Upgrades

Year	PM 2.5 Annual Total from CalEEMod	Construction Start	Construction End	Construction Duration
2026	0.007501215	9/15/2026	12/31/2026	107
2027	0.023802326	12/31/2026	12/31/2027	365
2028	0.002805441	12/31/2027	2/15/2028	46

Largest Emission Noted	NRS Substation Upgrade
Year	2027
Emission per day (Ton/Total Construction Duration)	**0.024**
Annual Construction Start	12/31/2026
Annual Construction Completion	12/31/2027
Construction Duration in 2027	365
Construction Emission per day (lb/day)	0.130
Annualized Emission Rate (Grams/Second)	0.00068
Project Site Size (Acres)	3.51
Project Site Size (meters^2)	14204.47
Length of Smalles Side (meters)	119.18
AERMOD Input Emission Rate (g/s-m^2)	4.81E-08

```
1                      AERMOD PRIME - (DATED 23132 )

                     AERMODPrMSPx VERSION
             (C) COPYRIGHT 1998-2022, Trinity Consultants

 Run Began on 11/11/2024 at  9:26:04

** BREEZE AERMOD
** Trinity Consultants
** VERSION  12.1

CO STARTING
CO TITLEONE  NRS Substation Construction PM2.5
CO MODELOPT  DFAULT  CONC  NODRYDPLT  NOWETDPLT
CO RUNORNOT  RUN
CO AVERTIME  ANNUAL
CO POLLUTID  PM25
CO FINISHED

SO STARTING
SO ELEVUNIT  METERS
SO LOCATION  EA0A8004  AREAPOLY  591639  4140062.9  0
** SRCDESCR  NRS Substation Work
SO SRCPARAM  EA0A8004  4.81E-08  3  13  1
SO AREAVERT  EA0A8004  591639 4140062.9  591623.7 4140054.6  591602 4140096.7  591516.6 4140051.4
SO AREAVERT  EA0A8004  591565.7 4139958.3  591651.7 4140006.2  591648.6 4140012.5  591659.4 4140018.9
SO AREAVERT  EA0A8004  591657.5 4140024  591643.5 4140018.3  591633.3 4140038.7  591648.6 4140046.9
SO AREAVERT  EA0A8004  591639 4140062.9
SO SRCGROUP  ALL
SO FINISHED

RE STARTING
RE ELEVUNIT  METERS
RE DISCCART  591670.2  4140141.9  0  0
** SENSITIV
** RCPDESCR  R1
RE DISCCART  591714.2  4140072.4  0  0
** SENSITIV
** RCPDESCR  R2
RE DISCCART  591657.5  4139928.4  0  0
** SENSITIV
** RCPDESCR  R3
RE DISCCART  591603.9  4139899.7  0  0
** SENSITIV
** RCPDESCR  R4
RE FINISHED

ME STARTING
ME SURFFILE  "C:\Users\ryan\MYDRIV~1.COM\CIA265~1\23-32N~1\Models\NORTHE~1\AERMOD\KSJC_2017.SFC"
** SURFFILE  "C:\Users\ryan\MYDRIV~1.COM\CIA265~1\23-32N~1\Models\NORTHE~1\AERMOD\KSJC_2017.SFC"
ME PROFFILE  "C:\Users\ryan\MYDRIV~1.COM\CIA265~1\23-32N~1\Models\NORTHE~1\AERMOD\KSJC_2017.PFL"
** PROFFILE  "C:\Users\ryan\MYDRIV~1.COM\CIA265~1\23-32N~1\Models\NORTHE~1\AERMOD\KSJC_2017.PFL"
ME SURFDATA  23293 2017
ME UAIRDATA  23230 2017
ME PROFBASE  0  METERS
ME FINISHED

OU STARTING
OU FILEFORM  FIX
OU PLOTFILE  ANNUAL  ALL  ALL`ANNUAL.plt  10000
OU FINISHED

** ******************************************************************************
** It is recommended that the user not edit any data below this line
** ******************************************************************************


** AMPTYPE
** AMPDATUM  -1
** AMPZONE  -1
** AMPHEMISPHERE

** PROJECTIONWKT
PROJCS["UTM_6326_Zone11",GEOGCS["WGS_84",DATUM["World_Geodetic_System_1984",SPHEROID["WGS_1984",6378137,298.257223563],TOWGS84[0,0,0,0,0,0,0]],PRIMEM["Gree
nwich",0],UNIT["Degree",0.0174532925199433]],PROJECTION["Universal_Transverse_Mercator"],PARAMETER["Zone",11],UNIT["Meter",1,AUTHORITY["EPSG","9001"]]]
** PROJECTION  UTM
** DATUM  WGE
** UNITS  METER
** ZONE  11
** HEMISPHERE  N
** ORIGINLON  0
** ORIGINLAT  0
** PARALLEL1  0
** PARALLEL2  0
** AZIMUTH  0
** SCALEFACT  0
** FALSEEAST  0
** FALSENORTH  0

** POSTFMT  UNFORM
** TEMPLATE USERDEFINED
```

```
** AERMODEXE  AERMOD_BREEZE_23132_64.EXE
** AERMAPEXE  AERMAP_EPA_18081_64.EXE


  *** Message Summary For AERMOD Model Setup ***

  --------- Summary of Total Messages --------

 A Total of           0 Fatal Error Message(s)
 A Total of           2 Warning Message(s)
 A Total of           0 Informational Message(s)


    ******** FATAL ERROR MESSAGES ********
               ***  NONE  ***


    ********   WARNING MESSAGES   ********
 ME W186      56       MEOPEN: THRESH_1MIN 1-min ASOS wind speed threshold used           0.50
 ME W187      56       MEOPEN: ADJ_U* Option for Stable Low Winds used in AERMET

 ***********************************
 *** SETUP Finishes Successfully ***
 ***********************************

 *** AERMOD - VERSION 23132  ***   ***  NRS Substation Construction PM2.5                                   ***        11/11/24
 *** AERMET - VERSION  18081 ***   ***                                                                      ***        09:26:04
                                                                                                                       PAGE   1
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  NODRYDPLT  NOWETDPLT  RURAL  ADJ_U*

                                          ***     MODEL SETUP OPTIONS SUMMARY       ***
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

 ** Model Options Selected:
      * Model Uses Regulatory DEFAULT Options
      * Model Is Setup For Calculation of Average CONCentration Values.
      * NO GAS DEPOSITION Data Provided.
      * NO PARTICLE DEPOSITION Data Provided.
      * Model Uses NO DRY DEPLETION. DDPLETE  =  F
      * Model Uses NO WET DEPLETION. WETDPLT  =  F
      * Stack-tip Downwash.
      * Model Accounts for ELEVated Terrain Effects.
      * Use Calms Processing Routine.
      * Use Missing Data Processing Routine.
      * No Exponential Decay.
      * Model Uses RURAL Dispersion Only.
      * ADJ_U*   - Use ADJ_U* option for SBL in AERMET
      * CCVR_Sub - Meteorological data includes CCVR substitutions
      * TEMP_Sub - Meteorological data includes TEMP substitutions
      * Model Assumes No FLAGPOLE Receptor Heights.
      * The User Specified a Pollutant Type of: PM25

 **Note that special processing requirements apply for the 24-hour PM2.5 NAAQS - check available guidance.
   Model will process user-specified ranks of high 24-hour values averaged across the number of years modeled, and
   the multi-year average of individual ANNUAL values, averaged across the number of years modeled.

 **Model Calculates ANNUAL Averages Only

 **This Run Includes:      1 Source(s);       1 Source Group(s); and       4 Receptor(s)

               with:      0 POINT(s), including
                          0 POINTCAP(s) and      0 POINTHOR(s)
                and:      0 VOLUME source(s)
                and:      1 AREA type source(s)
                and:      0 LINE source(s)
                and:      0 RLINE/RLINEXT source(s)
                and:      0 OPENPIT source(s)
                and:      0 BUOYANT LINE source(s) with a total of     0 line(s)
                and:      0 SWPOINT source(s)


 **Model Set To Continue RUNning After the Setup Testing.

 **The AERMET Input Meteorological Data Version Date:  18081

 **Output Options Selected:
          Model Outputs Tables of ANNUAL Averages by Receptor
          Model Outputs External File(s) of High Values for Plotting (PLOTFILE Keyword)

 **NOTE:  The Following Flags May Appear Following CONC Values:  c for Calm Hours
                                                                 m for Missing Hours
                                                                 b for Both Calm and Missing Hours

 **Misc. Inputs:  Base Elev. for Pot. Temp. Profile (m MSL) =     0.00 ;  Decay Coef. =    0.000     ;  Rot. Angle =     0.0
                  Emission Units = GRAMS/SEC                                ;  Emission Rate Unit Factor =   0.10000E+07
                  Output Units   = MICROGRAMS/M**3

 **Approximate Storage Requirements of Model =      3.5 MB of RAM.

 **Input Runstream File:          aermod.inp
```

**Output Print File: aermod.out

*** MODELOPTs: RegDFAULT CONC ELEV NODRYDPLT NOWETDPLT RURAL ADJ_U*

*** AREAPOLY SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC /METER**2)	LOCATION OF AREA X (METERS)	LOCATION OF AREA Y (METERS)	BASE ELEV. (METERS)	RELEASE HEIGHT (METERS)	NUMBER OF VERTS.	INIT. SZ (METERS)	URBAN SOURCE	EMISSION RATE SCALAR VARY BY	AIRCRAFT
EA0A8004	0	0.48100E-07	591639.0	4140062.9	0.0	3.00	13	1.00	NO		NO

*** MODELOPTs: RegDFAULT CONC ELEV NODRYDPLT NOWETDPLT RURAL ADJ_U*

*** SOURCE IDs DEFINING SOURCE GROUPS ***

SRCGROUP ID	SOURCE IDs
ALL	EA0A8004 ,

*** MODELOPTs: RegDFAULT CONC ELEV NODRYDPLT NOWETDPLT RURAL ADJ_U*

*** METEOROLOGICAL DAYS SELECTED FOR PROCESSING ***
(1=YES; 0=NO)

```
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1
```

NOTE: METEOROLOGICAL DATA ACTUALLY PROCESSED WILL ALSO DEPEND ON WHAT IS INCLUDED IN THE DATA FILE.

*** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED CATEGORIES ***
(METERS/SEC)

1.54,   3.09,   5.14,   8.23,   10.80,

*** MODELOPTs: RegDFAULT CONC ELEV NODRYDPLT NOWETDPLT RURAL ADJ_U*

*** UP TO THE FIRST 24 HOURS OF METEOROLOGICAL DATA ***

```
Surface file:   C:\Users\ryan\MYDRIV~1.COM\CIA265~1\23-32N~1\Models\NORTHE~1\AERMOD\KSJC_2017.SF   Met Version:  18081
Profile file:   C:\Users\ryan\MYDRIV~1.COM\CIA265~1\23-32N~1\Models\NORTHE~1\AERMOD\KSJC_2017.PF
Surface format: FREE
Profile format: FREE
Surface station no.:    23293                  Upper air station no.:    23230
               Name: UNKNOWN                                   Name: UNKNOWN
               Year:   2017                                    Year:   2017
```

First 24 hours of scalar data

YR	MO	DY	JDY	HR	H0	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O LEN	Z0	BOWEN	ALBEDO	REF WS	WD	HT	REF TA	HT
17	01	01	1	01	-22.4	0.219	-9.000	-9.000	-999.	246.	52.9	0.02	0.68	1.00	3.36	121.	7.9	277.5	2.0
17	01	01	1	02	-12.5	0.138	-9.000	-9.000	-999.	125.	21.0	0.02	0.68	1.00	2.17	180.	7.9	278.1	2.0
17	01	01	1	03	-16.7	0.164	-9.000	-9.000	-999.	160.	29.6	0.02	0.68	1.00	2.55	137.	7.9	278.8	2.0
17	01	01	1	04	-17.5	0.172	-9.000	-9.000	-999.	172.	32.7	0.02	0.68	1.00	2.67	125.	7.9	279.2	2.0
17	01	01	1	05	-21.8	0.215	-9.000	-9.000	-999.	239.	50.6	0.02	0.68	1.00	3.29	122.	7.9	279.2	2.0
17	01	01	1	06	-15.2	0.153	-9.000	-9.000	-999.	145.	25.8	0.02	0.68	1.00	2.39	154.	7.9	279.9	2.0
17	01	01	1	07	-18.9	0.187	-9.000	-9.000	-999.	194.	38.3	0.02	0.68	1.00	2.88	124.	7.9	279.9	2.0
17	01	01	1	08	-17.7	0.175	-9.000	-9.000	-999.	176.	33.7	0.02	0.68	0.74	2.71	132.	7.9	279.9	2.0
17	01	01	1	09	5.8	0.168	0.369	0.005	314.	166.	-74.7	0.02	0.68	0.39	2.32	134.	7.9	280.9	2.0
17	01	01	1	10	35.9	0.138	0.923	0.018	792.	123.	-6.6	0.02	0.68	0.27	1.59	138.	7.9	282.0	2.0
17	01	01	1	11	59.1	0.123	1.168	0.019	974.	104.	-2.9	0.02	0.68	0.23	1.28	129.	7.9	284.2	2.0
17	01	01	1	12	72.0	0.252	1.293	0.020	1085.	304.	-20.1	0.02	0.68	0.21	3.34	280.	7.9	284.9	2.0
17	01	01	1	13	87.9	0.389	1.384	0.019	1089.	582.	-60.3	0.05	0.68	0.21	4.65	263.	7.9	285.9	2.0
17	01	01	1	14	65.5	0.353	1.256	0.019	1091.	504.	-60.5	0.05	0.68	0.22	4.22	270.	7.9	285.9	2.0
17	01	01	1	15	46.1	0.403	1.118	0.018	1093.	613.	-128.0	0.05	0.68	0.25	4.97	244.	7.9	285.4	2.0
17	01	01	1	16	18.2	0.370	0.820	0.018	1094.	542.	-252.7	0.02	0.68	0.33	5.44	281.	7.9	285.4	2.0
17	01	01	1	17	-32.0	0.420	-9.000	-9.000	-999.	653.	209.2	0.02	0.68	0.57	6.43	279.	7.9	283.1	2.0
17	01	01	1	18	-28.9	0.288	-9.000	-9.000	-999.	382.	91.1	0.05	0.68	1.00	3.85	243.	7.9	282.0	2.0
17	01	01	1	19	-18.6	0.185	-9.000	-9.000	-999.	197.	37.6	0.05	0.68	1.00	2.52	246.	7.9	282.0	2.0

```
17 01 01   1 20  -13.3  0.147 -9.000 -9.000 -999.  135.     23.7  0.05   0.68   1.00    2.03  225.    7.9  280.9    2.0
17 01 01   1 21   -7.4  0.105 -9.000 -9.000 -999.   82.     14.3  0.02   0.68   1.00    1.69  116.    7.9  282.0    2.0
17 01 01   1 22  -10.4  0.130 -9.000 -9.000 -999.  112.     19.0  0.05   0.68   1.00    1.76   94.    7.9  281.4    2.0
17 01 01   1 23  -14.5  0.149 -9.000 -9.000 -999.  138.     24.5  0.02   0.68   1.00    2.33  133.    7.9  280.9    2.0
17 01 01   1 24  -21.8  0.215 -9.000 -9.000 -999.  240.     51.0  0.02   0.68   1.00    3.30  114.    7.9  280.4    2.0


First hour of profile data
YR MO DY HR HEIGHT F  WDIR    WSPD AMB_TMP sigmaA  sigmaW  sigmaV
17 01 01 01    7.9 1  121.    3.36   277.6   99.0  -99.00  -99.00

F indicates top of profile (=1) or below (=0)
```

```
*** MODELOPTs:    RegDFAULT  CONC  ELEV  NODRYDPLT  NOWETDPLT  RURAL  ADJ_U*

                 *** THE ANNUAL AVERAGE CONCENTRATION    VALUES AVERAGED OVER   1 YEARS FOR SOURCE GROUP: ALL      ***
                                INCLUDING SOURCE(S):     EA0A8004    ,

                                          *** SENSITIVE DISCRETE RECEPTOR POINTS ***

                                     ** CONC OF PM25     IN MICROGRAMS/M**3                         **

      X-COORD (M)   Y-COORD (M)        CONC                       X-COORD (M)   Y-COORD (M)        CONC
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
        591670.20   4140141.90       0.01761                     591714.20   4140072.40       0.02127
        591657.50   4139928.40       0.05159                     591603.90   4139899.70       0.01577
```

```
*** MODELOPTs:    RegDFAULT  CONC  ELEV  NODRYDPLT  NOWETDPLT  RURAL  ADJ_U*

                                 *** THE SUMMARY OF MAXIMUM ANNUAL RESULTS AVERAGED OVER   1 YEARS ***


                                  ** CONC OF PM25     IN MICROGRAMS/M**3                         **

                                                                                                      NETWORK
GROUP ID                      AVERAGE CONC              RECEPTOR  (XR, YR, ZELEV, ZHILL, ZFLAG)  OF TYPE  GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

ALL       1ST HIGHEST VALUE IS       0.05159 AT (  591657.50,  4139928.40,     0.00,     0.00,     0.00)  SR
          2ND HIGHEST VALUE IS       0.02127 AT (  591714.20,  4140072.40,     0.00,     0.00,     0.00)  SR
          3RD HIGHEST VALUE IS       0.01761 AT (  591670.20,  4140141.90,     0.00,     0.00,     0.00)  SR
          4TH HIGHEST VALUE IS       0.01577 AT (  591603.90,  4139899.70,     0.00,     0.00,     0.00)  SR
          5TH HIGHEST VALUE IS       0.00000 AT (       0.00,        0.00,     0.00,     0.00,     0.00)
          6TH HIGHEST VALUE IS       0.00000 AT (       0.00,        0.00,     0.00,     0.00,     0.00)
          7TH HIGHEST VALUE IS       0.00000 AT (       0.00,        0.00,     0.00,     0.00,     0.00)
          8TH HIGHEST VALUE IS       0.00000 AT (       0.00,        0.00,     0.00,     0.00,     0.00)
          9TH HIGHEST VALUE IS       0.00000 AT (       0.00,        0.00,     0.00,     0.00,     0.00)
         10TH HIGHEST VALUE IS       0.00000 AT (       0.00,        0.00,     0.00,     0.00,     0.00)


*** RECEPTOR TYPES:  GC = GRIDCART
                     GP = GRIDPOLR
                     DC = DISCCART
                     DP = DISCPOLR
```

```
*** MODELOPTs:    RegDFAULT  CONC  ELEV  NODRYDPLT  NOWETDPLT  RURAL  ADJ_U*

*** Message Summary : AERMOD Model Execution ***

 --------- Summary of Total Messages --------

A Total of           0 Fatal Error Message(s)
A Total of           3 Warning Message(s)
A Total of         194 Informational Message(s)

A Total of        8784 Hours Were Processed

A Total of          52 Calm Hours Identified

A Total of         142 Missing Hours Identified (  1.62 Percent)


   ******** FATAL ERROR MESSAGES ********
              ***  NONE  ***


   ********   WARNING MESSAGES   ********
ME W186      56       MEOPEN: THRESH_1MIN 1-min ASOS wind speed threshold used           0.50
ME W187      56       MEOPEN: ADJ_U* Option for Stable Low Winds used in AERMET
MX W481    8785         MAIN: Data Remaining After End of Year. Number of Hours=           24

   ************************************
   *** AERMOD Finishes Successfully ***
   ************************************
```

Power the South Bay Project
Updated Project Fuel Use Calculations - Project Construction

Fuel Usage (gallons) = CO_2 emission (kg) / fuel combustion rate (kg/gallon)

Diesel Emissions		
off road equipment	4231.1	MT
onroad (haul & vendor trips)	938.2	MT
Total Diesel Emissions	5169.3	MT
kg/MT	1000	
Total CO_2 Emissions (kg)	5169300	kg

Diesel fuel combustion rate	10.21	kg/gallon
Diesel fuel consumption	506,297.75	gallons

Gasoline Emissions		
Worker Trips	206.42	MT
kg/MT	1000	
Total Emissions (kg)	206420	kg

Gasoline combustion rate	8.78	kg/gallon
Gasoline consumption	23,510.25	gallons

Notes
Combustion rates taken from The Climate Registry 2020 default emission factors (Table 2.1).

Sources: LSPGC, 2023; Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community, National Geographic, Esri, Garmin, HERE, UNEP-WCMC, USGS, NASA, ESA, METI, NRCAN, GEBCO, NOAA, increment P Corp.

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POWER THE SOUTH BAY PROJECT

Updated Figure 5.1-3: Location of Representative Viewpoints and Key Observation Points

Alameda Co. and Santa Clara Co., CA

LEGEND

Proposed Project Components

- 230 kV AC Transmission Line (Overhead)
- 230 kV AC Transmission Line (Underground)
- Existing Substation Fenceline
- Construction Staging Area

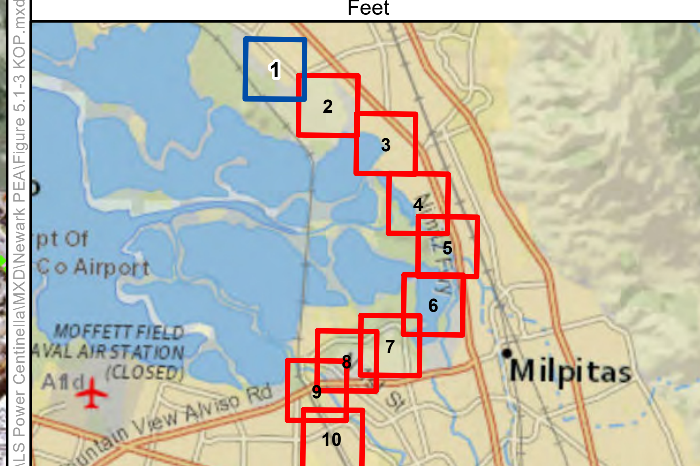
Representative Viewpoints (RV) and Key Observation Points (KOP)

- RV and KOP Location and Direction

General Features

- Municipal Boundary
- Interstate
- US Route or State Highway
- Railroad

0 250 500 1,000 1,500 2,000
Feet



POWER THE SOUTH BAY PROJECT

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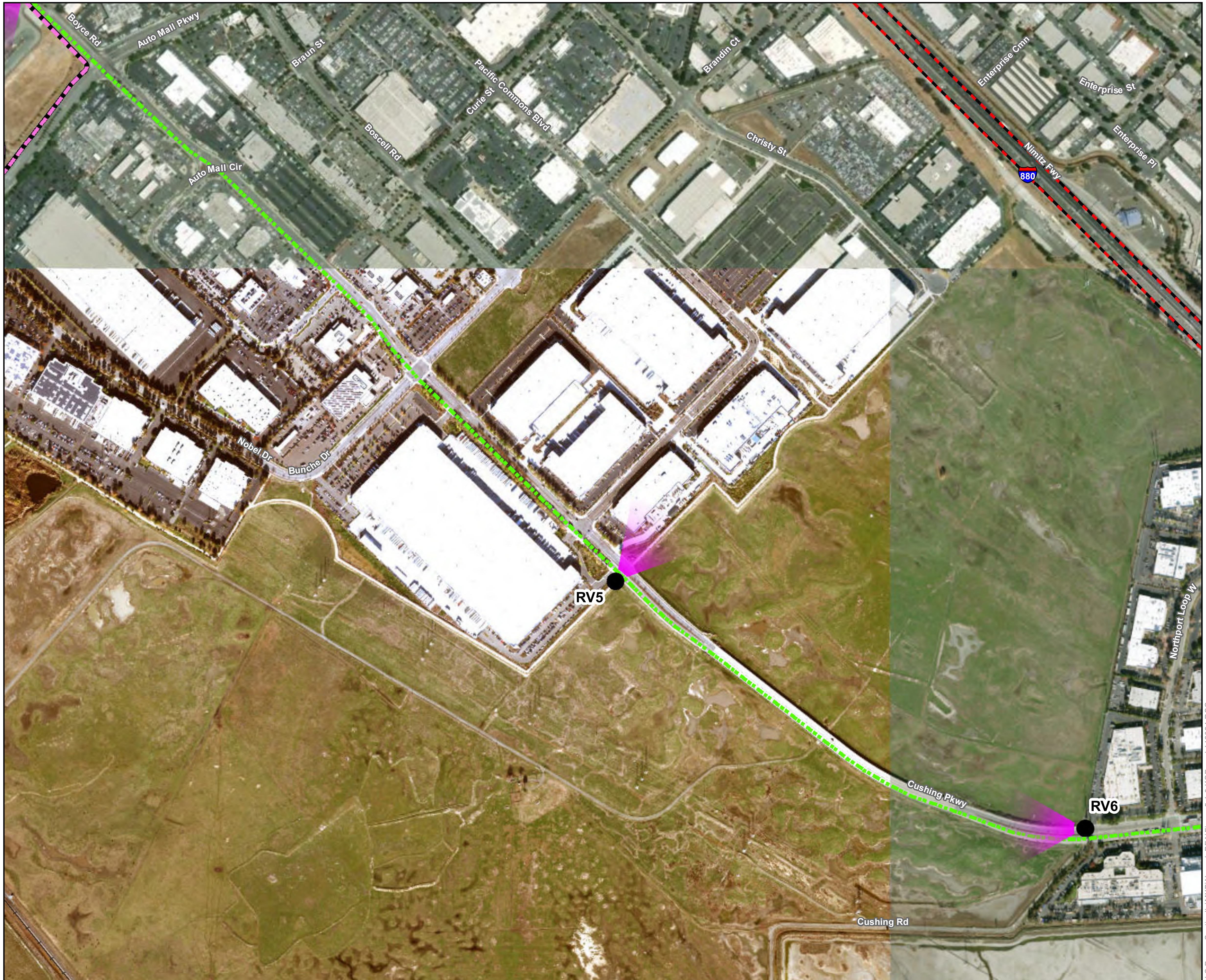
Alameda Co. and Santa Clara Co., CA



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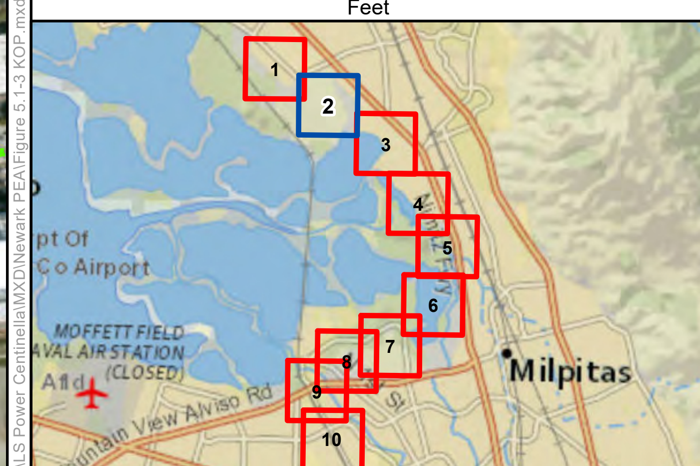

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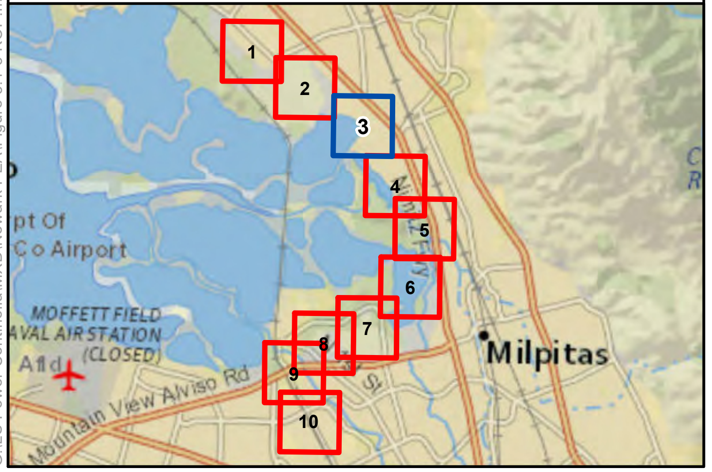

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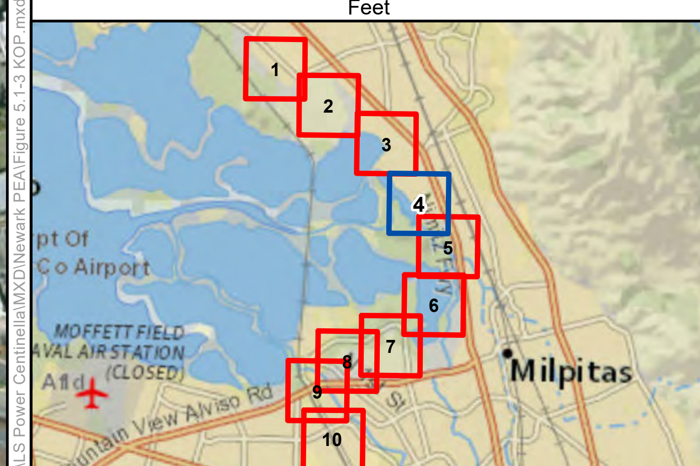

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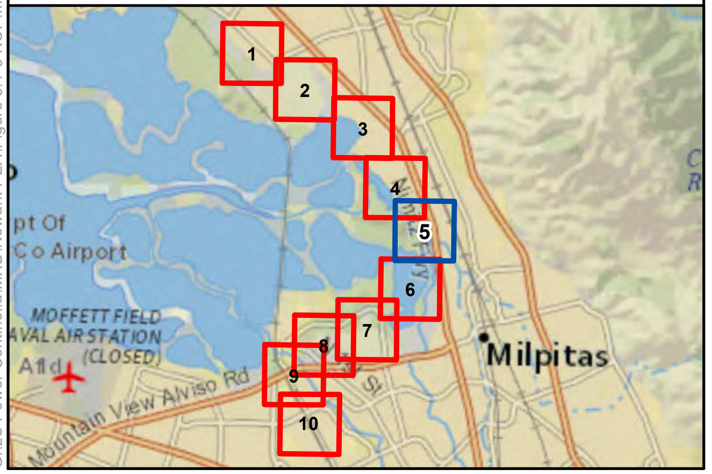

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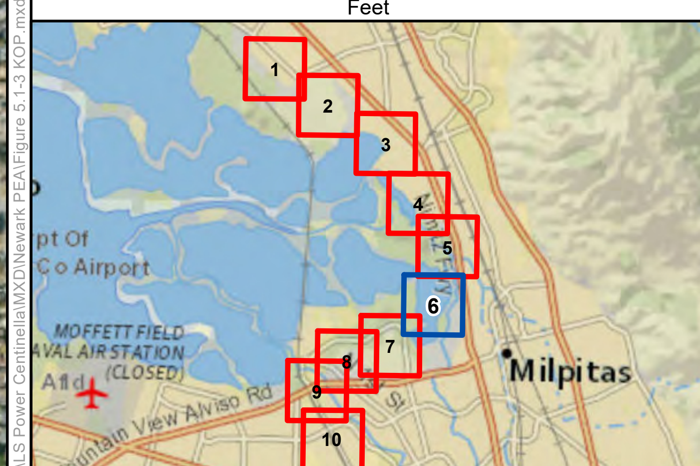

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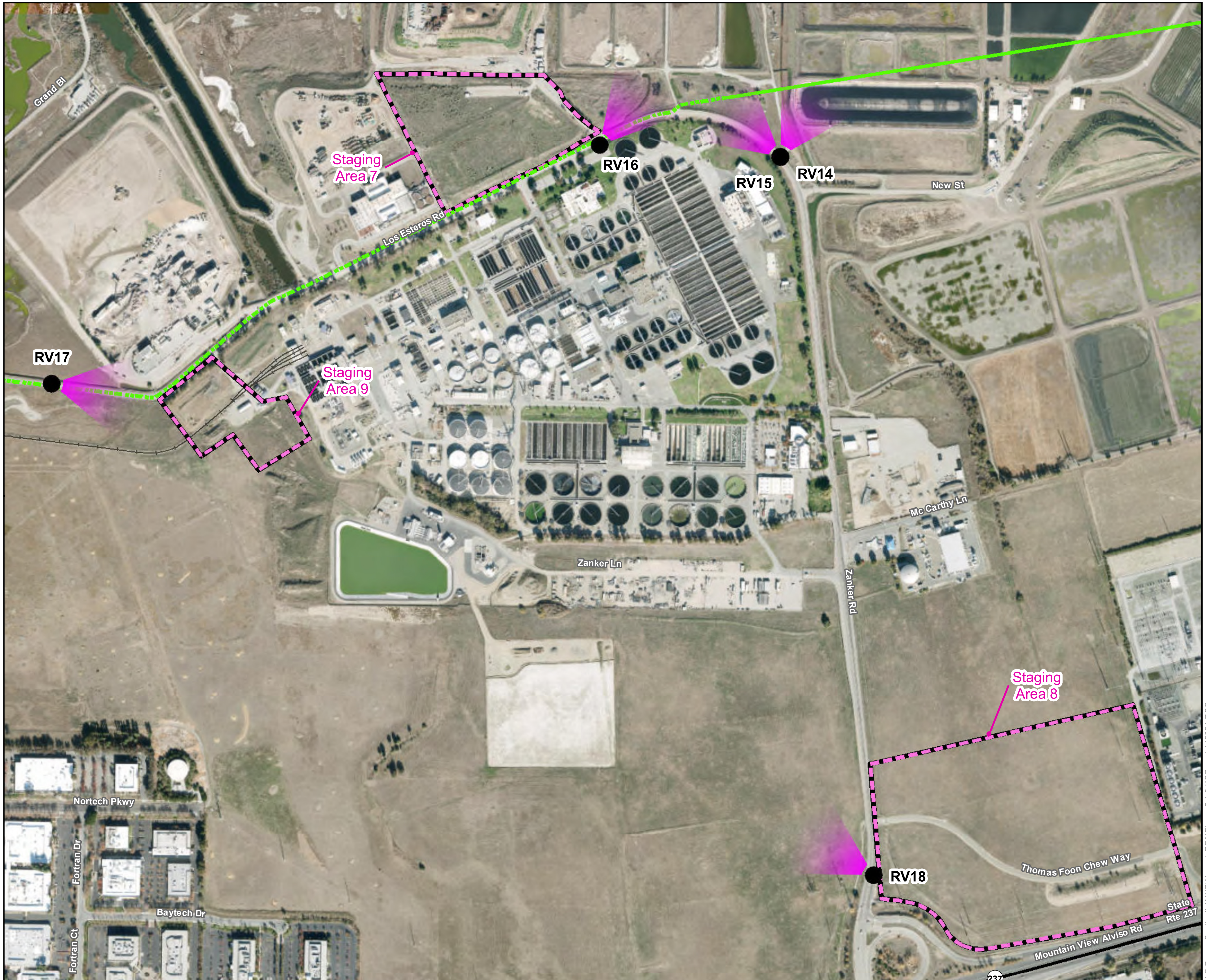

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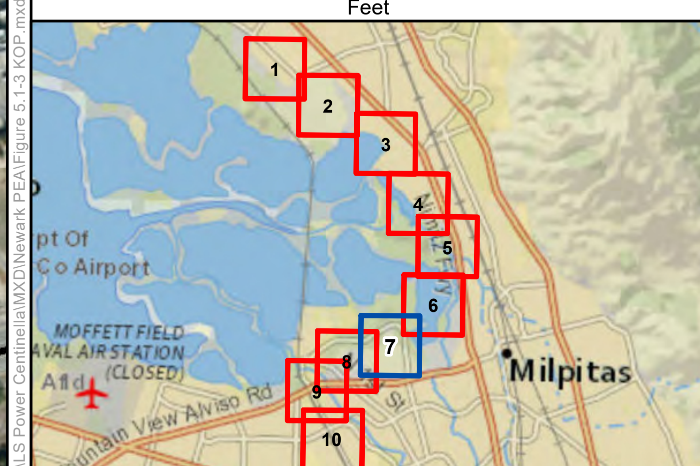

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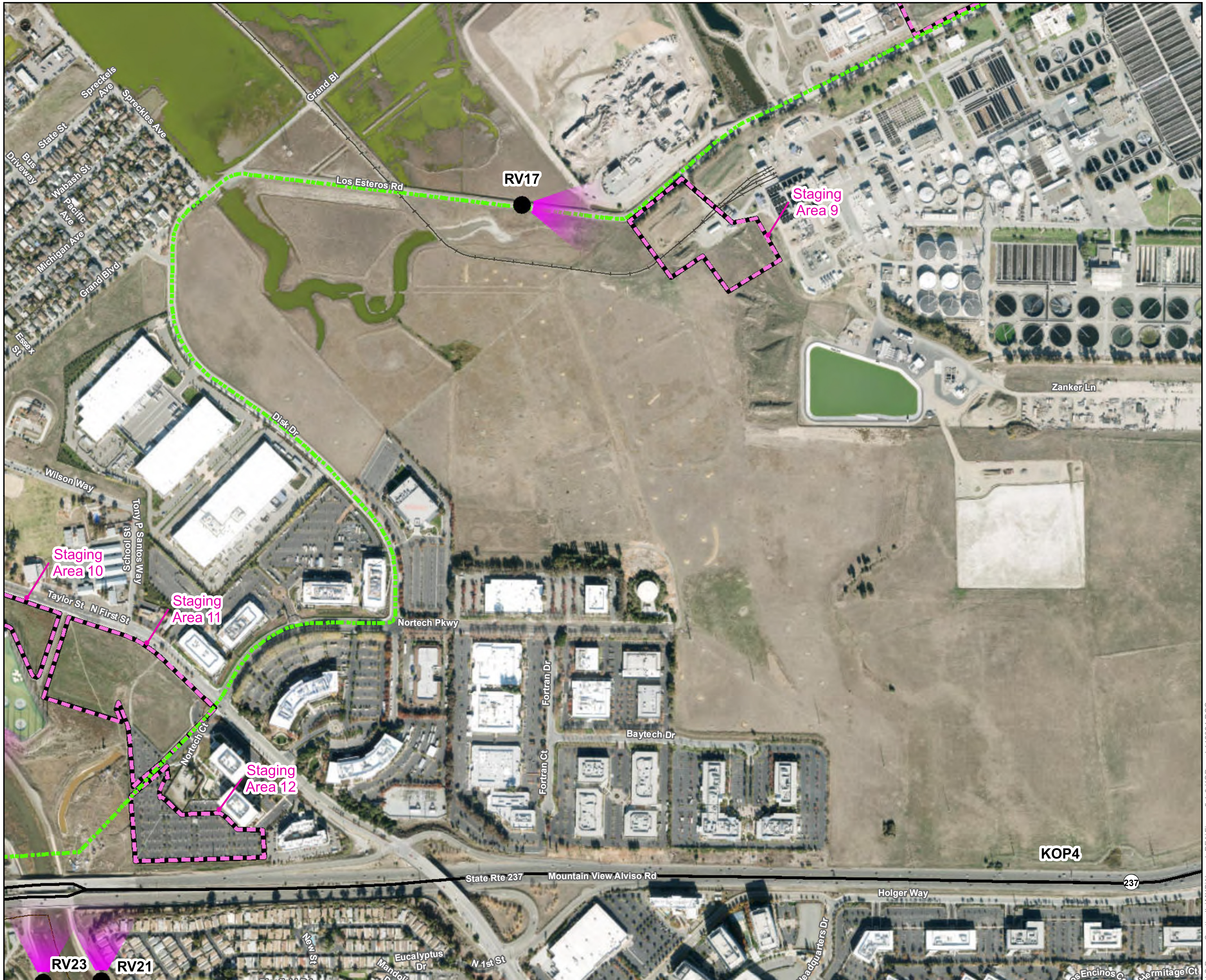

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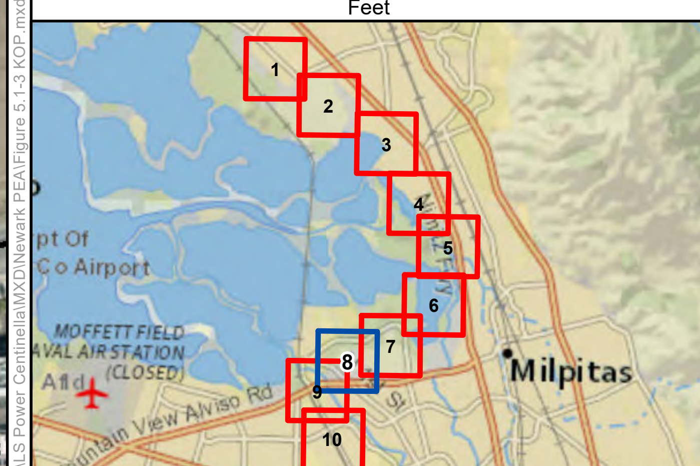

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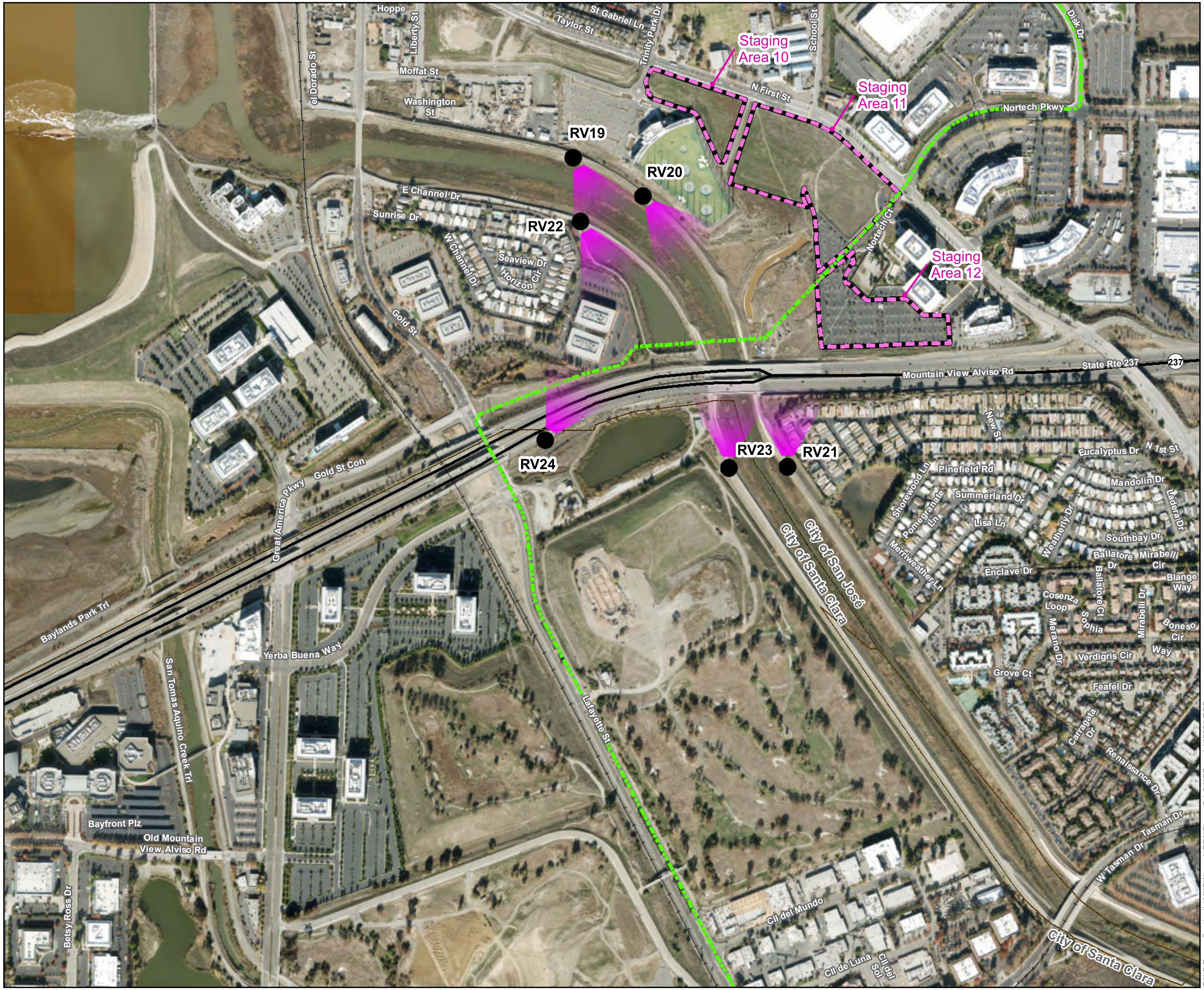

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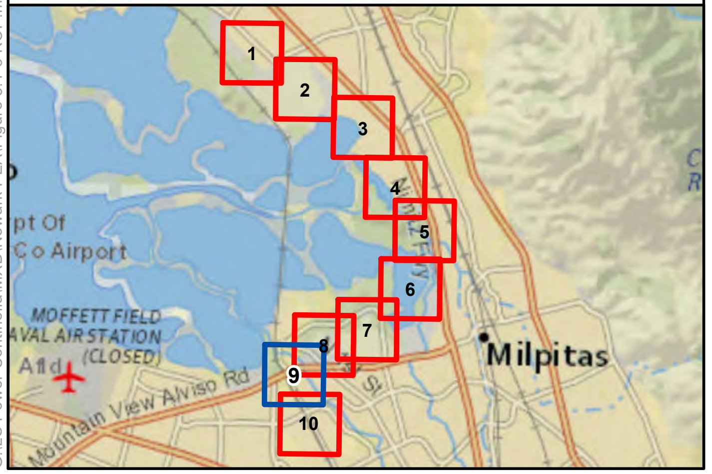

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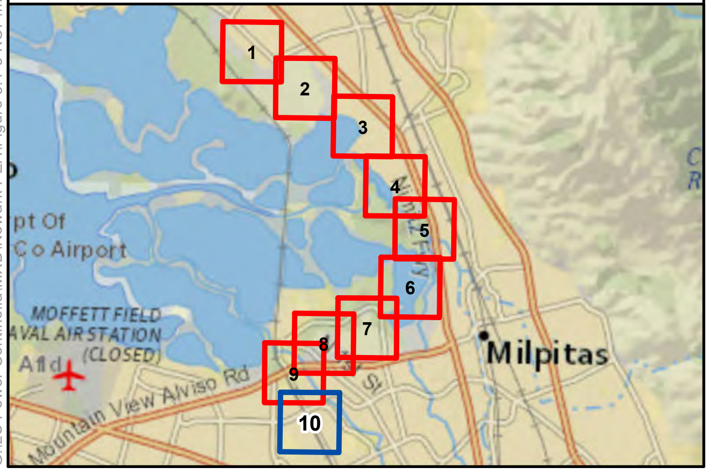

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LS POWER
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Power the South Bay Project

McCarthy Boulevard & Dixon Landing Road - Looking South - Existing View

Visual Environments
WWW.VISENV.COM

Updated KOP# 1

11/2/24

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Power the South Bay Project

McCarthy Boulevard & Dixon Landing Road - Looking South - Proposed View

THIS RENDERING IS BASED ON CURRENT INFORMATION AS OF THIS DATE AND IS SUBJECT TO CHANGE.

Visual Environments
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Power the South Bay Project

Coyote Creek Trailhead at City of Milpitas Main Sewage Pump Station - Looking Southwest - Existing View

Visual Environments
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Updated KOP# 2

11/2/24

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Innovation and Investment in Energy

Power the South Bay Project

Coyote Creek Trailhead at City of Milpitas Main Sewage Pump Station - Looking Southwest - Proposed View

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Visual Environments
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Updated KOP# 2

11/2/24