Draft
Initial Study/Mitigated Negative Declaration (IS/MND)
Pacific Gas and Electric Company
Vierra Reinforcement Project

(A. 18-06-004)

Lead Agency

California Public Utilities Commission

With Assistance From

October 2020

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Notice of Intent to Adopt a Mitigated Negative Declaration

Pacific Gas and Electric Company's Vierra Reinforcement Project
(Application A.18-06-004)

To: Interested Parties

Pursuant to California Public Utilities Commission (CPUC) General Order 131-D, Pacific Gas and Electric Company (PG&E) has filed an application with the CPUC for a Permit to Construct (PTC) on June 6, 2018, for the Vierra Reinforcement Project (Application No. A. 18-06-004).

PROJECT BACKGROUND. The California Public Utilities Commission (CPUC) Energy Division has prepared a Mitigated Negative Declaration and supporting Initial Study (IS/MND) for consideration of PG&E's permit to construct the Vierra Reinforcement Project. PG&E proposes to add a new double-circuit power line, connecting from the Vierra Substation to the Tesla-Stockton Cogen Junction 115 kilovolt (kV) Power Line, to reinforce the area's 115 kV system and the 60 kV systems connected at Kasson, Manteca, and Salado substations. The closest cross streets near the western extent of the power line are Nestle Way and Christopher Way. The closest cross streets near the eastern extent of the power line are D'Arcy Parkway and Vierra Road. The Vierra Substation would be expanded approximately 340 feet to the west, and the substation's existing 115 kV equipment would be replaced, upgraded, and reconfigured to accommodate the project's new 115 kV double-circuit lines. Vierra Substation and the power line alignment are located in the City of Lathrop. The new power line would require minor modifications within an additional six substations (Howland Road, Kasson, Manteca, Tracy, Tesla, and Ripon Cogen) in Alameda and San Joaquin counties, to integrate protection of the new line into the existing system. New telecommunication equipment would be installed at various substations and existing microwave stations (Mount Oso and Highland Peak), including microwave towers or monopoles, and microwave dishes on existing towers. Control room equipment would be upgraded at Howland Road, Ripon Cogen, and Tesla substations.

Availability of Draft IS/MND. Extended by Executive Order (EO) N-80-20 until the State of Emergency due to the COVID-19 pandemic is lifted, certain CEQA noticing requirements (e.g., the requirement to publicly post and file materials concerning the project with the county clerk) have been suspended as authorized by Governor Newsom's previous EO N-54-20 that said "The public filing, posting, notice, and public access requirements . . . are suspended for a period of 60 days." Therefore, access to the MND and other project information/reports will be solely available electronically through the CPUC's website at: http://www.cpuc.ca.gov/environment/info/CEC/VierraReinforcement/index.htm. Consistent with subparagraphs (a) through (c) of Paragraph 8 of EO N-54-20, this Notice of Intent has also been mailed to nearby property owners, responsible and trustee agencies, and the county clerk, sent to the California State Clearinghouse, and published in the Stockton Record. Persons who cannot access the materials through the link above are encouraged to email the CPUC at Vierra@energy.ca.gov with a subject line "Vierra", to arrange for alternative means of access to project materials.

The 30-day public comment period for the Draft IS/MND is from October 16, 2020 to November 16, 2020. Comments may be submitted by email or U.S. Mail postmarked by 5:00 p.m. on November 16, 2020. Please be sure to include your name, phone number and return address.

By Mail: If you send comments by U.S. Mail, please use first-class mail and be sure to include your name, telephone number, and a return address. Please send written comments on the Draft IS/MND to:

Michael Rosauer, CPUC Project Manager
c/o California Energy Commission STEP Division
1516 9th Street, MS-40
Sacramento, California 95814

By Electronic Mail: E-mail communications are welcome; however, please remember to include your name, return

address, and phone number in the e-mail. E-mail should be sent to Vierra@energy.ca.gov, with a subject line “Vierra”. Following the public comment period, the CPUC will prepare a Final IS/MND that will address comments received on the Draft IS/MND. At this time, the date, time, and place of any scheduled public meetings or hearings to be held by the CPUC on the proposed project are not yet known. A notice of any such public meeting or hearing will be provided at a future date.

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LIST OF ACRONYMS

Acronyms and Abbreviations

Symbols	
µg/m^3	micrograms per cubic meter
A	
AAC	all-aluminum conductors
AB	Assembly Bill
ACE	Altamont Corridor Express
ACSS	aluminum conductor steel supported
AF	acre-feet
AFY	acre-feet per year
AGL	above ground level
amps	amperes
AQP	air quality plan
APM	Applicant Proposed Measure
ATCM	airborne toxic control measure
B	
BAAH	breaker and a half
BAAQMD	Bay Area Air Quality Management District
bgs	Below ground surface
BMP	best management practice
BPS	Best performance Standards
C	
CAA	Clean Air Act
CAAQS	California Ambient Air Quality Standards
CAISO	California Independent System Operator
CalEEMod	California Emissions Estimator Model
CalEPA	California Environmental Protection Agency
Cal Fire	California Department of Forestry and Fire Protection
Cal IPC	California Invasive Plant Council
Caltrans	California Department of Transportation
CAP	Clean Air Plan

CARB	California Air Resources Board
CBC	California Building Code
CCIC	Central California Information Center
CCVT	coupling-capacitor voltage
CDFA	California Department of Food and Agriculture
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CGS	California Geologic Survey
CH_4	methane
CMP	Congestion Management Program
CNDDB	California Natural Diversity Database
CNEL	Community Noise Equivalent Level
CNPS	California Native Plant Society
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalent
CPUC	California Public Utilities Commission
CRHR	California Register of Historic Resources
CTF	[Lathrop] Consolidated Treatment Facility
CWA	Clean Water Act
D	
dB	decibels
dBA	A-weighted decibels
Diesel PM	Diesel Particulate Matter
DPM	Diesel Particulate Matter
DTSC	California Department of Toxic Substances Control
DWR	Department of Water Resources
E	
EDR	Environmental Data Resources
EMF	electric and magnetic fields
EO	Executive Order
ESA	Endangered Species Act
ESJ	Eastern San Joaquin
F	
^oF	Degree Fahrenheit
f-gases	fluorinated gases
FAA	Federal Aviation Administration
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Maps
FMMP	Farmland Mapping and Monitoring Program
FOCA	Swiss Federal Office of Civil Aviation
ft^3	cubic feet
FTA	Federal Transit Administration
G	

GHG	greenhouse gas
GO	CPUC General Order
GO 131-D	General Order 131-D Section III.B
GPM	gallons per minute
GSA	groundwater sustainability agency
GSP	groundwater sustainability plans
GWP	global warming potential
H	
H_2S	hydrogen sulfide
Handbook	Air Quality and Land Use Handbook
HAP	Hazardous Air Pollutant
HCP	Habitat Conservation Plan
HFC	hydrofluorocarbon
HRA	Health Risk Assessment
Hz	hertz
I	
I-5	U.S. Interstate 5
in/sec	inches per second
IPaC	Information for Planning and Conservation (USFWS)
IS	Initial Study
IWMA	Integrated Waste Management Act of 1989
K	
kcmil	1,000 circular mils
kV	kilovolt
kVA	kilovolt ampere
L	
Lbs/day	pounds per day
Ldn	Day/Night Average Sound Level
LDSP	light duty steel pole
Leq	equivalent noise level
Lmax	maximum noise level
LMFPD	Lathrop-Manteca Fire Protection District
LOS	level of service
LRA	local responsible area
M	
MBTA	Migratory Bird Treaty Act
mg/m^3	milligrams per cubic meter
MM	mitigation measure
MMP	Mitigation Monitoring Plan
MMT	million metric tons
MND	Mitigated Negative Declaration
MPAC	Modular Protection, Automation, and Control Building
MPR	Minor Project Refinements
MRZ	mineral resource zone
MS4	Municipal Separate Storm Sewer System
MT/yr	metric tons per year

$MTCO_2e$	metric tons of carbon dioxide equivalent
MVA	megavolt ampere
MWh	megawatt-hour
N	
NAAQS	National Ambient Air Quality Standards
NAHC	Native American Heritage Commission
NCCP	Natural Community and Conservation Plan
NERC	North American Reliability Corporation
NESHAP	National Emission Standards for Hazardous Air Pollutants
NFIP	National Flood Insurance Program
NFPA	National Flood Insurance Program
NOA	naturally occurring asbestos
N_2O	nitrous oxide
NOX	nitrogen oxides
NPPA	Native Plant Protection Act
NPDES	National Pollutant Discharge Elimination System
NRHP	National Register of Historic Places
NWIC	Northwest Information Center
O	
O_3	ozone
OSHA	Occupational Safety and Health Administration
P	
Pb	Lead
PEA	Proponents Environmental Assessment
PFC	Perfluorocarbon
PFM	Petition for Modification
PFYC	Potential Fossil Yield Classification
PGA	Peak ground acceleration
PG&E	Pacific Gas and Electric Company
PG&E O&M HCP	Pacific Gas and Electric Company San Joaquin Valley Operations and Maintenance Habitat Conservation Plan
PM2.5	particulate matter less than 2.5 microns
PM10	particulate matter up to 10 microns
PMI	Point of maximum impact
ppb	parts per billion
PPE	Personal Protection Equipment
ppm	parts per million
PPV	peak particle velocity
PSD	Prevention of Significant Deterioration
PTC	Permit to Construct
Project	Vierra Reinforcement Project
R	
RECRA	Resource Conservation and Recovery Act
RMS	root mean square
ROG	Reactive Organic Gas
RPR	[California Native Plant Society] Rare Plant Rank

RWQCB	Regional Water Quality Control Board
S	
SB	Senate Bill
SCWSP	South County Water Supply Project
SF_6	sulfur hexafluoride
SFBAAB	San Francisco Bay Area Air Basin
SIP	state implementation plan
SJCOG	San Joaquin Council of Governments
SJMSHCP	San Joaquin Multiple Species Habitat Conservation Plan
SJV	San Joaquin Valley
SJVAB	San Joaquin Valley Air Basin
SMARA	California Surface Mining and Reclamation Act
SJVAPCD	San Joaquin Valley Air Pollution Control District
SMARA	[California] Surface Mining and Reclamation Act
SO_2	sulfur dioxide
SO_4	sulfate
SOx	Sulfur oxides
SR	State Route
SRA	State responsibility area
SSJID	South San Joaquin Irrigation District
SWPPP	Stormwater Pollution Prevention Plan
SWRCB	State Water Resources Control Board
T	
TAC	toxic air contaminant
TMDL	Total Maximum Daily Load
TSP	tubular steel pole
U	
UPRR	Union Pacific Railroad
USACE	United States Army Corps of Engineers
USBR	United States Bureau of Reclamation
US EPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
USGS	United States Geologic Survey
V	
VdB	vibration decibel notation
VMT	vehicle miles traveled
W	
WEAP	Worker Environmental Awareness Program
WWTP	wastewater treatment plant
WQCF	[Manteca-Lathrop] Water Quality Control Facility

Section 1

Mitigated Negative Declaration

PUBLIC UTILITIES COMMISSION
505 VAN NESS AVENUE
SAN FRANCISCO, CA 94102-3298

DRAFT

Mitigated Negative Declaration
Pacific Gas and Electric Company's
Vierra Reinforcement Project
Application No. A-18-06-004

1 Mitigated Negative Declaration

1.1 Project Information

Project: Vierra Reinforcement Project
Lathrop, California

Project Sponsor: Pacific Gas and Electric Company
303 E. State Street, Suite 600
Redlands, California 92373
(909) 793-4942

Pacific Gas and Electric Company (PG&E) proposes to expand the existing Vierra Substation in the City of Lathrop and build a new, double-circuit power line west from the substation, approximately 1 mile to the existing Tesla-Stockton Cogen Junction 115 kilovolt (kV) Power Line. The expanded substation and new line would provide more electrical capacity and reliability for households and businesses in Lathrop, Manteca, and surrounding areas of San Joaquin County.

The Vierra Reinforcement Project (project) would add a new double-circuit power line, connecting from the Vierra Substation to the Tesla-Stockton Cogen Junction 115 kilovolt (kV) Power Line, to reinforce the area's 115 kV system and the 60 kV systems connected at Kasson, Manteca, and Salado substations. The closest cross streets near the western extent of the power line are Nestle Way and Christopher Way. The closest cross streets near the eastern extent of the power line are D'Arcy Parkway and Vierra Road. The Vierra Substation would be expanded approximately 340 feet to the west, and the substation's existing 115 kV equipment would be replaced, upgraded, and reconfigured to accommodate the project's new 115 kV double-circuit lines. Vierra Substation and the power line alignment are located in the City of Lathrop. The new power line would require minor modifications within an additional six substations (Howland Road, Kasson, Manteca, Tracy, Tesla, and Ripon Cogen) in Alameda and San Joaquin counties, to integrate protection of the new line into the existing system. New telecommunication equipment would be installed at various substations and existing microwave stations (Mount Oso and Highland Peak),

including microwave towers or monopoles, and microwave dishes on existing towers. Control room equipment would be upgraded at Howland Road, Ripon Cogen, and Tesla substations.

1.2 Introduction

Pursuant to the California Environmental Quality Act (CEQA), the California Public Utilities Commission (CPUC) must prepare an Initial Study (IS) for the project to determine if any significant adverse effects on the environment would result from project implementation. The IS utilizes the significance criteria outlined in Appendix G of the CEQA *Guidelines*. If the IS for the project indicates that a significant adverse impact may occur, the CPUC would be required to prepare an Environmental Impact Report.

According to Section 15070 (Decision to Prepare a Negative Declaration or Mitigated Negative Declaration) of the CEQA Guidelines, "*[a] public agency shall prepare or have prepared a proposed negative declaration or mitigated negative declaration for a project subject to CEQA when:*

(a) The initial study shows that there is no substantial evidence, in light of the whole record before the agency, that the project may have a significant effect on the environment, or

(b) The initial study identifies potentially significant effects, but:

(1) Revisions in the project plans or proposals made by, or agreed to by the applicant before a proposed mitigated negative declaration and initial study are released for public review would avoid the effects or mitigate the effects to a point where clearly no significant effects would occur, and

(2) There is no substantial evidence, in light of the whole record before the agency, that the project as revised may have a significant effect on the environment."

Based on the analysis in the IS, it has been determined that all project-related environmental impacts would be reduced to a less than significant level with the incorporation of feasible mitigation measures (MM) that have been agreed to by the applicant. Therefore, adoption of a Mitigated Negative Declaration (MND) will satisfy the requirements of CEQA. The MMs included in this MND are designed to reduce or eliminate the potentially significant environmental impacts described in the IS. Where a measure described in this document has been previously incorporated into the project, either as a specific project design feature or as an Applicant Proposed Measure (APM), this is noted in the discussion.

1.3 Project Description / Required Approvals

The new double-circuit line will be made up of the Tesla-Vierra and Vierra-Stockton Cogen Junction 115 kV power lines, located together on approximately 16 tubular steel poles (TSP). The project would also improve reliability by upgrading the substation to a compact breaker-and-a-half (BAAH) bus configuration. Additionally, the expansion and upgrade of Vierra Substation to a BAAH bus configuration will allow for Howland Road Substation, located approximately 0.7-mile north of Vierra Substation, to receive power directly from Vierra Substation instead of from the Vierra-Tracy-Kasson 115 kV line, which is approximately 10.5 miles in length, thereby increasing the reliability of the Howland Road Substation.

The objectives of the project are:

- Increase service reliability to electricity customers in the cities of Lathrop, Manteca, and surrounding communities by alleviating a potential overload condition due to the growing load in the existing system.

- Meet the category "P6[1]" planning performance requirement established by the North American Electric Reliability Corporation (NERC) that the electric system will operate reliably during the loss of two transmission circuits.
- Increase electric system capacity to help meet increasing demand in and around the cities of Lathrop and Manteca.
- Design and build the California Independent System Operator (CAISO)-approved project in a safe, cost-effective manner that will also minimize environmental impacts.

PG&E would obtain permits for the project, as needed, from state and local agencies. **Table 1-1** lists those permits and approvals that may be required for project construction.

TABLE 1-1 PERMITS AND APPROVALS THAT MAY BE REQUIRED FOR THE PROJECT

Regulatory Authority	Agency	Jurisdiction/Purpose	Project Requirements
FEDERAL/ STATE AGENCIES			
Permit to Construct (General Order 131-D)	California Public Utilities Commission	Construction, modification, or alteration of power line facilities.	A PTC is required under the CPUC's General Order No. 131-D, Section III.B.
National Pollution Discharge Elimination System Storm Water Permit (ministerial)	State Water Resources Control Board	Construction activities disturbing 1 acre or more of soil must submit a Notice of Intent to comply with the terms of the general permit and implement a SWPPP.	The project would develop and implement a State Water Pollution Prevention Plan.
47 CFR Part 101 Fixed Microwave Services Subpart B Applications and Licenses § 101.4	Federal Communications Commission	Operation of microwave bands	License to operate.
LOCAL/ REGIONAL AGENCIES			
Encroachment Permit (ministerial)	City of Lathrop	For construction activities completed within city road rights-of-way.	Pull sites and temporary work areas will be located within city roads.
Grading Permit (ministerial)	City of Lathrop	Cuts or fills in excess of 50 cubic yards.	Grading of substation site.
Building Permit (ministerial)	City of Lathrop	Construction of a wall.	Substation perimeter wall.
Dust Control Plan (ministerial)	San Joaquin Valley Air Pollution Control District	Construction activities disturbing greater than 5 acres.	Approval of Dust Control Plan prepared pursuant to Regulation VIII (ministerial).
Possible modification to use permit (discretionary)	Contra Costa County	Modification to telecommunication tower (microwave dish)	Addition of microwave dish to existing Highland Peak telecommunication tower (microwave station)
Possible modification to use permit (discretionary)	Stanislaus County	Modification to telecommunication tower (microwave dish)	Addition of microwave dish to existing Mount Oso telecommunication tower (microwave station)
PRIVATE			
Encroachment Permit (ministerial)	Union Pacific Railroad	For construction activities completed within or over Union Pacific Railroad rights-of-way.	The new line will cross a segment of Union Pacific Railroad.

[1] A category "P6" planning performance requirement, established by (NERC, provides for purposes of this project that the electric system will operate reliably during the loss of two transmission circuits.

1.4 Environmental Determination

The IS was prepared to identify the environmental effects resulting from project implementation, and to evaluate the level of significance of these effects. The IS relies on information in PG&E's Proponent's Environmental Assessment (PEA) filed on June 5, 2018, project site reconnaissance by the CPUC environmental team on September 26, 2018, and other environmental analyses.

PG&E's PEA identified measures to address significant impacts — the Applicant Proposed Measures (APMs) — and these APMs are considered to be part of the project. Based on the IS analysis, additional MMs are identified for adoption to ensure that impacts of the project would be less than significant. The additional MMs either supplement or supersede the APMs. PG&E has agreed to implement all of the additional recommended MMs as part of the project.

Implementation of the following MMs would avoid significant impacts identified in the IS or reduce them to less than significant levels.

1.5 Applicant Proposed Measures and Mitigation Measures

APPLICANT PROPOSED MEASURES

APM AES-1: Nighttime lighting to minimize potential visual impacts. Nighttime construction activities, if they occur, will incorporate measures such as use of non-glare or hooded fixtures and directional lighting to reduce spillover into areas outside the construction site and minimize the visibility of lighting from off-site locations wherever feasible.

APM AES-2: Construction cleanup. Construction activities will be kept as clean and inconspicuous as practical. Construction debris will be picked up regularly from construction areas. The appearance of disturbed land areas will be restored to approximate pre-construction visual conditions, where feasible and consistent with landowner requests, through implementation of re-contouring and/or re-vegetation.

APM AES-3: Use of galvanized finish on TSPs. Use of a galvanized finish that will weather to a dull, non-reflective patina on new TSPs will reduce the potential for a new source of glare resulting from introduction of project elements.

APM AGR-1: Landowner coordination. PG&E will coordinate with J. R. Simplot Company (or tenant) in advance of construction activities to minimize impacts on agricultural operations.

APM AIR-1: Fugitive dust emissions minimization. Pursuant to SJVAPCD Regulation VIII, a Dust Control Plan will be submitted to the SJVAPCD for approval at least 30 days prior to commencing construction activities. Based on the SJVAPCD Guidance for Assessing and Mitigating Air Quality Impacts (SJVAPCD 2015), the following are examples of fugitive dust control measures that may be included in the Dust Control Plan to minimize dust emissions:

- Apply water to unpaved surfaces and areas
- Use non-toxic chemical or organic dust suppressants on unpaved roads and traffic areas
- Limit or reduce speed vehicle speed on unpaved roads and traffic areas
- Maintain areas in a stabilized condition by restricting vehicle access
- Install wind barriers
- During high winds, cease outdoor activities that disturb the soil
- Keep bulk materials sufficiently wet when handling
- When storing bulk materials, apply water to the surface or cover the storage pile with a tarp
- Don't overload haul trucks. Overloaded haul trucks are likely to spill bulk materials

- Cover haul trucks with a tarp or other suitable cover. Or, wet the top of the load enough to limit visible dust emissions
- Clean the interior of cargo compartments on emptied haul trucks prior to leaving a site
- Prevent trackout by installing a trackout control device
- Clean up trackout at least once a day. If along a busy road or highway, clean up trackout immediately.
- Monitor dust-generating activities and implement appropriate measures for maximum dust control

APM BIO-2: Avoid impacts on nesting birds. If work is scheduled during the nesting season (February 1 through August 31), nest detection surveys will correspond with a standard buffer for individual species in accordance with the species-specific buffers set forth in Appendix D of the PEA and will occur within 15 days prior to the start of work activities at designated construction areas, staging areas, and landing zones to determine nesting status by a qualified wildlife biologist. Nest surveys will be accomplished by ground surveys and will support phased construction, with surveys scheduled to be repeated if construction lapses in a work area for 15 days between March and July. Access for ground surveys will be subject to property owner permission.

If active nests containing eggs or young are found, the biologist will establish a species-specific nest buffer, as defined in Appendix D of the PEA. Where feasible, standard buffers will apply, although the biologist may increase or decrease the standard buffers in accordance with the factors set forth in Appendix D. Nesting pair acclimation to disturbance in areas with regularly occurring human activities will be considered when establishing nest buffers. The established buffers will remain in effect until the young have fledged or the nest is no longer active as confirmed by the biologist. Active nests will be periodically monitored until the biologist has determined that the young have fledged or once construction ends. Per the discretion of the biologist, vegetation removal by hand may be allowed within nest buffers or in areas of potential nesting activity. Inactive nests may be removed in accordance with PG&E's approved avian permits. The biologist will have authority to order the cessation of nearby project activities if nesting pairs exhibit signs of disturbance.

All references in this APM to qualified wildlife biologists refer to qualified biologists with a bachelor's degree or above in a biological science field and demonstrated field expertise in ornithology, in particular, nesting behavior.

APM BIO-4: Voluntary Compensatory Mitigation for Permanent Impacts to Burrowing Owl, Swainson's Hawk and White-tailed Kite Foraging Habitat. Prior to construction, PG&E shall mitigate for permanent impacts to agricultural lands that are potential foraging habitat for Burrowing Owl, Swainson's Hawk and White-tailed Kite through PG&E's San Joaquin Valley O&M Habitat Conservation Plan in the total amount of 2.63 acres. Confirmation of the completion of this obligation must be provided to the CPUC prior to the commencement of ground-disturbing activities in agricultural land.

APM CUL-1: Worker education training. The following procedures will be implemented prior to commencement of any project-related construction activities:

- All PG&E, contractor, and subcontractor project personnel will receive training regarding:
  - appropriate work practices necessary to effectively implement the APMs and to comply with the applicable environmental laws and regulations;
  - the potential for exposing subsurface cultural resources and paleontological resources; and
  - how to recognize possible buried cultural and paleontological resources.
- This training will include a presentation of:
  - procedures to be followed upon discovery or suspected discovery of historic or archaeological materials, including Native American remains and their treatment; procedures to be followed upon discovery or suspected discovery of paleontological resources; and actions that may be taken in the case of violation of applicable laws.

APM CUL-2: Inadvertent discovery of previously unidentified cultural resources. The following procedure will be employed if a previously undocumented cultural resource is encountered during construction:

- All work within 100 feet (30 meters) of the find will be halted or redirected by the construction foreman and protective barriers or flagging will be installed along with signage identifying the area as an "environmentally sensitive area." Entry into the area will be limited to PG&E-approved/qualified cultural resources specialists, PG&E, and other authorized personnel.
- PG&E and the CPUC will be notified immediately.
- A qualified archaeologist will document the resource and coordinate with PG&E, the landowner, and the CPUC on the appropriate steps for evaluation and preservation of the find. The level of effort will be based on the size and nature of the resource, as determined by the archeologist and approved by the CPUC.
- No work will occur within the environmentally sensitive area until clearance has been granted by the archaeologist or PG&E and the CPUC. Environmentally sensitive area flagging and signage will only be removed when authorized by PG&E or the archaeologist and the CPUC.

APM CUL-3: Discovery of human remains. The following procedures will be implemented in the event of the discovery of human remains, in compliance with California law, including, but not limited to, the following provisions: CEQA Guidelines Section 15064.5(e); PRC Sections 5097.94, 5097.98, and 5097.99; and California Health and Safety Code Section 7050.5:

- Work in the immediate area of the find will be halted and the PG&E archaeologist and County Coroner and the CPUC will be notified immediately. Work will remain suspended until the Coroner can assess the remains. In the event the remains are determined to be prehistoric in origin, the Coroner will notify the NAHC, which will then identify a Most Likely Descendent (MLD). The MLD will consult with PG&E's archaeologist within 48 hours of notification to determine further treatment of the remains.

APM CUL-4: Undiscovered potential tribal cultural resources. The following procedure will be employed (after stopping work and following the procedure for determining eligibility in APM CUL-2) if a resource is encountered and determined by the project's qualified archaeologist to be potentially eligible for the CRHR or a local register of historic resources and is associated with a California Native American Tribe(s) with a traditional and cultural affiliation with the geographic area of the proposed project:

- The project's qualified archaeologist will notify the CPUC for appropriate action. PG&E will assist the CPUC if needed to identify the lead contact person for the California Native American Tribe(s) potentially associated with the cultural resource and with a traditional and cultural affiliation with the geographic area of the proposed project. The CPUC will contact the lead contact person to set up a meeting with PG&E and the CPUC.
- The project's qualified archaeologist will participate with the CPUC in discussions with the California Native American Tribe(s) to determine whether the resource is a "tribal cultural resource" as defined by PRC section 21074, and the tribe(s)' preferred method of mitigation, if the resource is determined to be a TCR.

If no agreement can be reached for mitigation after discussions with the California Native American Tribe(s) or it is determined that the tribe(s)' preferred mitigation is not feasible, PG&E will consult with the CPUC and implement one of the example mitigation measures listed in PRC section 21084.3(b), or other feasible mitigation.

APM CUL-5: Discovery of paleontological resources. If paleontological resources are discovered during construction activities, the following procedures will be followed:

- Stop work immediately within 100 feet of the discovery.
- Contact the designated project inspector PG&E CRS, and the CPUC immediately.
- Protect the site from further impacts, including looting, erosion, or other human or natural damage.
- PG&E's CRS will arrange for a Principal Paleontologist to evaluate the discovery. If the discovery is determined to be significant, PG&E will consult with the CPUC and implement appropriate measures to protect and document the paleontological resource. Examples of such measures include: establishing recovery standards, preparing specimens for identification and preservation, and securing a curation agreement from the appropriate agency.
- Work may not resume within 100 feet of the find until approval by the paleontologist and PG&E CRS, and the CPUC.

APM GS-1: Minimization of construction above liquefiable soils or in soft or loose soils. PG&E will conduct geotechnical investigations prior to construction to identify liquefiable soils, soft soils or loose soils, and implement design and civil engineering standards in accordance with California Building Code (2016) and to comply with California State General Order 95 (2015) standards.

APM GHG-1: Minimize GHG Emissions. The following procedures will be implemented:

- Minimize unnecessary construction vehicle idling time. The ability to limit construction vehicle idling time will depend on the sequence of construction activities and when and where vehicles are needed or staged. Certain vehicles, such as large diesel-powered vehicles, have extended warm-up times following start-up that limit their availability for use following start-up. Where such diesel-powered vehicles are required for repetitive construction tasks, these vehicles may require more idling time. The project will apply a "common sense" approach to vehicle use, so that idling is reduced as far as possible below the maximum of 5 consecutive minutes allowed by California law; if a vehicle is not required for use immediately or continuously for construction activities, its engine will be shut off. Construction foremen will include briefings to crews on vehicle use as part of pre-construction conferences. Those briefings will include discussion of a "common sense" approach to vehicle use.
- Maintain construction equipment in proper working conditions in accordance with PG&E standards.
- Minimize construction equipment exhaust by using low-emission or electric construction equipment where feasible. Portable diesel fueled construction equipment with engines 50 hp or larger and manufactured in 2000 or later will be registered under the CARB Statewide Portable Equipment Registration Program.
- Minimize welding and cutting by using compression of mechanical applications where practical and within standards.
- Encourage the recycling of construction waste where feasible.

APM GHG-2: Minimize SF6 emissions. The following procedures will be implemented:

- Incorporate the new breakers to be installed at Vierra Substation into PG&E's system-wide SF6 emission reduction program. CARB has adopted the Regulation for Reducing Sulfur Hexafluoride Emissions from Gas Insulated Switchgear sections 95350 to 95359, title 17, California Code of Regulations, which requires that company-wide SF6 emission rate not exceed 1 percent by 2020. Since 1998, PG&E has implemented a programmatic plan to inventory, track, and recycle SF6 inputs, and inventory and monitor system-wide SF6 leakage rates to facilitate timely replacement of leaking breakers. PG&E has improved its leak detection procedures and increased awareness of SF6 issues within the company. X-ray technology is now used to inspect internal circuit breaker components to eliminate dismantling of breakers, reducing SF6 handling and accidental releases. As an active member of EPA's SF6 Emission Reduction Partnership for Electrical Power Systems, PG&E has focused on reducing SF6 emissions from its transmission and distribution operations.
- Require that the new breakers at Vierra Substation have a manufacturer's guaranteed maximum leakage rate of 0.5 percent per year or less for SF6.
- Maintain substation breakers in accordance with PG&E's maintenance standards.
- Comply with California Air Resources Board Early Action Measures as these policies become effective.

APM HM-1: Worker Environmental Training Program. An environmental training program will be established to communicate environmental concerns and appropriate work practices to all construction field personnel. The training program will emphasize site-specific physical conditions to improve hazard prevention, and will include: an overview of Personal Protection Equipment (PPE) (safety vest and hard had requirements); fire safety and fire control (general requirements, preventative steps, and PPE); personal health and safety, electrical safety, and safety procedures and protocols; and a review of the Stormwater Pollution Prevention Plan (SWPPP), which will also address spill response. The worker environmental training program will be provided to CPUC staff for review prior to construction.

APM HM-2: Update Spill Prevention Control and Counter Measures (SPCC) Plan and Hazardous Materials Business Plan (HMBP). The expanded substation will be equipped with a retention basin that meets SPCC Guidelines (40 Code of Federal Regulations 112). Prior to operation of the project, PG&E will update the existing SPCC Plan and HMBP for Vierra Substation to include all new equipment and on-site hazardous materials associated with the substation

expansion, and to address containment from an accidental spill. A copy of the updated SPCC Plan and HMBP will be submitted to the CPUC for record keeping.

APM HM-3: Emergency spill response equipment and training. Emergency spill response and cleanup kits will be readily available at Vierra Substation for cleanup of an accidental spill. Construction crews will be trained in safe handling and cleanup responsibilities.

APM HM-4: Soil and Groundwater testing and disposal. In the event soils suspected of being contaminated (on the basis of visual, olfactory, or other evidence) are removed during site grading or excavation activities, the excavated soil will be tested, and if measured above hazardous waste levels, will be contained and disposed of at a licensed waste facility. The presence of known or suspected contaminated soil will require testing and investigation procedures to be supervised by a qualified person, as appropriate, to meet state and federal regulations.

In the event groundwater is encountered during construction, the groundwater will be tested prior to being discharged over land or removed from the site. Testing of groundwater will be supervised by a qualified person, as appropriate, to meet state and federal regulations.

APM HYDRO-1: Stormwater Pollution Prevention Plan. PG&E will prepare and implement a SWPPP to prevent construction-related erosion, sediment runoff, and discharge of other pollutants into adjacent waterways and onto neighboring properties. Because project activities will result in ground disturbance of more than one acre, PG&E will obtain coverage under the SWRCB General Permit for Storm Water Discharges Associated with Construction Activity Order No. 2009-0009-DWQ (and as amended by 2010-0014-DWQ and 2012-006-DWQ). To obtain coverage under the permit, PG&E will develop and submit permit registration documents—including a Notice of Intent, SWPPP, risk assessment, site map, construction drawings, certification by Legally Responsible Person (LRP), contractor contact information, and annual fee—to the State of California's SMARTS database and obtain a WDID number prior to initiating construction activities.

PG&E will prepare and implement a SWPPP to help stabilize disturbed areas and reduce erosion and sedimentation. A monitoring program will also be established to ensure that the prescribed BMPs are followed during project construction. A qualified SWPPP practitioner will oversee the implementation of the SWPPP and associated BMPs.

The following measures are generally drawn from the permit and will be included in the SWPPP prepared for the construction of the project:

- All BMPs will be on site and ready for installation before the start of construction activities.
- BMPs will be developed to prevent the acceleration of natural erosion and sedimentation rates, such as the use of silt fence and wattles.
- Prior to conducting clearing activities during the wet season and before the onset of winter rains or any anticipated storm events, erosion-control measures will be installed. Temporary measures such as silt fences or wattles, which are intended to minimize sediment transport from temporarily disturbed areas, will remain in place until disturbed areas have stabilized.

If the project is exempt from local post-construction storm water BMP requirements, the permit registration documents shall contain:

- A post-construction storm water system design
- Demonstrated compliance with post-construction water balance calculator

APM NOI-1: Construction schedule limits. Construction hours within the project area, which is industrially-zoned, will typically occur between the hours of 7:00 a.m. and 7:00 p.m., Monday through Friday, and between 9:00 a.m. and 7:00 p.m. Saturday. Nighttime work is not anticipated but may occur to take advantage of line clearances during off-peak hours, which would be short in duration. If nighttime work is needed because of clearance restrictions on the existing power lines connected to Vierra Substation, PG&E will take appropriate measures to minimize disturbances to local residents, including contacting nearby residences within 500 feet of the activity to inform them of the work schedule and probable inconveniences.

APM NOI-2: Construction equipment noise reduction devices. Construction equipment will use noise reduction devices that are no less effective than those originally installed by the manufacturer.

APM NOI-3: Placement of stationary construction equipment. Stationary equipment used during construction will be located as far as practical from sensitive noise receptors.

APM NOI-4: Minimization of unnecessary engine idling. Construction crews will limit unnecessary engine idling. (See APM GHG-1.)

APM NOI-5: Use of "quiet" equipment. Where feasible, equipment will be used that is specifically designed for low-noise emissions or that is powered by electric or natural gas as opposed to diesel or gasoline.

APM NOI-6: Sensitive Receptor Notification. Sensitive receptors in areas of heavy construction noise, including helicopter usage, will be notified prior to commencing construction activities. Notification will include written notice and posting signs in appropriate locations, with a contact number to call with questions and concerns.

APM TRA-3: Crossroads Commerce Center coordination. Prior to the start of construction, PG&E will consult with the Crossroads Commerce Center regarding the schedule of traffic using the private rail spur that crosses Nestle Way to reduce potential interruption of rail services serving the industrial park.

MITIGATION MEASURES

MM 5.4-1: General Avoidance of Biological Resource Impacts. (Supersedes APM BIO-1). Pacific Gas and Electric Company (PG&E) will implement field protocols and avoidance and minimization measures to reduce impacts sensitive natural communities. This mitigation measure consists of the following components:

Worker Environmental Awareness Program (WEAP). PG&E will conduct environmental training for all construction and on-site personnel prior to the beginning of site work. The WEAP training will be presented by a California Public Utilities Commission (CPUC)-approved, qualified biologist. All construction crew members and contractors who attend the training will sign a form indicating that they attended the training and understood the information. Follow-up training will be conducted as needed; new workers will attend WEAP training prior to beginning at the work site.

Training will include a discussion of the avoidance and minimization measures that are being implemented to protect biological resources, as well as the terms and conditions of permits that apply to the project. Training will include information on the United States and California Endangered Species Acts and the consequences of noncompliance with these acts. Under this program, workers will be informed about the presence, life history, and habitat requirements of all listed and special-status species with at least a moderate potential to occur in the vicinity based on Table 5.4-2 of this Initial Study/Mitigated Negative Declaration, with a focus on those species that could be affected within the project area. Training will also include information on state and federal laws protecting nesting birds, and other biological resources, as applicable and appropriate to the project. Additionally, personnel will be trained for situations where it is necessary to contact a qualified biologist (e.g., should any sensitive biological resources such as an active nest be found during construction). If sensitive resources are found, the qualified biologist will provide guidelines for the personnel to avoid impacts on them.

All WEAP participants will receive a brochure that outlines all this information including contact information for the appropriate environmental personnel. A record of all trained personnel will be kept on site, and a sticker indicating training completion will be worn on all worker hard hats. A copy of the training and brochure will be provided to CPUC prior to the start of construction for project files.

Litter and trash management. All food scraps, wrappers, food containers, cans, bottles, and other trash from the project area will be deposited in closed animal-proof trash containers and removed from the project site daily. Open fires (such as barbecues) are prohibited at work sites.

Parking and vehicle speed limit. Vehicles and equipment will be parked on pavement, existing roads, and previously disturbed or developed areas or work areas. Off-road parking will only be permitted in previously identified and designated work areas. Vehicle speeds on unpaved roads will not exceed 15 miles per hour.

Access route and work area limitations. Vehicles will be confined to established roadways and existing access roads, pre-approved temporary access routes, existing boardwalks, and designated matted work areas. Access routes and construction work areas will be limited to the minimum necessary to safely construct the project.

Maintenance and refueling. All equipment will be maintained to minimize the potential for leaks of automotive fluids such as fuels, solvents, or oils.

Pets and firearms. No pets, firearms, hunting or fishing will be permitted at the project site.

Cover pipes and excavations. Minimize potential for special-status species to seek refuge or shelter in pipes and excavations. Inspect pipes, of diameter wide enough to be entered by a special-status species that could inhabit the area where pipes are stored, for wildlife species prior to moving pipes and culverts. 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 will search open trenches or steep-walled holes every morning prior to initiating daily activities to ensure wildlife are not trapped. If any trapped wildlife are found, a qualified biologist will be notified and will relocate the species to adjacent habitat or the species will be allowed to naturally disperse, as determined by a biologist. If a special-status species are identified within the work area, California Department of Fish and Wildlife shall be notified of the detection.

MM 5.4-2: Avoid and Minimize Impacts on Special-status Plant Species. (Supersedes APM BIO-1). Pacific Gas and Electric Company (PG&E) will implement the following measures to minimize impacts on habitat potentially suitable for special-status plant species:

Pre-construction surveys for special-status plant species in areas of suitable habitat will be conducted during the appropriate blooming period by a qualified biologist prior to the start of construction If special-status plant species are found, a report documenting the survey results will be provided to the California Public Utilities Commission (CPUC) prior to construction and the following actions will be implemented:

Special-status plants within and immediately adjacent to work areas and access routes will be marked by a qualified biologist and avoided to the extent feasible.

If impacts to special-status plants cannot first be avoided, the impacts will be enumerated and described. PG&E will notify the landowner of the presence and location of the special-status plants and contact California Department of Fish and Wildlife (CDFW) to arrange for the plants to be salvaged. CDFW must be notified at least 10 days prior to ground disturbance to allow for salvage of rare or endangered plants. Following the 10-day notification period, PG&E may proceed with construction activities unless notification is received from the landowner or CDFW within 48 hours indicating that the plants will be salvaged.

As part of the Worker Environmental Awareness Program, include information on the identification of noxious weeds and invasive plants, the importance of noxious-weed and invasive plant control, and measures to minimize their spread. Training will include the following best management practices (BMPs) to avoid or minimize the spread of invasive plants and noxious weeds: (1) avoid working in invasive plant or noxious weed infested areas or prioritize activities so that infested areas are worked in last; (2) keep records of road maintenance activities including location and source of grading material; (3) maintain gravel and soil spoil piles free of invasive plants or noxious weeds; use areas known to be weed-free for staging and laydown areas; (4) minimize soil disturbance to the extent possible; (5) ensure materials used for erosion control will be certified weed free (i.e., straw wattles, gravel, fill material, etc.); when restoring a site after disturbance, use a native seed mix; (6) drive on and park on established roads as much as possible; (7) off-road equipment that is not local to the project area will arrive onsite clean and free of soil and plant parts; and (8) use clean clothing, footwear, and gear before moving from an infested area to a non-infested area.

Prior to commencement of activities located on or adjacent to non-paved surfaces, a biologist will flag known populations of noxious weeds and invasive plants in the work areas.

To minimize introduction and spread of noxious weeds and invasive plants, PG&E will avoid moving weed-infested gravel, rock, and other fill materials to relatively weed-free locations. PG&E will use certified weed-free straw and mulch for erosion-control projects. PG&E will maintain stockpiled, uninfested material in a weed-free condition.

PG&E will minimize soil disturbance and the removal of vegetation during construction and other ground-disturbing activities to the extent practicable. Vehicles and equipment should remain on established roads or access routes as much as is practicable.

PG&E will stage in areas not infested with weeds or treat for weed removal prior to using an infested area.

PG&E will conduct post-construction monitoring of any disturbed soils in the spring following completion of construction for any invasive species that inadvertently have been introduced by the project in an area where they did not previously grow. PG&E shall coordinate with the CPUC to determine appropriate means of invasive species eradication (such as hand-pulling or chemical herbicide application).

MM 5.4-3: Burrowing Owl and Swainson's Hawk Mitigation Measures. (Supersedes APM BIO-3).

Burrowing Owl

Surveys for burrowing owl will be conducted by a qualified biologist in the vicinity of Vierra Substation expansion and the railroad tracks, the alignment south of Christopher Way, and any other suitable habitat within 500 feet of the project area. Surveys will be conducted according to California Department of Fish and Wildlife (CDFW) (2012) (or newer guidance, if available). Burrowing owl site clearance and mitigation shall follow the following approach:

Breeding Season (February 1 through August 31)

Pre-construction surveys for burrowing owls shall be performed at least 14 days prior and again 24 hours prior to initial ground disturbance activities following the methodology in the CDFW (2012) Staff Report on Burrowing Owl Mitigation (Staff Report). If burrowing owls are present, a detailed survey report shall be prepared by the applicant and submitted to CDFW for review. The report shall include survey methods and timing, and maps, among other information based on the reporting elements presented in the Staff Report. The required reporting information is described in the Staff Report (CDFW, 2012; see page 30).

Any occupied burrows shall not be disturbed and shall be provided with a 250 foot protective buffer until and unless a qualified biologist approved by the CPUC verifies through non-invasive means that either: (1) the birds have not begun egg laying, or (2) juveniles from the occupied burrows are foraging independently and are capable of independent survival.

Once a qualified biologist determines the fledglings are capable of independent survival, they may only be evicted after a Burrowing Owl Exclusion Plan (BOEP) is developed by a qualified biologist and approved by the CDFW. The BOEP shall provide for passive exclusion by a permitted individual, and any other appropriate measures such as collapsing of nearby unoccupied burrows, providing artificial burrows onsite or in a different location, and monitoring to determine the success of the actions taken. If compensatory mitigation has been provided through the PG&E O&M HCP in accordance with APM BIO-4, the burrow may then be destroyed following implementation of any CDFW 2012-appropriate measures as well as concurrence from CDFW.

Pre-construction surveys following destruction of burrows and prior to initial construction activities are required 24 hours prior to construction to ensure owls do not re-colonize the project area.

If project activities are delayed or suspended for more than 15 days during the breeding season, surveys will be repeated. Depending upon the condition of the project site (e.g., if burrows are absent, or if small mammal burrows are present with owl sign), surveys may require only a single habitat assessment review, or may require a repeat of the full survey protocol.

Non-breeding Season (September 1 through January 31)

Pre-construction surveys following the CDFW (2012) Staff Report shall be performed prior (at least 14 days prior and again 24 hours prior) to initial ground disturbance activities. If burrowing owls are present, a detailed survey report shall be prepared by the applicant and submitted to CDFW for review following the methodology described for breeding season surveys. Burrowing owls may only be evicted after a BOEP is developed and approved by the CDFW, and compensatory mitigation has been provided under the PG&E O&M HCP in accordance with APM BIO-4.

Pre-construction surveys following destruction of burrows and prior to initial construction activities are required (24 hours prior) to ensure owls do not re-colonize the project area. If owls are found within 165 feet of the project area, it is recommended that visual screens or other measures are implemented to limit disturbance of the owls without evicting them from the occupied burrows. A post-survey report shall be provided to CDFW, as described in the Burrowing Owl Staff Report (CDFW, 2012). The CPUC should also receive a copy of the report.

If no burrowing owls are detected, no further measures are required. If burrowing owls are detected, no construction activities will occur within 250 feet of occupied burrows during the nesting season or within 160 feet of occupied burrows

during the non-nesting season. For purposes of this measure, the nesting season is February 1st to August 31st. Additionally, burrowing owls shall be monitored by a qualified biologist during construction to assess the sensitivity of the burrowing owls to the construction activities. The size of the avoidance buffer may be increased or decreased as determined by the monitoring biologist based on the planned construction activities and the sensitivity of the burrowing owls.

If a burrowing owl is observed at the construction site at any time during construction, then exclusion fencing will be used to establish a safe buffer area until the animal can be passively relocated out of the construction area or other appropriate buffer distance is established consistent with CDFW guidance. Construction sites in areas that previously contained an occupied burrow should remain active and disturbed to discourage burrowing owl recolonization of the construction area.

Swainson's Hawk

If work activities are performed during the Swainson's hawk nesting period (March 1 to July 30), pre-construction surveys for Swainson's hawks shall be performed following the current methodology adopted by CDFW, in consultation with the appropriate CDFW staff.

Construction activities shall remain a distance of 0.25-mile from any active nest tree. This distance may be reduced with concurrence from CDFW based on site conditions or other factors that affect visibility of the nest from work areas, such as buildings or trees.

If PG&E elects to remove a nest tree, the nest trees may be removed between September 1 and February 1, when the nests are unoccupied. Replacement trees shall be required near the same location, consistent with safety considerations near power lines, with specimen size depending on the size of the tree removed. Trees up to 6- inch caliper (at 3-foot height) shall be replaced with minimum 24-inch box specimens. Trees between 6-12-inch caliper shall be replaced with minimum 36-inch box specimens and trees greater than 12-inch caliper shall be replaced with 48-inch box specimens.

MM 5.5-1: Cultural Resources Testing. PG&E shall conduct pre-construction extended Phase I archaeological testing, and Phase II evaluation if a deposit is uncovered, in locations identified in a testing plan submitted to CPUC's representative for review and approval. The specific workplan for this enhanced identification effort will be developed with input from the appropriate Native American tribal groups,1 will be invited to monitor the mechanical coring and participate in laboratory identification efforts.

If cultural or tribal cultural resources are not identified in the course of this testing, no archaeological or Native American monitoring will be required during construction. However, APMs CUL-1 – CUL-4, including worker training and inadvertent discovery procedures, will remain in place.

The testing plan will conform to the standards described in Guidelines for Archaeological Research Designs (OHP 1991) and will contain thresholds that will explain what requirements are necessary to move the Phase I identification effort (XPI) into a Phase II evaluation effort (Phase II). The testing plan will also contain a research design and will outline generalized methods to complete the Phase II evaluation. The purpose of the testing plan is to identify cultural and tribal cultural resources prior to construction of the expanded Vierra Substation, new power line, and Kasson Substation modifications. The plan shall be prepared by an archaeologist that meets the Secretary of the Interior's professional standards for archaeologists (see Archaeology and Historic Preservation: Secretary of the Interior Standards and Guidelines, 36 C.F.R. 61). The plan must include the following:

- A statement of the problem(s) and research goals,
- A statement of methods to achieve Phase I testing and laboratory identification and, if necessary, Phase II evaluation,
- A statement regarding how the results will be reported,
- Maps depicting project boundaries and locations of mechanical coring for each project area being tested,
- A schedule for implementation of the testing plan, including the laboratory identification,
- The preparer's resume and the resume of other key staff who are expected to implement the testing plan, and
- Thresholds for elevating the Phase I XPI testing and identification into a Phase II evaluation effort.

Archaeological testing of the new transmission line will include each of the proposed pole locations. Those locations will be subject to archaeological testing by mechanical coring to the maximum depth of the final design plans. Coring will be completed using a hydraulic coring rig (Geoprobe) to recover continuous core samples of subsurface deposits. In each of the 20 proposed new pole locations, testing shall include one hydraulic core that is approximately 4 inches in diameter and up to 40 feet below ground surface (the testing depth to be dictated by the maximum depth of project components) to determine the presence or absence of cultural or tribal cultural resources. Each core will be collected and processed in a laboratory. Generally, selected samples including soils and any identified archaeological strata (e.g., layer containing cultural materials) will be wet-screened through 1/16-inch mesh or flotation processed to determine if archaeological materials are present or absent. If cultural materials are identified, a Phase II evaluation will be undertaken based on the collected material and the research design.

The proposed Vierra Substation expansion footprint will also be subject to subsurface identification efforts by mechanical coring. Within the project footprint in this location, a mechanical core will be excavated every 25-30 meters to the maximum depth of project impacts in the specific locations within those boundaries.

Additionally, testing will be conducted at Kasson Substation by mechanical coring. Up to three cores to the maximum depth of project impacts will be collected at Kasson Substation. In all instances, if cultural or tribal cultural resources are identified in the course of laboratory testing, the Phase II evaluation plan and associated research design that was created and approved by the CPUC's representative in coordination with interested archaeological and/or Native American contacts as appropriate to the resources will be followed. The Phase II evaluation plan will help the CPUC representative determine whether any discovered resources qualify as historical resources, unique archaeological resources or tribal cultural resources pursuant to Pub. Res. Code, § 5024.1 and Title 14, Cal. Code Regs., § 4852. The results of these efforts will be reported in a subsequent evaluation and summary report provided to the CPUC for concurrence on the eligibility determination and, if necessary, mitigation measures will also be outlined. Best practices suggest mitigation should focus on avoidance of the resource, if possible, to prevent any impacts to the resource. If the resource is eligible under CRHR criterion 4 and it cannot be avoided, CEQA best practices suggest implementing a robust data recovery program, to the extent consistent with safety concerns, developed in consultation with the CPUC and landowner. If any cultural resources discovered during the course of testing are found to be historical resources, unique archaeological resources or tribal cultural resources, the CPUC will require construction ground disturbance in the specific location of that project component to be monitored by a qualified archaeologist and Native American monitor.

MM 5.9-1: Fire Hazard Reduction Measures. Pacific Gas and Electric Company shall implement the following measures prior to and during construction activities at the Highland Peak and Mount Oso microwave stations:

- As part of the Worker Training Program, workers will be trained in fire prevention and response practices to be implemented to minimize the risk of fire, and in the event of fire, trained to provide immediate response. Construction personnel will be trained in reporting and incipient stage fire prevention, control, and extinguishing.
- Prohibit smoking at the worksites other than in designated areas that are free of ignitable material. Require disposal of cigarette butts in a way that will not ignite vegetation or other materials.
- Ensure an appropriate fire extinguisher is present during any hot work activity.
- Do not park vehicles in areas with vegetation prone to ignition.
- Equip all vehicles with a fire extinguisher.

MM 5.13-1: Nighttime Construction Noise Measures. In the event that any necessary nighttime (i.e., between 10:00 p.m. and 7:00 a.m.) construction activity is likely to create a noise complaint at any occupied residence within 250 feet of construction, PG&E shall:

- Limit all helicopter activity to daytime hours.
- Identify all residences within 250 feet of any potential nighttime construction activities, and notify and consult with the nearby residences, or make an attempt to do so, prior to the nighttime construction activities. Residents shall be provided with information regarding the nature of the work, its likely duration, and measures to reduce interior noise (such as shutting windows).

- ·If the above measures are not sufficient to reduce interior noise to below a level that could likely result in a complaint at any occupied dwelling within 250 feet of construction, PG&E shall take one or more of the following actions:
    - Install and maintain temporary sound barriers capable of reducing noise levels by 5 to 10 dBA. Temporary sound barriers shall consist of either sound blankets at the noise source or other sound barriers/techniques such as acoustic padding or acoustic walls placed near the noise source. Barriers shall be placed such that the line-of-sight between the construction equipment and adjacent sensitive land uses is blocked.
    - Relocate residents to a nearby hotel during nighttime construction that could result in a complaint.
- PG&E shall identify and provide a public liaison person before and during construction to respond to concerns of neighboring receptors, including residents, about noise construction disturbance. Contact information for reaching the public liaison officer via telephone or in person shall be included in the above notices and shall also be posted conspicuously at the construction site(s). PG&E shall address any nighttime construction work complaint within 24 hours of the filing of the complaint. If there are any complaints, PG&E shall provide monthly reports with records of complaints and responses to the CPUC. These reports shall be provided to CPUC within 15 days of the end of the month.

MM 5.17-1: Transportation Plans. (Supersedes APM TRA-1). Pacific Gas and Electric Company (PG&E) shall obtain any necessary transportation and/or encroachment permits, including those for transport of oversized loads and hazardous materials, lane closures, and construction near railroad tracks, and shall comply with permit requirements designed to minimize hazards, impacts to emergency services, and impacts to rail service. Construction activities that are in, along, or cross local roadways and rail lines must follow best management practices (BMPs), including compliance with the California Manual on Uniform Traffic Control Devices (MUTCD) 2014 Edition, Revision 4.

PG&E shall:

- Prepare and implement a Railroad Safety Plan, if required by encroachment permit(s) obtained from Union Pacific Railroad (UPRR), for its construction activities to address the transport of heavy/oversized loads over the railroad tracks or spur, as well as safety measures to be employed during construction near the railroad tracks;
- Prepare and implement Transportation Management Plans (TMPs), or lane closure/width reduction and/or traffic diversion plans, as required by any necessary transportation and/or encroachment permits, including plans for maintaining emergency vehicle access during lane or full roadway closures (e.g., if needed for helicopter travel over Nestle Way, Christopher Way, and D'Arcy Parkway).

MM 5.17-2: Air transit and neighborhood coordination. (Supersedes APM TRA-2). Pacific Gas and Electric Company (PG&E) will implement the following protocols that pertain to helicopter use and air traffic during construction:

- PG&E will comply with all applicable FAA regulations regarding air traffic.
- PG&E's helicopter operator will coordinate all project helicopter operation with the local airport before and during project construction.

Section 2

Environmental Determination and Environmental Checklist

2 Environmental Determination

2.1 Environmental Factors Potentially Affected

The environmental factors checked below would be potentially affected by this project, involving at least one impact that is a "Potentially Significant Impact" and requiring implementation of mitigation as indicated by the checklist on the following pages.

☐ Aesthetics	☐ Agriculture & Forestry Resources	☐ Air Quality
☒ Biological Resources	☒ Cultural and Tribal Cultural Resources	☐ Energy
☐ Geology/Soils	☐ Greenhouse Gas Emissions	☒ Hazards & Hazardous Materials
☐ Hydrology/Water Quality	☐ Land Use/Planning	☐ Mineral Resources
☒ Noise	☐ Population/Housing	☐ Public Services
☐ Recreation	☒ Transportation	☐ Mandatory Findings of Significance
☐ Utilities/Service Systems	☒ Wildfire	

2.2 Environmental Determination

On the basis of this initial evaluation:

☐ I find that the Proposed Project COULD NOT have a significant effect on the environment, and a **NEGATIVE DECLARATION** will be prepared.

☒ I find that although the Proposed Project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A **MITIGATED NEGATIVE DECLARATION** will be prepared.

☐ I find that the Proposed Project MAY have a significant effect on the environment, and an **ENVIRONMENTAL IMPACT REPORT** is required.

☐ I find that the Proposed Project may have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect (1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and (2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An **ENVIRONMENTAL IMPACT REPORT** is required, but it must analyze only the effects that remain to be addressed.

☐ I find that although the Proposed Project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR, including revisions or mitigation measures that are imposed upon the Proposed Project, nothing further is required.

Michael E. Rosauer

_____ October 12, 2020

Michael Rosauer, Project Manager
Energy Division CEQA Unit
California Public Utilities Commission

Date

Section 3

Introduction to the Initial Study

3 Introduction to the Initial Study

3.1 Project Overview

Pacific Gas and Electric Company (PG&E), a regulated California utility, filed an application with the California Public Utilities Commission (CPUC) on June 6, 2018 for a Permit to Construct (PTC) the Vierra Reinforcement Project. The application was deemed complete by the CPUC on September 18, 2018.

PG&E proposes to expand the existing Vierra Substation in the City of Lathrop and build a new, double-circuit power line west from the substation, approximately 1 mile to the existing Tesla-Stockton Cogen Junction 115 kilovolt (kV) Power Line. The expanded substation and new line would provide more electrical capacity and reliability for households and businesses in Lathrop, Manteca, and surrounding areas of San Joaquin County. As proposed by PG&E, the project includes the following components:

- **Power Line Construction.** An approximately 1-mile-long, double-circuit 115 kV power line would be installed on approximately 16 tubular steel poles (TSPs).
- **Substation Expansion**. Vierra Substation would be expanded approximately 340 feet to the west. The existing 115 kV equipment would be replaced, upgraded, and reconfigured to accommodate the new 115 kV double-circuit lines. A new microwave tower would be installed.
- **Remote Substation Modifications.** In addition to expanding Vierra Substation, the project would require modifications to Howland Road, Kasson, Manteca, Tracy, Ripon Cogen, and Tesla substations to integrate protection of the new line into the existing system. Telecommunication equipment would also be installed at Kasson, Manteca, and Tracy substations, including microwave dishes on new monopoles. Control room equipment would be upgraded at Howland Road, Ripon Cogen, and Tesla substations. An antenna would be installed at Howland Road Substation, along with a new circuit switcher, voltage transformer, and other minor equipment modifications.
- **Remote Telecommunication Tower Upgrades.** Microwave dishes would be installed on the existing telecommunication towers at the Mount Oso and Highland Peak microwave stations.

3.2 Environmental Analysis

3.2.1 CEQA Process

This Initial Study (IS) has been prepared pursuant to the California Environmental Quality Act (CEQA) (Pub. Resources Code, § 21000 et seq.), the state CEQA Guidelines (Cal. Code Regs., tit. 14., § 15000 et seq.), and the CPUC's Rules of Practice and Procedure (Rule 2.4). The purpose of the IS is to inform the decision-makers, responsible agencies, and the public of the project, the existing environment that would be affected by the proposed project, the environmental effects that would occur if the project is approved, and proposed mitigation measures that would avoid or reduce environmental effects.

A Mitigated Negative Declaration (MND) has been prepared based on the assessment of potential environmental impacts identified in the IS. All potentially significant impacts associated with the project can be mitigated to a level that would be less than significant; therefore, an MND can be adopted by the CPUC under CEQA in accordance with section 21080 of the Public Resources Code.

3.2.2 CEQA Lead Agency

The CPUC is the lead agency for review of the project under CEQA because it is the agency with the greatest responsibility for supervising and approving the project as a whole, including the decision whether to adopt the MND and to approve or deny the PTC application.

3.2.3 Initial Study

The IS presents an analysis of potential effects of the project on the environment. The IS is based on information from PG&E's Proponent's Environmental Assessment and associated submittals, site visits, CPUC data requests, and additional research conducted by the CPUC.

Construction activities and project operation could have direct and indirect impacts on the environment. The following environmental parameters are addressed based on the potential effects of the project and potential growth-inducing or cumulative effects of the project in combination with other projects:

- Aesthetics
- Agricultural and Forestry Resources
- Air Quality
- Biological Resources
- Cultural and Tribal Cultural Resources
- Energy
- Geology and Soils
- Greenhouse Gas Emissions
- Hazards and Hazardous Materials
- Hydrology and Water Quality
- Land Use and Planning
- Mineral Resources
- Noise
- Population and Housing
- Public Services
- Recreation
- Transportation
- Utilities and Service Systems
- Wildfire
- Mandatory Findings of Significance

The IS/MND has been organized into the following sections:

- Section 1: Mitigated Negative Declaration
- Section 2: Environmental Determination
- Section 3: Introduction. Provides an introduction and overview describing the project and the CEQA process, and identifies key areas of environmental concern.
- Section 4: Project Description. Provides an in-depth description of the project, including construction details and methods.
- Section 5: Environmental Analysis and Mitigation. Includes a description of the existing conditions and analysis of the project's potential environmental impacts, and identifies mitigation measures (MMs) to reduce potentially significant impacts to less-than-significant levels.
- Section 6: Mitigation Monitoring Plan. Includes Applicant Proposed Measures and MMs that PG&E must implement as part of the project, actions required to implement these measures, monitoring requirements, and timing of implementation for each measure.
- Appendix A: List of Preparers and Agency Contacts

- Appendix B: Air Quality and Greenhouse Gas Emissions Calculations
- Appendix C: California Native American Tribal Consultation Documentation
- Appendix D: Preliminary Transmission EMF (electric and magnetic fields) Management Plan
- Appendix E: Land Evaluation Site Assessment Worksheets Score Sheets

3.3 Public Review Process

On October 16, 2020, the CPUC electronically filed a Notice of Completion and Draft IS/MND to the California State Clearinghouse and also mailed the Notice of Intent to Adopt a Mitigated Negative Declaration to nearby property owners, responsible and trustee agencies, and the county clerk, announcing that the Draft IS/MND was available for public review. The Notice of Intent also was published in the Stockton Record.

The CPUC established a mailing and e-mail address (Vierra@energy.ca.gov), and project website (https://www.cpuc.ca.gov/environment/info/CEC/VierraReinforcement/index.htm) to enable the public to ask questions, provide comments, and obtain additional information on the project analyzed in the Draft IS/MND. In accordance with Section 15105(b) of the CEQA Guidelines, the public review and comment period began on October 16, 2020, and ends on November 16, 2020. Copies of all written comments received on the Draft IS/MND will be included in the Final IS/MND.

Extended by Executive Order (EO) N-80-20 until the State of Emergency due to the COVID-19 pandemic is lifted, certain CEQA noticing requirements (e.g., the requirement to publicly post and file materials concerning the project with the county clerk) have been suspended as authorized by Governor Newsom's previous EO N-54-20 that said "The public filing, posting, notice, and public access requirements . . . are suspended for a period of 60 days." Therefore, public access to the MND and other project information/reports will be solely available electronically through the CPUC's project website. Persons who cannot access the materials through the link in the previous paragraph are encouraged to email the CPUC at Vierra@energy.ca.gov to arrange for alternative means of access to project materials.

Section 4

Project Description

4 Project Description

4.1 Project Overview

The Vierra Reinforcement Project (project) would expand Vierra Substation approximately 340 feet to the west. The existing 115 kV equipment would be replaced, upgraded, and reconfigured to accommodate the new 115 kV double-circuit lines. The project would also add a new double-circuit power line, connecting to the Tesla-Stockton Cogen Junction 115 kilovolt (kV) Power Line, to reinforce the area's 115 kV and 60 kV systems connected at Kasson, Manteca, and Salado substations. The closest cross streets for the power line starting at western extent are Nestle Way and Christopher Way. The closest cross streets near the eastern extent of the power line are D'Arcy Parkway and Vierra Road. The area's existing 115 kV equipment would be replaced, upgraded, and reconfigured to accommodate the project's new 115 kV double-circuit lines. The new power line would require minor modifications within another six substations in Alameda and San Joaquin counties, and the addition of new microwave dishes to telecommunications towers in Contra Costa and Stanislaus counties (see Section 4.2, *Project Location*). (PGE, 2018a)

4.2 Project Location

The Vierra Substation and the new power line are located in a primarily industrial area within the City of Lathrop, in southern San Joaquin County (see **Figure 4-1**). In addition to expanding the Vierra Substation, the project would require upgrades to the protection equipment and telecommunications equipment at the remote Howland Road, Kasson, Manteca, Tracy, Ripon Cogen, and Tesla substations to integrate protection of the new line into the existing system. New telecommunications equipment would be installed on the telecommunications towers at the Mount Oso and Highland Peak microwave stations.

The new power line would originate at the Vierra Substation, north of State Route (SR) 120 and east of Interstate 5. It would extend approximately 1,000 feet west along the north side of Vierra Road, then turn in a northwesterly direction for approximately 1,000 feet, crossing Union Pacific Railroad tracks at a perpendicular angle and paralleling the east side of D'Arcy Parkway. The alignment then turns west and extends along the south side of Christopher Way for approximately 2,000 feet, then northwest along Nestle Way for approximately 800 feet to where it ties into the existing Tesla-Stockton Cogen Junction 115 kV Power Line on the west side of a private spur rail line serving the Crossroads Business Park. The alignment is shown on **Figure 4-1**.

The new power line would be integrated into the existing system with new protection equipment at several area substations (see **Figure 4-2**). Modifications would occur within the existing fence lines at the following area facilities:

- Howland Road Substation, located on Howland Road in the City of Lathrop, in San Joaquin County;
- Kasson Substation, located on South Kasson Road in San Joaquin County;
- Manteca Substation, located on Elm Avenue in the City of Manteca, in San Joaquin County;
- Tracy Substation, located on Grant Line Road in the City of Tracy, in San Joaquin County;
- Ripon Cogen Substation, located on Highway 99 Frontage Road, west of Jack Tone Road, in the City of Ripon, in San Joaquin County; and,
- Tesla Substation, located on Patterson Pass Road in Alameda County.

Figure 4-1
Project Location and Overview Map

Source: PGE, 2018a

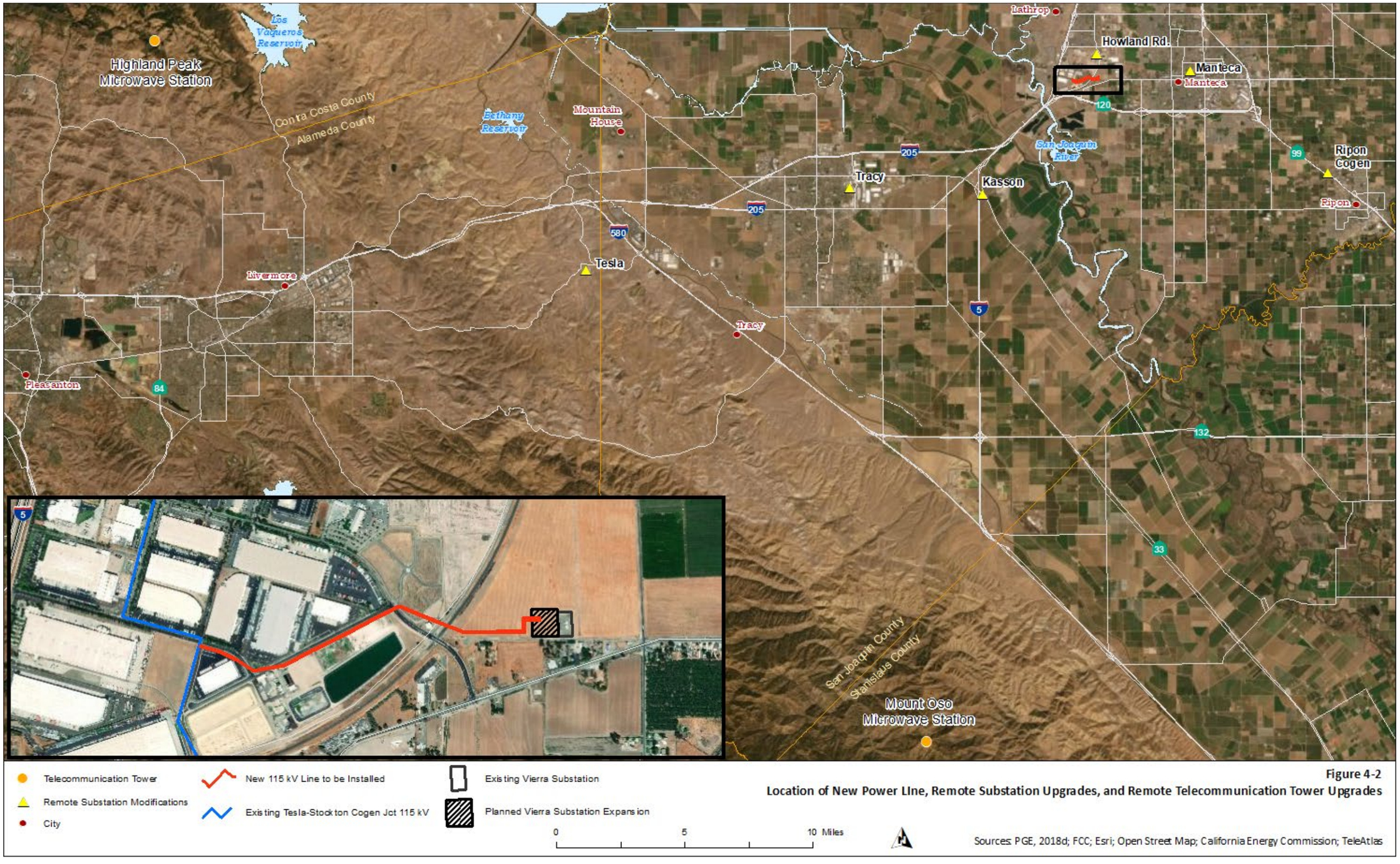

Figure 4-2
Location of New Power LIne, Remote Substation Upgrades, and Remote Telecommunication Tower Upgrades

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Microwave dishes would be added to existing telecommunications towers at Mount Oso and Highland Peak microwave stations (see **Figure 4-2**). The Mount Oso microwave station is located in northwestern Stanislaus County, approximately 6 miles northwest of the intersection of Del Puerto Canyon Road and Mount Oso Road, off Mount Oso Road. The Highland Peak microwave station is located in southern Contra Costa County, approximately 4.5 miles west of the intersection of Morgan Territory Road and Manning Road, along a private road.

4.3 Existing System

Vierra Substation serves the cities of Lathrop and Manteca, and is located approximately 1 mile east of the Tesla-Stockton Cogen Junction 115 kV Power Line. This power line collects and delivers electricity to the Tesla Substation, located approximately 17 miles southwest of Vierra Substation. The Tesla-Stockton Cogen Junction 115 kV Power Line also serves Tesla Motors Substation in the Crossroads Industrial Park and provides a back-tie support as needed to the Lockeford/Bellota 115 kV System. The existing and proposed Tesla 115 kV system with the Vierra Reinforcement Project are depicted in **Figures 4-3a** and **4-3b**, respectively.

4.4 Project Background and Need

The project is an electric infrastructure project in the Tesla 115 kV system south of Stockton that is aimed at helping PG&E provide added capacity, reliability, and service to households and businesses in the City of Lathrop, Tracy, Manteca, and the surrounding San Joaquin County (PGE, 2019a). The center of the heaviest electric load in this region is around the cities of Manteca and Lathrop, which are in the eastern and southeastern parts of the service area. These customers are served from the distant Tesla Substation, approximately 20 miles to the west, or the Tracy Combined Cycle Power Plant (formerly GWF Tracy Power Plant and referred to herein as “GWF Tracy”), approximately 5 miles closer.

Power is transmitted to the load centers on four power line paths that start at Tesla Substation and travel generally eastward on different routes toward Manteca Substation in the City of Manteca (see **Figure 4-3a**). The power lines (named for the substations they connect) include:

- Tesla-Schulte-Lammers-Kasson 115 kV Power Line;
- Tesla-Schulte-Kasson-Manteca 115 kV Power Line;
- Tesla-Salado-Manteca 115 kV Power Line; and
- Tesla-Tracy-Kasson-Vierra-Manteca 115 kV Power Line.[1]

Much of the power for the Tesla 115 kV system is supplied by GWF Tracy, which connects directly into the Tesla-Schulte-Lammers-Kasson and Tesla-Schulte-Kasson-Manteca power lines east of Tesla Substation. The Tesla 115 kV system also receives stepped-down power at Tesla Substation from two 230/115 kV transformers.

[1] The Tracy-Kasson-Vierra 115 kV Power Line and the Manteca-Vierra 115 kV Power Line both connect to Vierra Substation and are part of this power line.

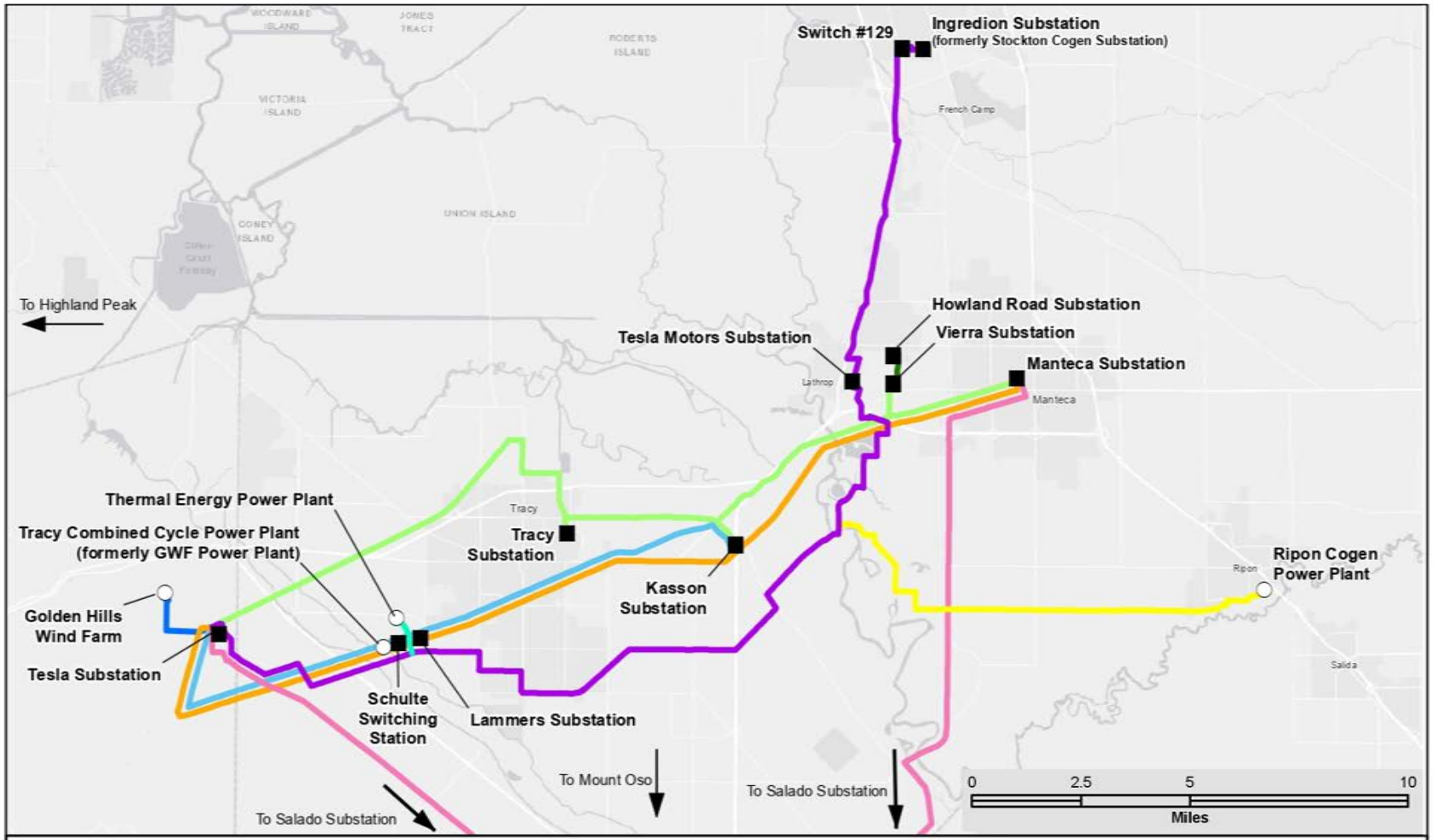

Figure 4-3a
Existing
Tesla 115 kV System

- Substations and Switching Stations
- Generation
- Tesla-Stockton Cogen Junction 115 kV Power Line
- Howland Road 115 kV Tap
- Thermal Energy 115 kV Tap
- Ripon Cogen 115 kV Power Line
- Tesla - Trust 115 kV Power Line
- Tesla-Salado-Manteca 115 kV Power Line Path
- Tesla-Schulte-Kasson-Manteca 115 kV Power Line Path
- Tesla-Schulte-Lammers-Kasson 115 kV Power Line Path
- Tesla-Tracy-Kasson-Vierra-Manteca 115 kV Power Line Path

Source: PGE, 2019a

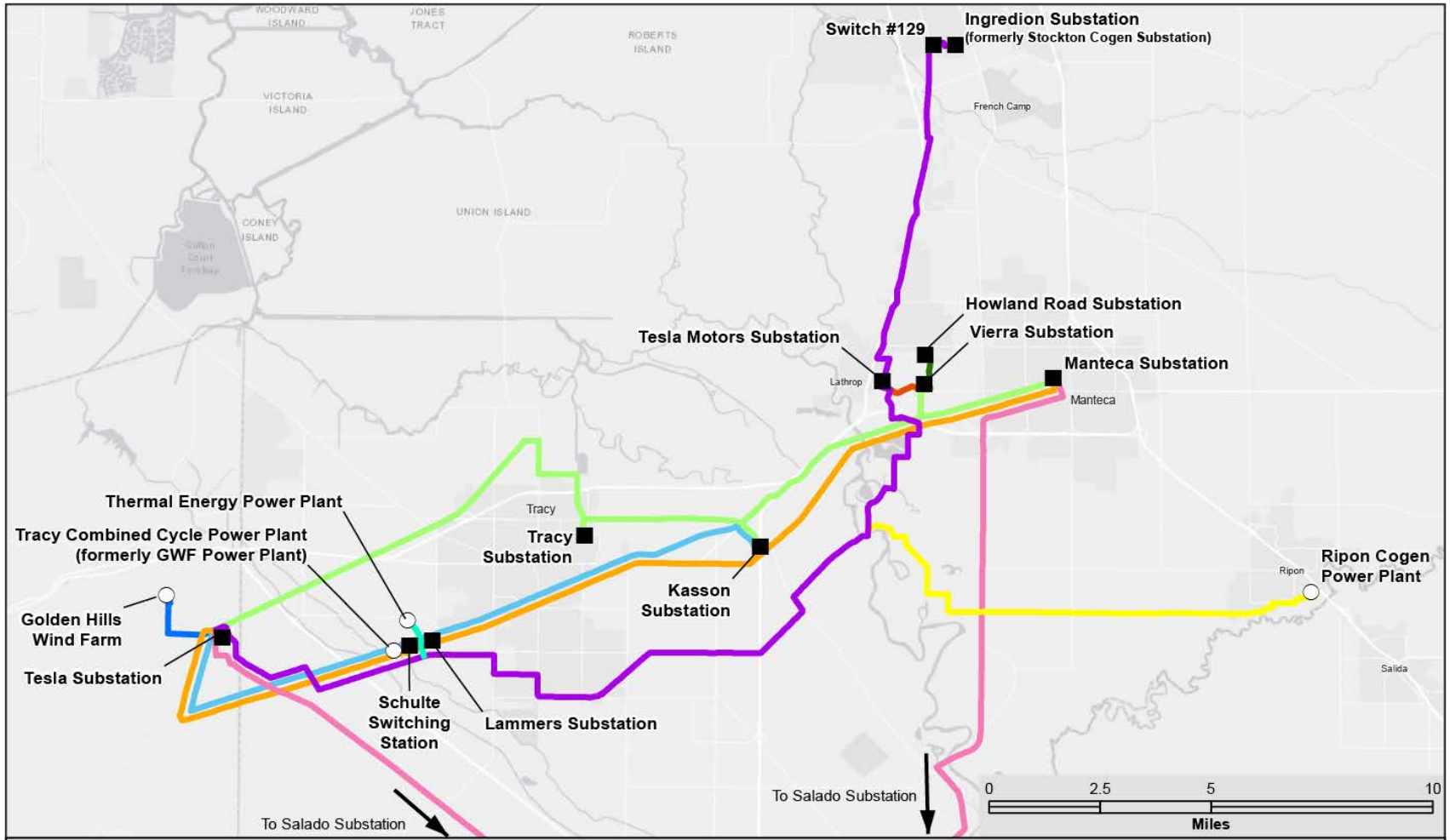

Figure 4-3b
Proposed Tesla 115 kV System

The rest of the generation feeding Tesla Substation is connected to the Tesla-Stockton Cogen Junction 115 kV Power Line. This line begins at Stockton Cogen Junction, an open switch near the Stockton Cogen Substation and power plant approximately 25 miles northeast of Tesla Substation. The power line travels southerly approximately 10 miles to the San Joaquin River, where it is joined by the Ripon Cogen 115 kV Power Line, a 10-mile-long tap line from Ripon Cogen Substation and power plant in the City of Ripon. The Tesla-Stockton Cogen Junction 115 kV Power Line then continues generally southwesterly from the river for approximately 15 miles to Tesla Substation, picking up additional power on the way from the Thermal Energy power plant approximately 4 miles east of Tesla Substation.

In the City of Lathrop, the Tesla-Stockton Cogen Junction 115 kV Power Line passes one mile west of Vierra Substation, and does not connect to the substation. Vierra Substation is located at the southern edge of Lathrop, just northwest of the City of Manteca, and is connected to two other 115 kV power lines extending from Tracy, Kasson, and Manteca substations: the Tracy-Kasson-Vierra and Manteca-Vierra 115 kV power lines. These two lines connect to Tesla Substation to make the Tesla-Tracy-Kasson-Vierra-Manteca 115 kV Power Line. Vierra, Tracy, Kasson, and Manteca substations are directly or indirectly connected to Tesla Substation and together serve power to over half of the electric load in the Tesla 115 kV system. At Vierra Substation, power is converted from 115 kV to 17 kV distribution voltage to serve area customers.

With electric generation and load located on opposite ends of the Tesla 115 kV system, heavy loading on sections of the four power lines between Tesla and Manteca substations could result from overlapping outages on two of the four power lines, known as a P6 planning event. If this were to happen within the existing 115 kV system, the remaining lines may not be able to handle the load.

Since 2007, the Tesla-Salado-Manteca, Tesla-Schulte-Kasson-Manteca, and Tesla-Tracy-Kasson-Vierra-Manteca power lines have experienced sustained outages ranging from an average of 9 hours to 225 hours per outage. During the summer of 2017, one of the power lines, the Tesla-Salado-Manteca 115 kV Power Line, remained out of service from a heavy storm. To mitigate potential overloads for the next outage, PG&E was prepared to initiate rolling blackouts of up to 68 megawatts (MWs) of load. Fortunately, a second overlapping outage did not materialize.

To improve system reliability and increase capacity of the Tesla 115 kV system by approximately 164 MW,[2] PG&E proposes to construct a 1-mile-long, double-circuit power line between the Tesla-Stockton Cogen Junction 115 kV Power Line and Vierra Substation. PG&E determined the increased capacity of 164 MW by performing power flow simulations with pre-project and post-project system models. In each case, limiting facilities were identified for various outages while increasing the area load. The increase in capacity represents the change in system capacity from the pre-project system model to the post-project system model. California Independent System Operator (CAISO) approved this project in its 2010-2011 Transmission Plan and, after reassessment in 2017, reaffirmed the approval in its 2017-2018 Transmission Plan. The new connecting line would provide a shortcut from the generation sources on the existing Tesla-Stockton Cogen Junction 115 kV Power Line through Vierra Substation to the Manteca load centers. It would also add a fifth power line for power to be transmitted from Tesla Substation to the load centers in the east and southeast of the service area. The fifth power line would be known as the Tesla-Vierra 115 kV Power Line and would add capacity to the system and reduce the loading on the existing four

[2] The project is expected to add approximately 164 MW, based on preliminary planning estimates.

transmission paths, which would prevent overloads for any overlapping outages if a P6 event takes two lines out of service (see **Figure 4-3b**).

The project would also upgrade Vierra Substation to a compact breaker-and-a-half (BAAH) bus configuration, where each bay would have two elements (line or transformer connections) connected to three 115 kV circuit breakers. The BAAH upgrade would not only further improve reliability for the three transmission paths connecting through Vierra Substation, it would also facilitate a direct connection to Howland Road Substation, located approximately 0.7-mile north of Vierra Substation.

4.5 Project Components

The project consists of the following components:

- **New Power Line.** An approximately 1-mile-long, double-circuit 115 kV power line would be installed on approximately 16 tubular steel poles (TSPs).
- **Vierra Substation Expansion**. Vierra Substation would be expanded approximately 340 feet to the west. The existing 115 kV equipment would be replaced, upgraded, and reconfigured to accommodate the new 115 kV double-circuit lines. A new microwave tower with an antenna and a dish would be installed.
- **Remote Substation Modifications.** In addition to expanding Vierra Substation, the project would require modifications to Howland Road, Kasson, Manteca, Tracy, Ripon Cogen, and Tesla substations to integrate protection of the new line into the existing system. Telecommunication equipment would be installed at Kasson, Manteca, and Tracy substations, including microwave dishes on new monopoles. Control room equipment would be upgraded at Howland Road, Ripon Cogen, and Tesla substations. An antenna would be installed at Howland Road Substation, along with a new circuit switcher, voltage transformer rated at 12.47/115 kV and 12/16 megavolt amp (MVA), and other minor equipment modifications.
- **Remote Telecommunication Tower Upgrades.** Microwave dishes would be installed on the existing towers within the Mount Oso and Highland Peak microwave stations.

Figures 4-4a through **4-4d** show the alignment of the proposed new power line, the existing power lines to be removed and relocated, and the expanded substation. The location of the pull sites to install the new conductor, staging areas, pole work areas, and conductor guard structure work areas are also shown.

4.5.1 New Power Line

The new power line between Vierra Substation and the existing Tesla-Stockton Cogen Junction 115 kV Power Line would be approximately one-mile-long with two circuits. The new double-circuit power line would split the existing Tesla-Stockton Cogen Junction 115 kV Power Line into the proposed Tesla-Vierra 115 kV Power Line and Vierra-Stockton Cogen Junction 115 kV Power Line. The new segment of the power lines would be supported by approximately 16 galvanized TSPs that range in height from approximately 80 to 90 feet above ground.

Other lines that would be rearranged to connect with the expanded substation are the Vierra-Tracy-Kasson 115 kV Power Line, the Manteca-Vierra 115 kV Power Line, and the Howland Road 115 kV Tap. To enable the Vierra-Tracy-Kasson 115 kV Power Line and the Manteca-Vierra 115 kV Power Line to enter the expanded substation from the west, two double-circuit TSPs on the north side of Vierra Road, west of the substation expansion, would be replaced with one double-circuit TSP.

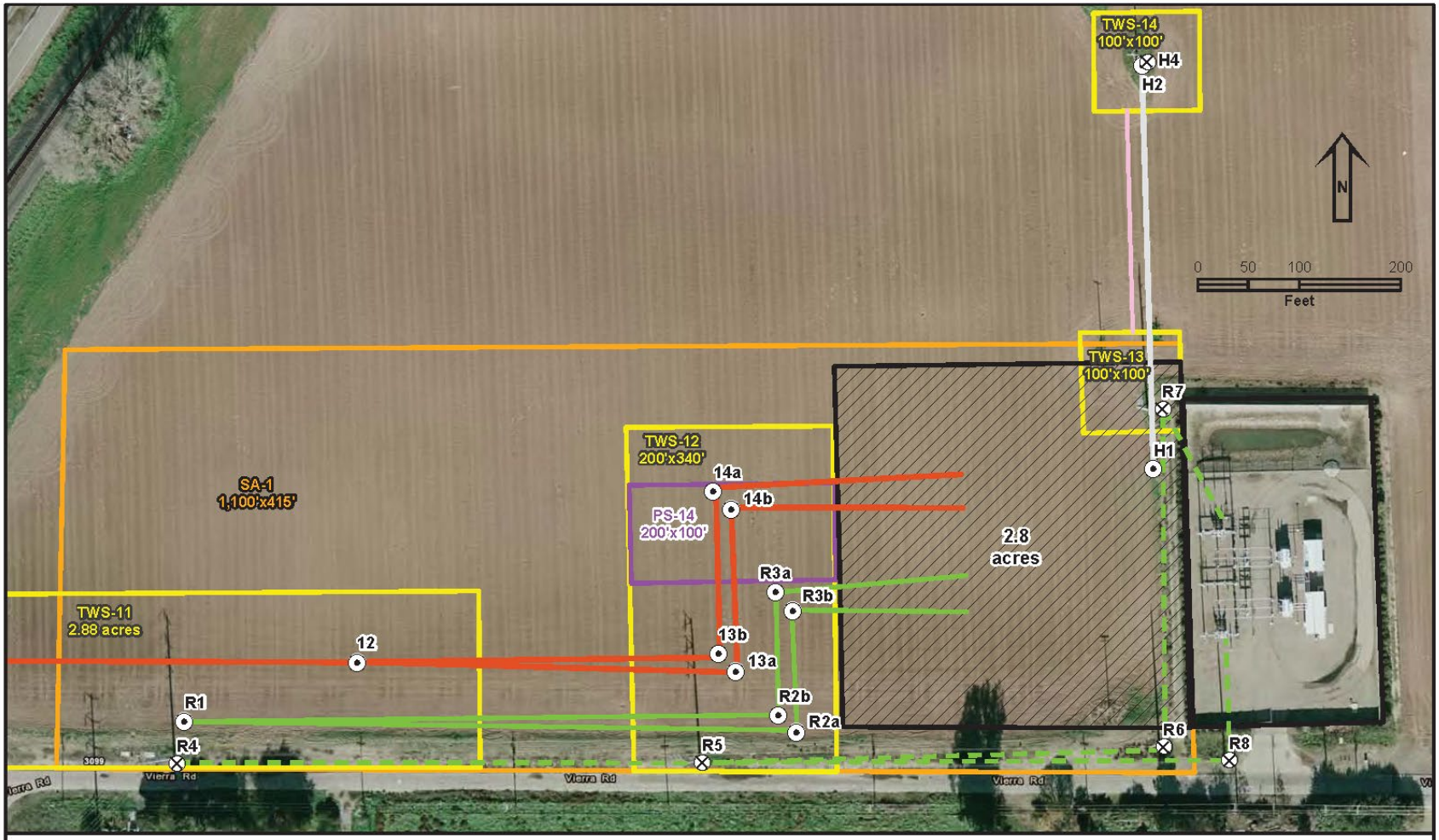

Figure 4-4a
Project Route Map

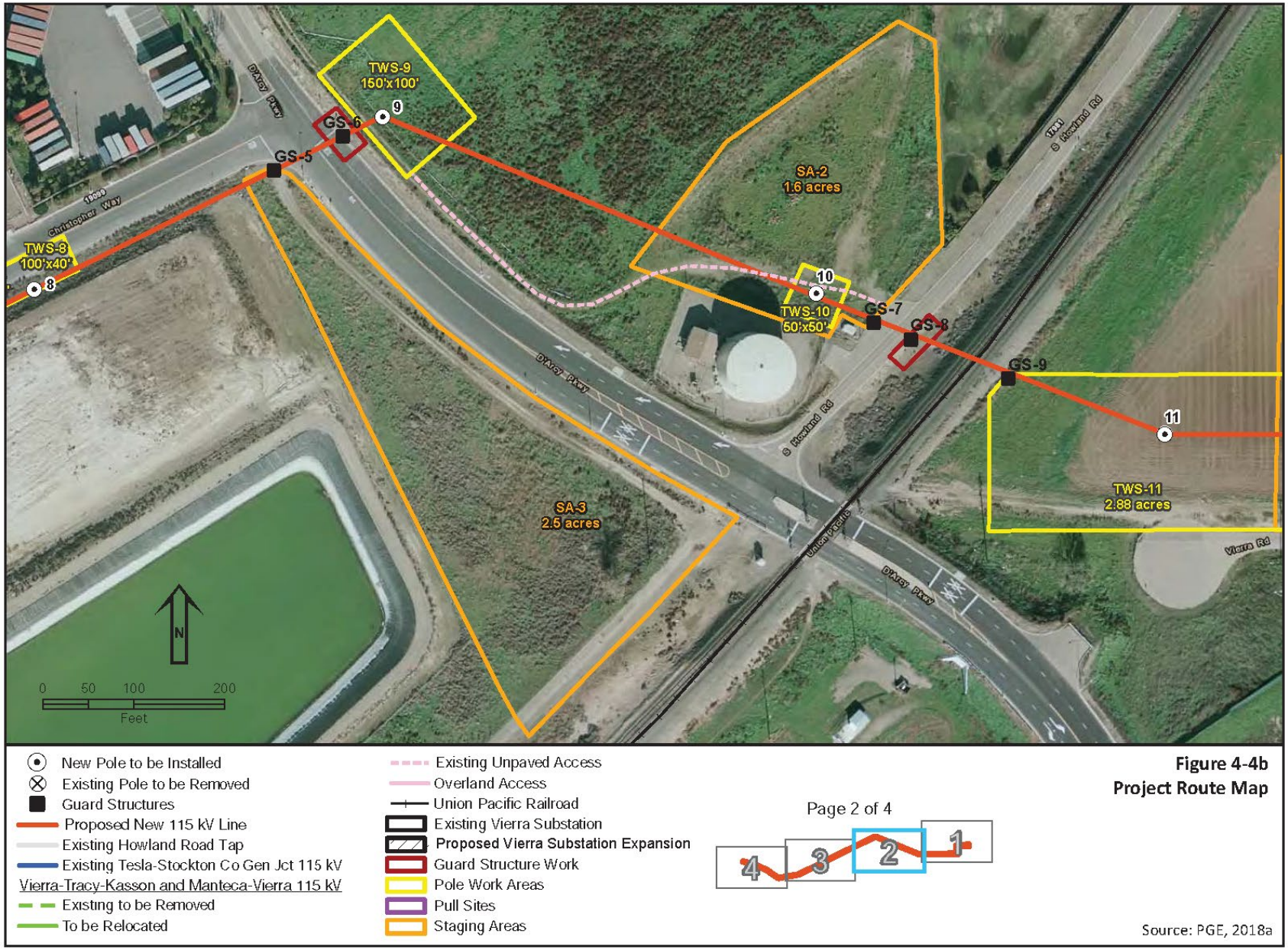

Figure 4-4b
Project Route Map

Figure 4-4c
Project Route Map

Source: PGE, 2018a

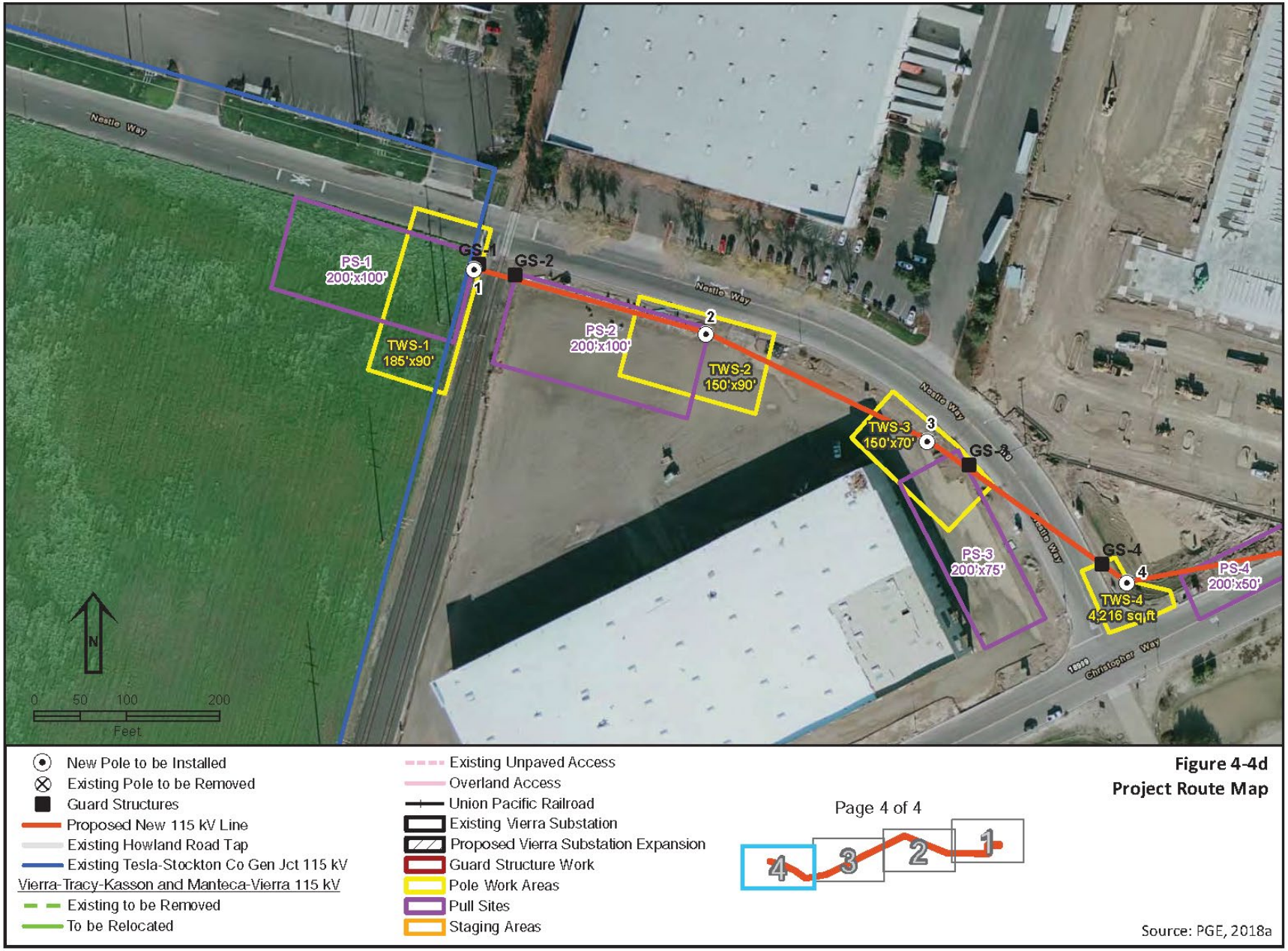

Figure 4-4d
Project Route Map

Also, two single-circuit TSPs at the southwest corner of the existing substation and one single-circuit TSP at the northwest corner of the existing substation would be replaced with four single-circuit TSPs on the west side of the substation expansion. These TSPs would range in height from approximately 75 to 85 feet. The Howland Road 115 kV Tap is a single-circuit line that currently branches off from the Vierra-Tracy-Kasson 115 kV Power Line at the northwest corner of the existing Vierra Substation. As part of the proposed project, the tap line would be disconnected from the power line and connected directly into Vierra Substation. To do this, the southernmost wood pole on the Howland Road 115 kV Tap (approximately 38 feet in height), would be replaced with a light-duty steel pole (LDSP) approximately 57 feet in height, and a new TSP approximately 85 feet in height and 400 feet south of the LDSP would be installed within the eastern portion of the substation expansion.

TSPs would be approximately 2 to 4 feet wide at the base and approximately 10 inches wide at the top. All TSPs would have concrete pier foundations measuring approximately 4 to 6 feet in diameter, 18 to 30 feet deep, and extending 1 to 2 feet above ground. The LDSP would be approximately 2 feet wide at the base and approximately 10 inches wide at the top and would be directly embedded in the ground. The locations of the new and rearranged structures are shown in **Figures 4-4a** through **4-4d**.

Drawings of typical designs for TSPs and an LDSP are provided in **Figure 4-5**. Pole designs would meet raptor safety requirements with 13-foot phase spacing and an 8-foot crossarm to support phase conductors. This design provides a conductor separation distance that meets the specifications in the guidance document entitled "Suggested Practices for Raptor Protection on Power Lines: The State of the Art in 2006," published by the Avian Power Line Interaction Committee.

The proposed conductor for both circuits on the new power line is 715.5 thousand circular mils (kcmil)[3] all-aluminum conductors (AAC) "Violet" double-bundle specular conductor with a summer interior rating of 1262 amperes (amps). It is a "bundled" conductor consisting of two parallel wires approximately 10 inches apart installed on the same cross-arm, creating a single phase. Three phases on three cross-arms make up one circuit. To support the double-circuit lines, three cross arms would be installed on each side of the TSPs. Nine of the TSPs on the new power line would be dead-end structures, while the remaining seven would be tangent or a running angle suspension configuration. For the single-circuit lines on the west side of Vierra Substation, typically two cross-arms would be installed on one side of the TSPs and one on the other side.

On the rearranged Vierra-Tracy-Kasson 115 kV Power Line, the Manteca-Vierra 115 kV Power Line, and the Howland Road 115 kV Tap, the relocated conductor would be 477 kcmil steel supported aluminum conductor (ACSS) "Flicker," and the conductor on the Howland Road 115 kV Tap between the new TSP and Vierra Substation would be 715.5 kcmil AAC "Violet." Toughened glass or ceramic insulators would be used on all poles except the TSP connecting to the Tesla-Stockton Cogen Junction 115 kV Power Line, and the new TSP and LDSP being installed on Howland Road 115 kV Tap, which would have non-ceramic, polymer insulators with silicone rubber sheds.

[3] A mil is 1/1000 inch. Kcmil is one thousand circular mil. A unit of the conductor's cross-sectional area divided by 1,273 to obtain the area in square inches.

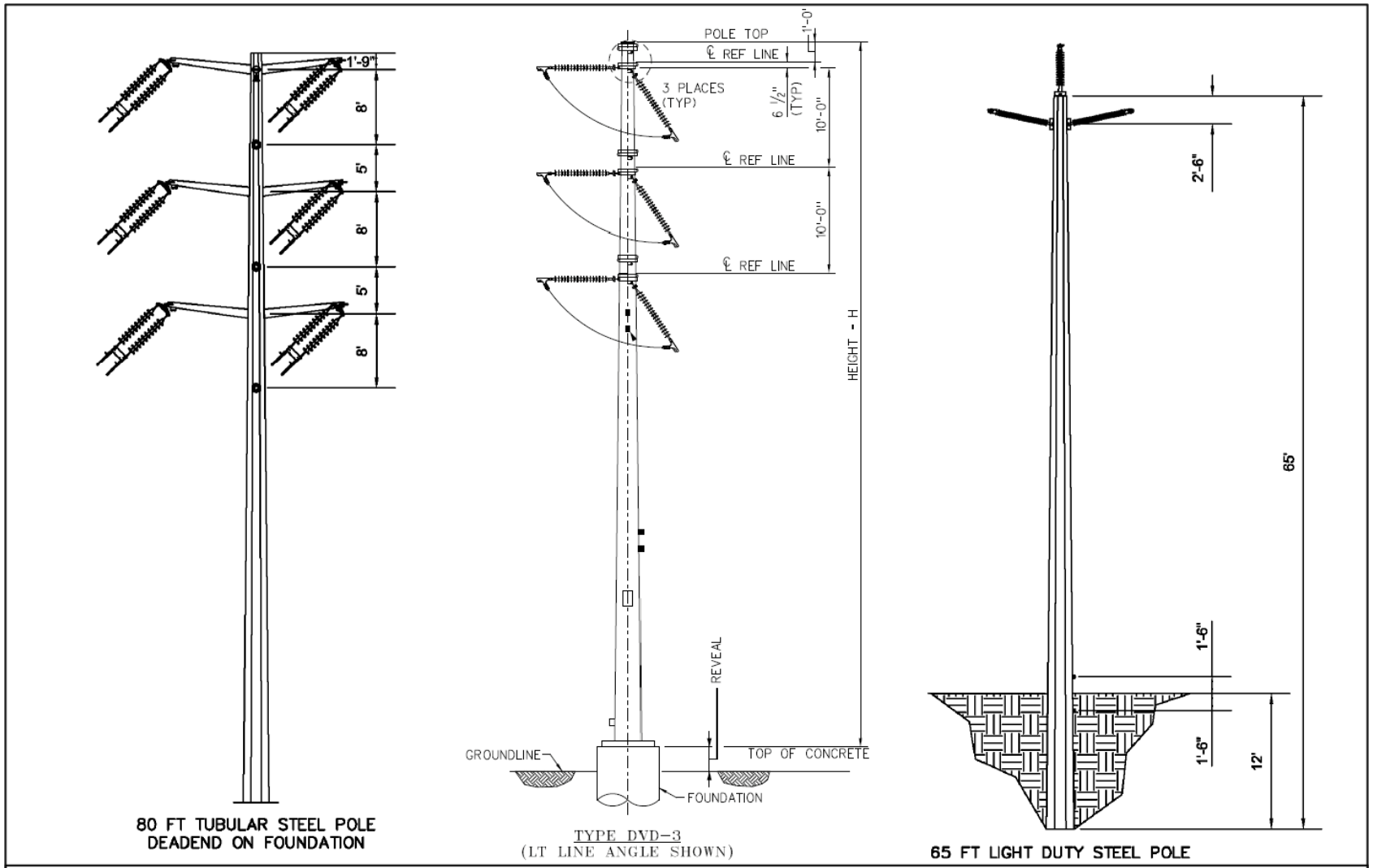

Figure 4-5
Typical TSPs and LDSP

Sources: PGE, 2018a; 2018f

When the TSPs are rearranged to connect with the expanded substation (those on the north side of Vierra Road supporting the Vierra-Tracy-Kasson 115 kV and Manteca-Vierra 115 kV power lines), the line would be reconductored. There would be no change in conductor capacity. The span between the TSP and station dead end along the Howland Road 115 kV Tap on the north side of the Vierra Substation would also be reconductored. There would be no change in conductor capacity.

The new conductor would be installed a minimum of 39 feet above the ground in accordance with PG&E standards, which exceed the California Public Utilities Commission (CPUC) General Order (GO) 95 minimum clearance of 30 feet. The 115 kV bundled conductor phases would have a minimum radial separation distance of 8.5 feet. The span lengths between poles would be approximately 400 feet, with the longest span being approximately 520 feet between the two poles on the east side of D'Arcy Parkway, north of South Howland Road.

4.5.2 Vierra Substation Expansion

To accommodate the Vierra Substation expansion and future improvements to Vierra Road, three existing TSPs supporting both the Vierra-Tracy-Kasson 115 kV Power Line and the Manteca-Vierra 115 kV Power Line would be relocated, two TSPs would be installed, and two TSPs would be removed. Additionally, a minimum of one wood pole would be removed and one new single-circuit TSP and one new single-circuit LDSP would be installed to re-route the Howland Road 115 kV Tap to its new termination bay within the expanded substation. A total of six poles supporting the lines that would be relocated would be removed and be replaced with seven poles to support the relocated lines. Existing and proposed plans and profiles for Vierra Substation are provided in **Figures 4-6** and **4-7**. More information on the appearance of the expanded substation, including visual simulations of the project, is provided in Section 5.1, *Aesthetics*.

New equipment proposed to be installed at the substation consists of:

- a four-bay, compact BAAH bus arrangement;
- eleven 115 kV sulfur hexafluoride (SF_6) circuit breakers;
- 24 center break disconnect switches;
- 7 vertical break disconnect switches;
- 19 coupling-capacitor voltage (CCVT) 115 kV transformers;
- a 115 kV station service transformer 100 kV ampere (kVA);
- associated support structures;
- Modular Protection, Automation, and Control (MPAC) building;
- battery building (provides backup power in the event of an outage at the Vierra Substation); and,
- a new 120-foot microwave tower with one six-foot diameter microwave dish and a 3-foot long antenna.

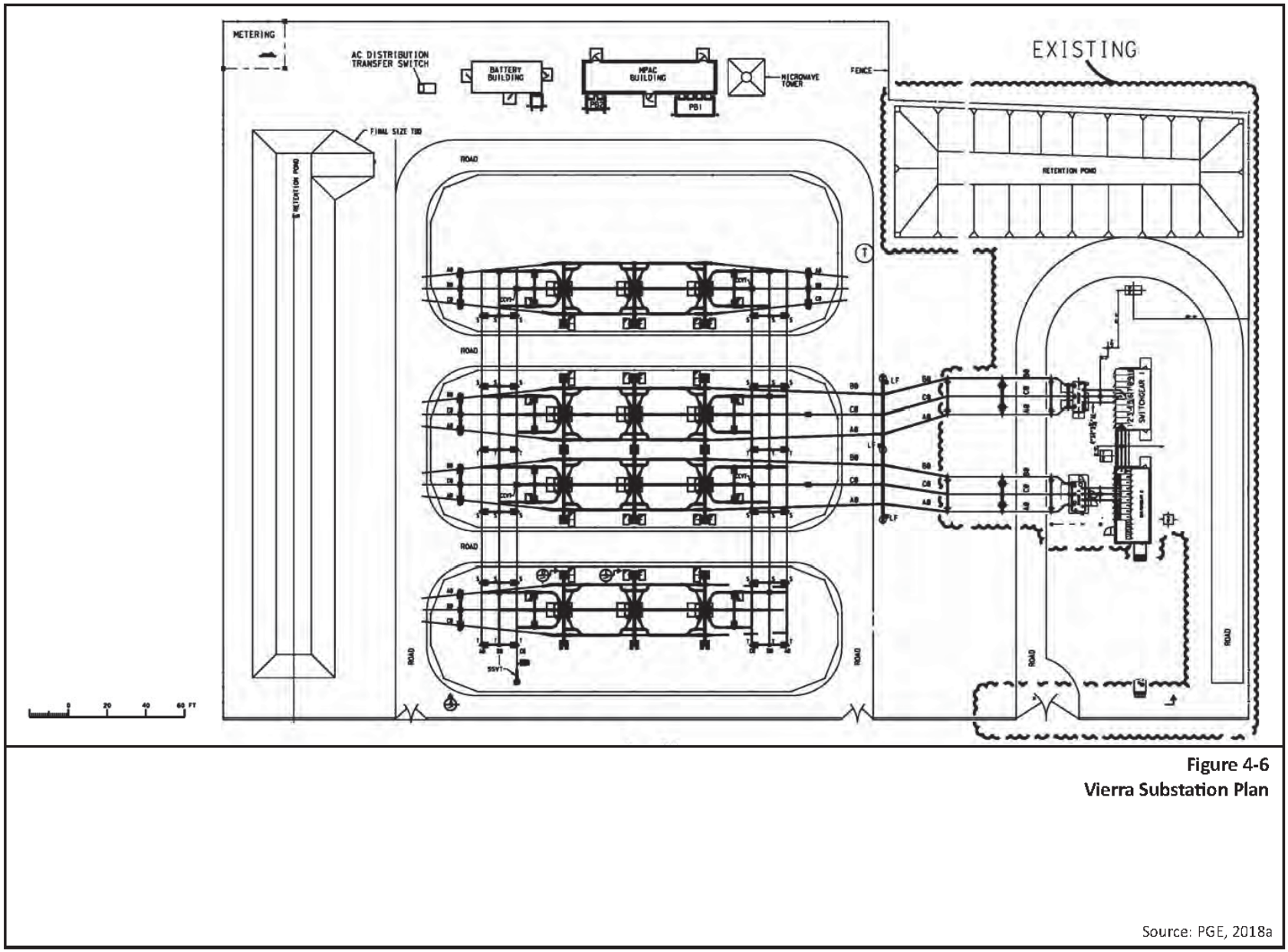

Figure 4-6
Vierra Substation Plan

Source: PGE, 2018a

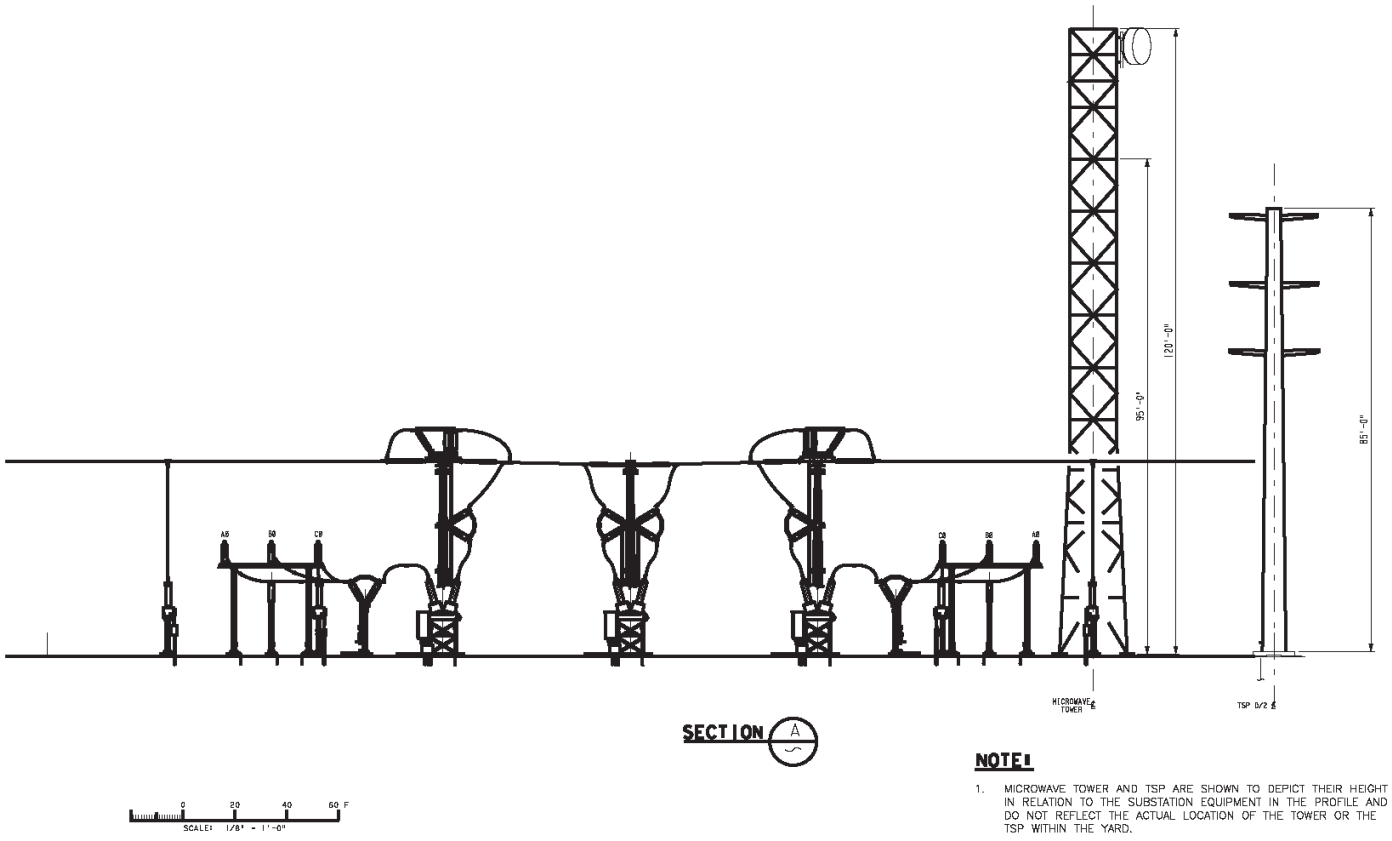

Figure 4-7
Vierra Substation Profile

Source: PGE, 2019a

Equipment to be removed consists of:

- two 115 kV circuit breakers;
- six 115 kV CCVT transformers;
- 3 disconnect switches;
- 2 bypass switches;
- 2 circuit switchers;
- associated structures; and
- string bus.

The Vierra Substation expansion includes space for a third transformer and two additional 115 kV line positions, consistent with PG&E standard practice, although there are currently no plans for these facilities. The need to use these two vacant positions has not been identified within the latest power flow forecast period for the project, and PG&E is not planning to fill the vacant positions for at least 10 years; therefore, use of these two vacant positions is currently not considered to be reasonably foreseeable (PGE, 2019a).[4] A stormwater retention pond would be constructed within the expanded substation, measuring approximately 300 feet long by 40 feet wide and 3 feet deep.

The project would also improve reliability by upgrading the substation to a compact BAAH bus configuration, where each bay would have two elements (line or transformer connections) connected to three 115 kV circuit breakers. Using this configuration, only two breakers per BAAH bay are used at one time, allowing one breaker to be taken out of service without taking either of the two lines out of service. The special compact BAAH configuration would have a smaller footprint than either a standard BAAH or Ring Bus configuration.

PG&E would acquire approximately 3.4 acres for the expansion of Vierra Substation, increasing the substation from 1.6 acres to a total of 5.0 acres to accommodate the new power line and substation modifications. The expansion would extend approximately 340 feet west of the existing substation, and approximately 33 feet further back from Vierra Road than the existing substation. Substation modifications include converting the 115 kV bus into a four-bay compact BAAH bus arrangement and installing the MPAC and battery buildings and a microwave communication tower.

All new Vierra Substation equipment would be adequate to support the new 115 kV line requirements. Existing substation structures are a maximum of approximately 40 feet tall. Replacement dead-end structures would be approximately 2 to 4 feet wide at the base and approximately 42 feet tall. The prefabricated MPAC building would be approximately 64 feet long, 15 feet wide, and 11 feet tall, and be covered in steel sheeting with a sloped roof. The battery building would measure approximately 34 feet long, 15 feet wide, and 11 feet tall. The battery building at the substation would provide backup power for the substation facilities during a power outage (e.g. to switchgear), and also provide power to communication and control equipment. The battery building would not contribute power to the electrical grid or contribute to the 164 MW increase in capacity of the electrical grid.

[4] The CPUC does not consider the use of the vacant positions to be reasonably foreseeable because it would occur beyond the 10-year forecast period for the Project when variables that contribute to growth in the service area, such as specific development projects and local economic conditions, cannot be estimated and are considered speculative.

Construction and operations power would be provided from the existing station service transformers within the substation. Portable generators may also be used during construction. The expanded substation would have a precast concrete wall along the south side facing Vierra Road, consistent with the existing substation wall, and 9-foot-tall chain link fencing consisting of an 8-foot-tall chain link fence topped with 1 foot of barbed wire on the remaining sides. The lighting at the substation would consist of non-glare fixtures located and designed to avoid casting light or glare toward off-site locations. The expanded substation would be unstaffed, with automated features and remote-control capabilities.

The microwave tower at the Vierra Substation would be approximately 15 feet wide at the base, approximately 9 feet wide at the top, and approximately 120 feet tall. A 3-foot tall antenna and 6-foot wide microwave dish would be installed on the tower. The microwave tower would have a slab foundation measuring approximately 25 feet by 25 feet and extend approximately 4 feet to 6 feet below ground and 6 inches above ground.

4.5.3 Remote Substation Modifications

Upgrades to telecommunications at remote substations would be required to support the Vierra Substation expansion. The upgrades would be conducted within the fence line of the substation and require construction personnel to enter each substation to modify existing protective telecommunications equipment to integrate protection of the new line into the existing system. Telecommunication upgrades at the Kasson, Manteca, and Tracy substations would include a monopole with a microwave dish. At Howland Road Substation, an antenna, up to 6 feet in length, would be added to a pole installed previously, and other modifications would be made to protect the new line. Telecommunication upgrades at the Ripon Cogen and Tesla substations would be within the control room. No ground-disturbing activity is expected at the Ripon Cogen or Tesla substations. The modifications to be performed at each substation include:

- Howland Road Substation: Install new antenna, circuit switcher (to replace 115 kV fuses), voltage transformer, and 228-foot-long conduit duct bank; update automation equipment in the control room;
- Kasson Substation: Upgrade/Replace line relay by building a 60-foot communications tower (ground disturbance) and affixing one, six-foot diameter microwave dish on the new tower;
- Manteca Substation: Upgrade/Replace line relay by building a 60-foot communications tower (ground disturbance) and affixing two, six-foot diameter microwave dishes on the new tower;
- Tracy Substation: Upgrade/Replace line relay by building a 60-foot communications tower (ground disturbance) and affixing two, six-foot diameter microwave dishes on the new tower;
- Ripon Cogen Substation: Update automation equipment in the control room; and,
- Tesla Substation: Update automation equipment in the control room.

See **Figure 4-8** for a close-up view of the remote substations where upgrades would occur (as discussed below). A close up view of the Vierra Substation is also provided.

The monopole foundations would have a slab foundation measuring approximately 11 by 11 feet and extend approximately 4 feet below ground and 18 inches above ground. Minor trenching within the substation yards would be required at each microwave structure. Drawings of the design for microwave structures are provided in **Figure 4-9**.

Figure 4-8
Close-Up View of the Location of Remote Substations

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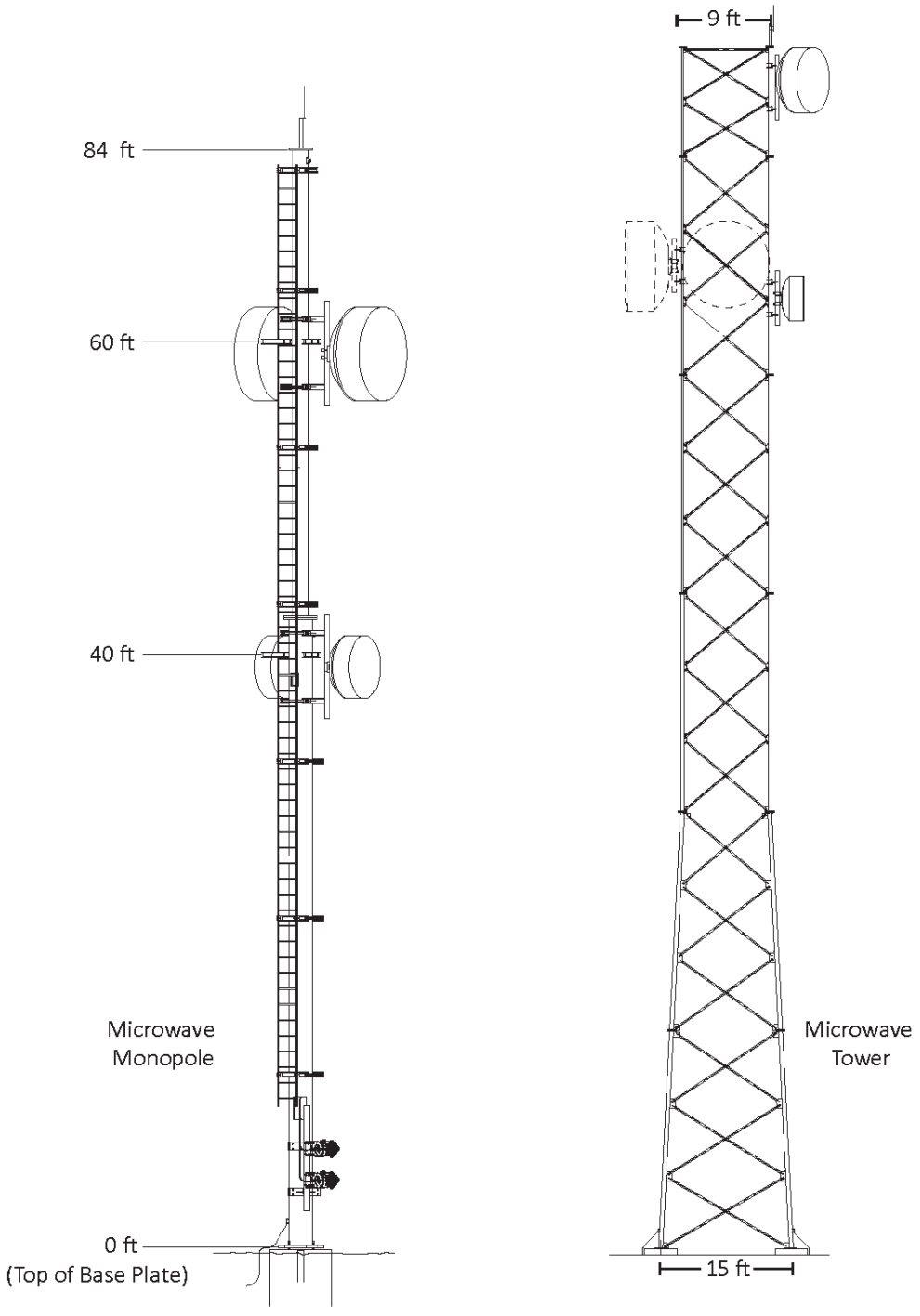

Figure 4-9
Typical Microwave Structures

Sources: PGE, 2018a

The modifications at Howland Road Substation include installation of a new circuit switcher and a new voltage transformer; removal of three 115 kV fuses; installation of a new conduit duct bank between the new circuit switcher and the existing control building; installation of one up-to-six-foot antenna on an existing pole; and an update to protection and automation equipment in the control room. The voltage transformer would be rated at 12.47/115 kV and 12/16 MVA.

The new circuit switcher would have a three-pier foundation where each pier is approximately 12 feet deep by 4 feet diameter. The new voltage transformer would have a single-pier foundation, approximately 9 feet deep by 2 feet diameter. Trenching for the new conduit duct bank would be 228 feet long by 5 feet wide by 5 feet deep.

4.5.4 Remote Telecommunication Tower Upgrades

New microwave radio paths up to the Mount Oso and to Highland Peak microwave stations would be installed in order to connect existing microwave radio paths to the other PG&E substation locations. Three, 6-foot-diameter microwave dishes would be added to the existing telecommunication tower at the Mount Oso microwave station and one, 6-foot-diameter microwave dish would be added to the existing telecommunications tower at the Highland Peak microwave station.

The Mount Oso tower is owned by PG&E and located in northwestern Stanislaus County, approximately 6 miles northwest of the intersection of Del Puerto Canyon Road and Mount Oso Road, off Mount Oso Road. The Highland Peak tower is owned by Contra Costa County and located in southern Contra Costa County, approximately 4.5 miles north-northwest of the intersection of Morgan Territory Road and Manning Road, along a private road. See **Figure 4-10** for close-up views of the microwave station locations. All work would occur within the existing fence line surrounding the existing towers. Both towers would be accessed by existing roads.

4.6 Project Construction

4.6.1 Construction Methods

Power Line Construction

To install the poles, work would begin by excavating a hole for each pole. For new TSPs, the holes would measure approximately 4 to 6 feet in diameter and 18 to 30 feet deep. Holes for TSPs would be drilled and excavated using a line truck mounted with an auger. The line truck would set up adjacent to the existing pole. Excavated soils would either be spread around the new pole site using a backhoe or loaded into a dump truck to be disposed of off-site. If soils to be removed during site grading or excavation are suspected of being contaminated (on the basis of visual, olfactory, or other evidence), the excavated soil would be tested, and if necessary, disposed of at a licensed waste disposal facility (see APM HM-4 in Section 4.9, *Applicant Proposed Measures*). Measurements associated with pole installation are summarized in **Table 4-1**.

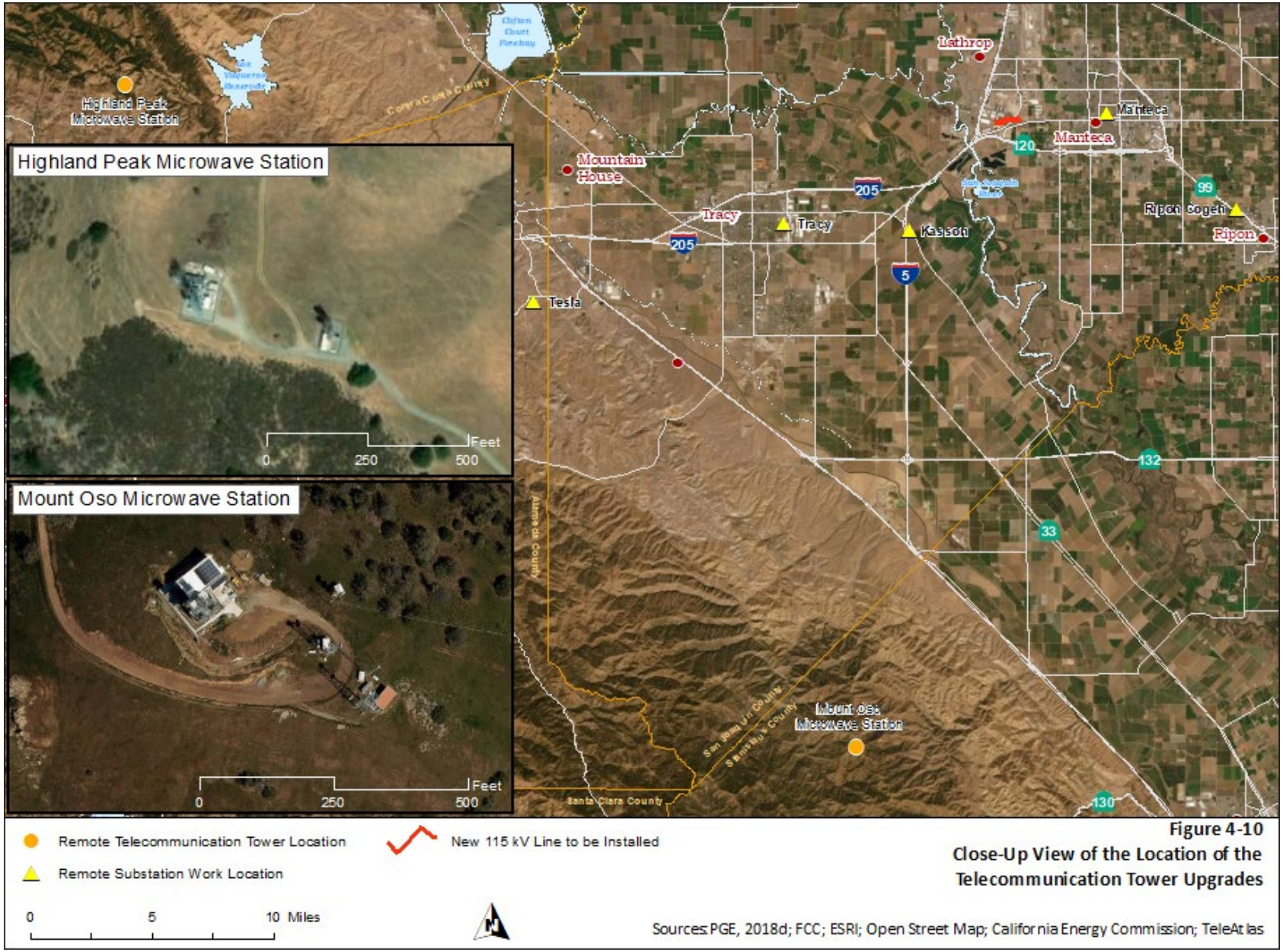

Figure 4-10
Close-Up View of the Location of the Telecommunication Tower Upgrades

TABLE 4-1 SUMMARY OF POLE INSTALLATION METRICS

Pole Type	Diameter (inches)	Hole Depth (feet)	Average Work Area (acres)	Number	Permanent Footprint per Pole (sq. feet)
TSP	24 to 72 at base; 10 at top	18 to 30	0.17	19 (install)	3 to 28
TSP	24 to 48 at base; 10 at top	18 to 30	0.17	3 (relocate)	3 to 13
TSP	-	-	0.17	2 (remove)	-
LDSP	24 at base; 10 at top	14	0.23	1 (install)	3
Wood	-	-	0.23	1 (remove)	-
				Total Permanent Footprint for Poles (acres):	0.01

Source: PGE, 2018a.

Following excavation, new poles and hardware would be delivered to the pole work areas. A rigging truck would be used to deliver the TSPs. Poles typically would be delivered the same day they are to be installed, unless there is a location to place the pole within the work area that does not obstruct vehicle or pedestrian traffic. Poles, insulators, and hardware would be assembled in the pole work area. A line truck would be used to place foundation forms, anchor bolts, and rebar, and a concrete truck and concrete pump would be used to deliver and pour concrete for the foundation form. Once the concrete has cured, the forms would be removed and native soil placed around the base. A crane would then be used to install the new TSP on the foundation.

The location of the pole to be installed on the east side of D'Arcy Parkway near the intersection of Christopher Way is within a percolation basin associated with the City of Lathrop's recycled water system. The location was determined in coordination with the Engineering Department of the City of Lathrop, and it was agreed that the pole should be installed immediately adjacent to the side of the basin through the placement of fill, and not on the access road surrounding the basin. Approximately 100 cubic yards of soil would be imported and compacted against the side of the basin, filling an area extending approximately 20 feet out from the corner of the basin and approximately 3 feet deep, within which the foundation for the pole would be installed. Although not currently proposed, the City of Lathrop may request that a reinforced 40-mil high density polyethylene pond liner, consistent with the existing pond design and best practicable treatment and control measures, be installed on the surface of the fill.

The existing poles that would be removed as part of the relocation of the Vierra-Tracy-Kasson 115 kV Power Line, the Manteca-Vierra 115 kV Power Line, and the Howland Road 115 kV Tap, would be removed using a backhoe and crane or similar equipment. The poles would be lowered to the ground and then transported by truck to a recycling facility. Existing foundations for the TSPs would be removed by jackhammers to approximately 3 feet below ground surface, and filled in with the soils excavated from the new foundation locations.

One small helicopter would be used to install stringing rollers on the cross-arms at each pole where conductor is being installed, and to place a pulling line between each TSP. When the pulling line is in place for the length of the pull, it would be connected to the new conductor. The new conductor would be on a reel tensioner, typically located on a line truck or semi-truck trailer in an established project pull site. The pulling line would then pull back the new conductor. Tension would be maintained between the tensioner and puller to keep the new conductor properly elevated and away from obstacles. The conductor would then be sagged and clipped into the new insulators, and the stringing rollers removed using aerial lift equipment. The power line would be sagged to a minimum height of 30 feet above the

ground surface, with the exception of the residential land use area along Vierra Road, which PG&E would raise the minimum conductor height to 40 feet (30-foot minimum clearance plus 10 feet) pursuant to the Preliminary Transmission Electric and Magnetic Field Management Plan prepared for the project (see Section 4.10, *Electric and Magnetic Fields Summary*).

Vierra Substation Expansion

Surveyors would establish grading limits and set grade stakes for the expanded Vierra Substation pad. PG&E would begin site preparation for the substation expansion by relocating three distribution poles on the west side of the existing substation to a new alignment outside of or within the substation expansion area. The existing poles supporting the Vierra-Tracy-Kasson 115 kV Power Line and Manteca-Vierra 115 kV Power Line along Vierra Road would also be relocated onto temporary (shoofly) poles within the work area west of the substation expansion (for more information about shoofly poles, refer to Section 4.6.3, *Temporary Structures*). The existing Howland Road 115 kV Tap would be re-routed to a new termination bay within the expanded substation. Any crop present at the time of construction would be cleared, and any other organic material would be removed. This material would be stockpiled within the work area, and eventually hauled to a PG&E-approved disposal facility. The rough grade would be established by importing fill to closely match the elevation of the existing substation, and engineered fill would be spread and compacted on the pad surface. It is anticipated that approximately 10,000 cubic yards of fill would need to be imported to the site, which would require 400 round trips by large 25-cubic yard-capacity haul trucks (PGE, 2019b). The PG&E specification for the composition of fill for the substation expansion requires that the fill material, whether native soil or engineered fill, be free of vegetation, deleterious substances, and rock or lumps over 3 inches in diameter, and contain no material subject to excessive swelling or shrinkage. All import fill material is subject to acceptance by PG&E prior to its use for filling and backfilling. PG&E would acquire the fill from a source available at that time of construction. PG&E generally attempts to find fill in close proximity to the work site, and anticipates the source would likely be within a 10-mile radius of the project location (PGE, 2018b).

For the proposed 120-foot microwave tower in the expanded Vierra Substation, a 25-foot by 25-foot hole, approximately 4 to 6 feet deep, would be excavated for setting a concrete slab foundation that would have an aboveground height of approximately 6 inches. A 6-foot diameter dish and 3-foot long antenna would be installed on the tower. The microwave tower would be located at the northeast corner of the expansion area. Due to the presence of a eucalyptus tree, the tower would need to be 120-feet in height; however, if the property owner agrees that the tree can be trimmed or removed, the microwave tower could be reduced to approximately 100 feet. Refer to **Figures 4-7** and **4-8** for drawings of the tower. The excavated soils would be removed with a backhoe and loaded into a dump truck at each structure location. Per the requirements of APM HM-4 (see Section 4.9, *Applicant Proposed Measures*), if soils to be removed during excavation are suspected of being contaminated (on the basis of visual, olfactory, or other evidence), the excavated soil would be tested, and if necessary, disposed of at a licensed waste facility.

A rigging truck would be used to deliver the tower to be installed, and the tower would be assembled at pole temporary work site 13 (TWS-13). A line truck would be used to place foundation forms, anchor bolts, and rebar. A cement truck would be used to deliver and pour concrete for the foundation form. Once the concrete has set, the form would be removed and gravel placed around the base. A crane would then be used to install the new structures on the foundation. The microwave dish and antenna would be installed on the completed tower.

Peak construction traffic would occur for approximately 1 week during substation construction when 20 trucks per day would be required to import the 10,000 cubic yards of fill needed for the expansion (assuming one belly truck would hold 25 cubic yards of fill) (PGE, 2019c). Rough grading would be followed by installation of a 9-foot-tall security fence, excavation and instillation of the subsurface ground grid, forming and pouring concrete footings and foundations for all the aboveground structures, and installation of aboveground steel structures, switches, MPAC building, battery building, retention pond, and other electrical equipment associated with the expansion. A final layer of aggregate would be spread on all unpaved areas in the expanded substation. Paved roads would be constructed within the expanded substation to provide access to substation equipment and tie into the asphalt roadways within the existing substation.

Remote Substation Modifications

For the approximate 60-foot monopoles at Kasson, Manteca, and Tracy substations, an 11-foot by 11-foot hole, approximately 4 feet deep, would be excavated for setting a concrete slab foundation that would have an aboveground height of approximately 18 inches. As described for the substation expansion project component, like the microwave tower, a rigging truck, line truck, and crane would be used to install the monopoles. Approximately 18 cubic yards of soil would be excavated at each of the three substations, and after testing, would be disposed of at the appropriate location. This would require one truck trip (roundtrip) for each of the three substations (PGE, 2019b).

The new direct connection integration at Howland Road Substation would require a new 228-foot-long by 5-foot-wide by 5-foot-deep conduit trench, three approximately 12-foot-deep by 4-foot wide piers for the circuit switcher foundation, and a new voltage transformer with one pier 9-foot-deep by 2-foot-diameter foundation (PGE, 2019d). Approximately 1,020 cubic yards of cut and fill material would be hauled to/from Howland Road Substation requiring 41 truck round trips (PGE, 2019b). **Table 4-2** presents the details for Howland Road Substation materials hauling.

TABLE 4-2 HOWLAND ROAD SUBSTATION MATERIALS HAULING SUMMARY

Construction Activity	Volume of Export	Volume of Import	Total Volume Hauled
Trenching	556 cy[1]	444 cubic y[2]	1,000 cy
Equipment Foundations	18.5 cy	0 cy	18.5 cy
		Grand Total	1,018.5 cy
		Rounded Total	1,020 cy
		Haul Truck Capacity	25 cy
		Total Haul Trips Required	41 round trips

[1] Volume of export for trenching is a conservative estimate and project analysis in this document is based on this conservative estimate. Based on the volume of the trench, volume of export could range from 211 to 556 cubic yards.
[2] Volume of import for trenching is a conservative estimate and project analysis in this document is based on this conservative estimate. Based on the volume of the trench, volume of import could be less than 211 cubic yards.
Sources: PGE, 2019b; 2019e; 2019f.

Figure 4-11a presents the proposed location of the monopoles at each of the remote substation sites and **Figure 4-11b** presents the location of the proposed modifications at the Howland Road Substation.

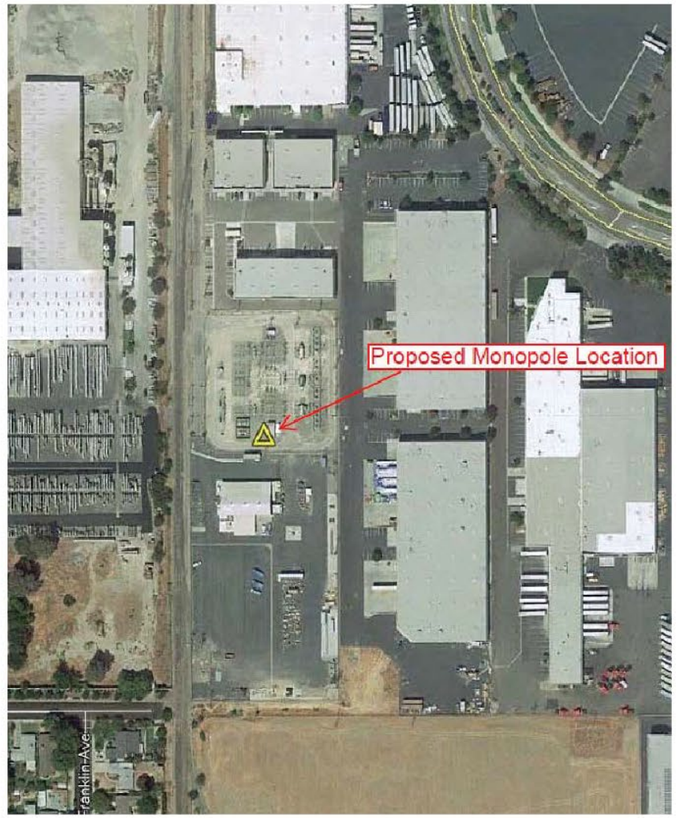

Figure 4-11a
Proposed Locations of Microwave Monopoles
(Approximate, Preliminary, and Subject to Change)

Source: PGE, 2019h

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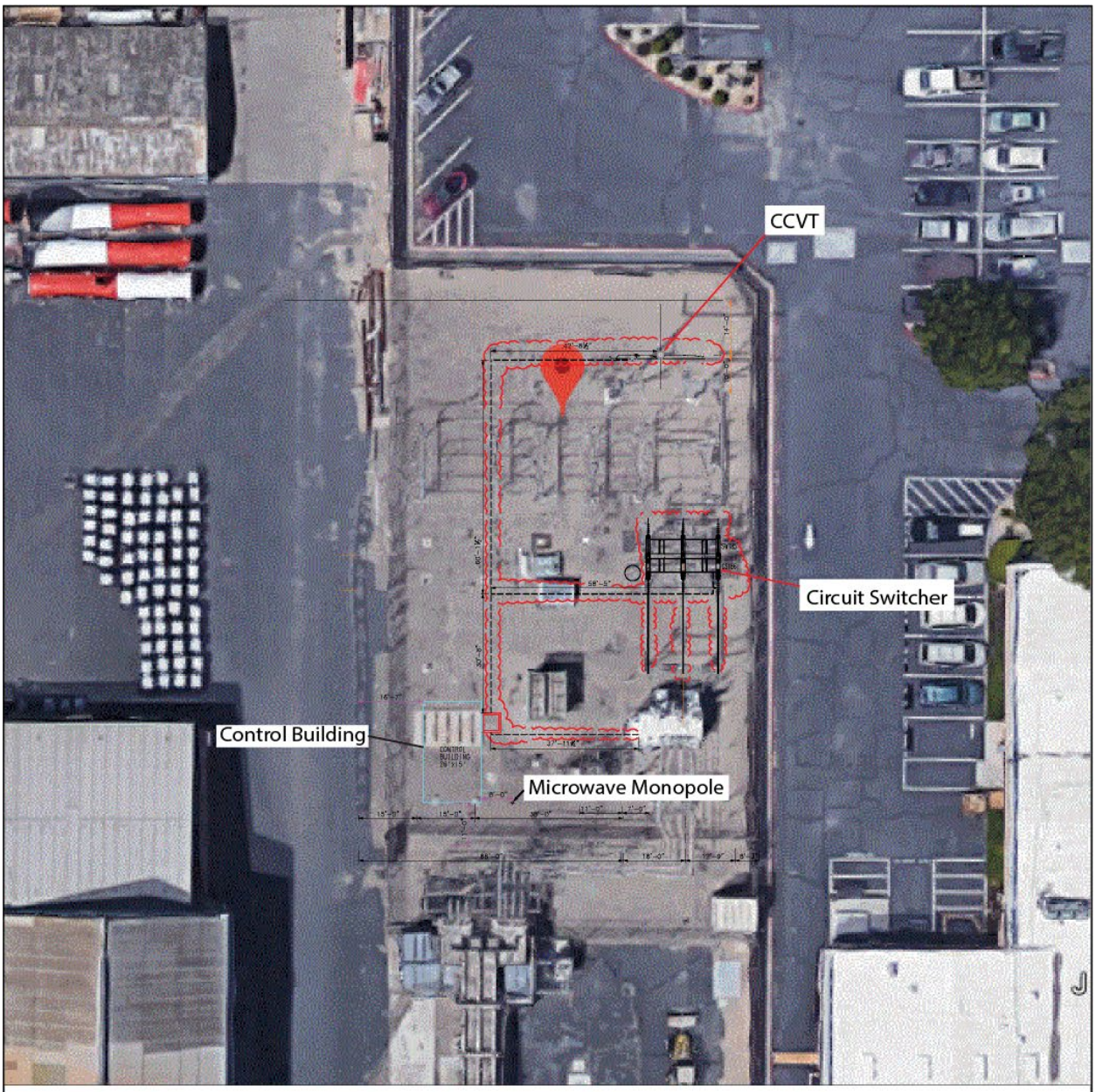


Howland Road Susbstation
Location of Proposed Modifications
- - - Trenching for ductbank

Figure 4-11b
Proposed Location of Modifications at the Howland Road Substation

Notes:
1. Foundations not shown. Located directly beneath equipment.
2. Ductbank lengths are as follows:
   - Transformer I to Control Building Pullbox ------ 37′- 11 3/4″
   - Circuit Swithcher to Control Building Pullbox - 88′- 1″
   - CCVT to Control Building Pullbox ----------102′- 10″
3. Control building and microwave monopole to be installed by another project prior to construction of the Vierra Reinforcement Project.

Source: PGE, 2019d

Remote Telecommunication Tower Upgrades

The microwave dishes that would be installed (co-located) on existing telecommunication towers at Mount Oso and Highland Peak microwave stations would require construction personnel to climb the existing towers and install three, 6-foot diameter microwave dishes on the Mount Oso tower and one, 6-foot diameter microwave dish on the Highland Peak tower. No ground disturbance would be required for these microwave dish installations.

4.6.2 Right-of-Way Requirements

New Power Line and Vierra Substation Expansion

PG&E has existing land rights along portions of the project area, which include fee-owned lands for the Vierra Substation and franchise rights for the existing power line facility installed along Vierra Road, in addition to an existing overhang easement on the north side of Vierra Road. Additional easements, measuring approximately 30 to 100 feet wide and 3,900 feet in total length, would be required for the new power line facilities (see **Figure 4-12**). Along the north side of Vierra Road, the new easement would be approximately 100 feet wide to accommodate the new line and move the existing power line out of the road franchise. Along Christopher Way and Nestle Way, the majority of new power line facilities, including all structures, would be installed within easements of varying widths to be acquired by PG&E, and the remainder would overhang the road franchise. PG&E's land rights include ingress and egress to the power lines for vegetation removal, pole installation, maintenance, and reconstruction.

While no land rights are needed where the new power line would cross the Union Pacific railroad and private spur line (see **Figures 4-4b** and **4-4d**), Union Pacific has right-of-way requirements necessary for the safe operation of its railroad signal equipment. For more details about Union Pacific's requirements for new transmission lines in proximity to its railroad right-of-way, see Section 5.17, *Transportation*.

Land right determinations are generally made after CPUC approval of a project, as they are not part of the regulatory proceeding in which the CPUC considers whether to grant or deny an application for a Permit to Construct (PTC). Any land rights issues for the project would be resolved in subsequent negotiations and/or condemnation proceedings in the proper jurisdiction, following the issuance of a decision by the CPUC on PG&E's PTC application.

Remote Substation Modifications and Remote Telecommunication Tower Upgrades

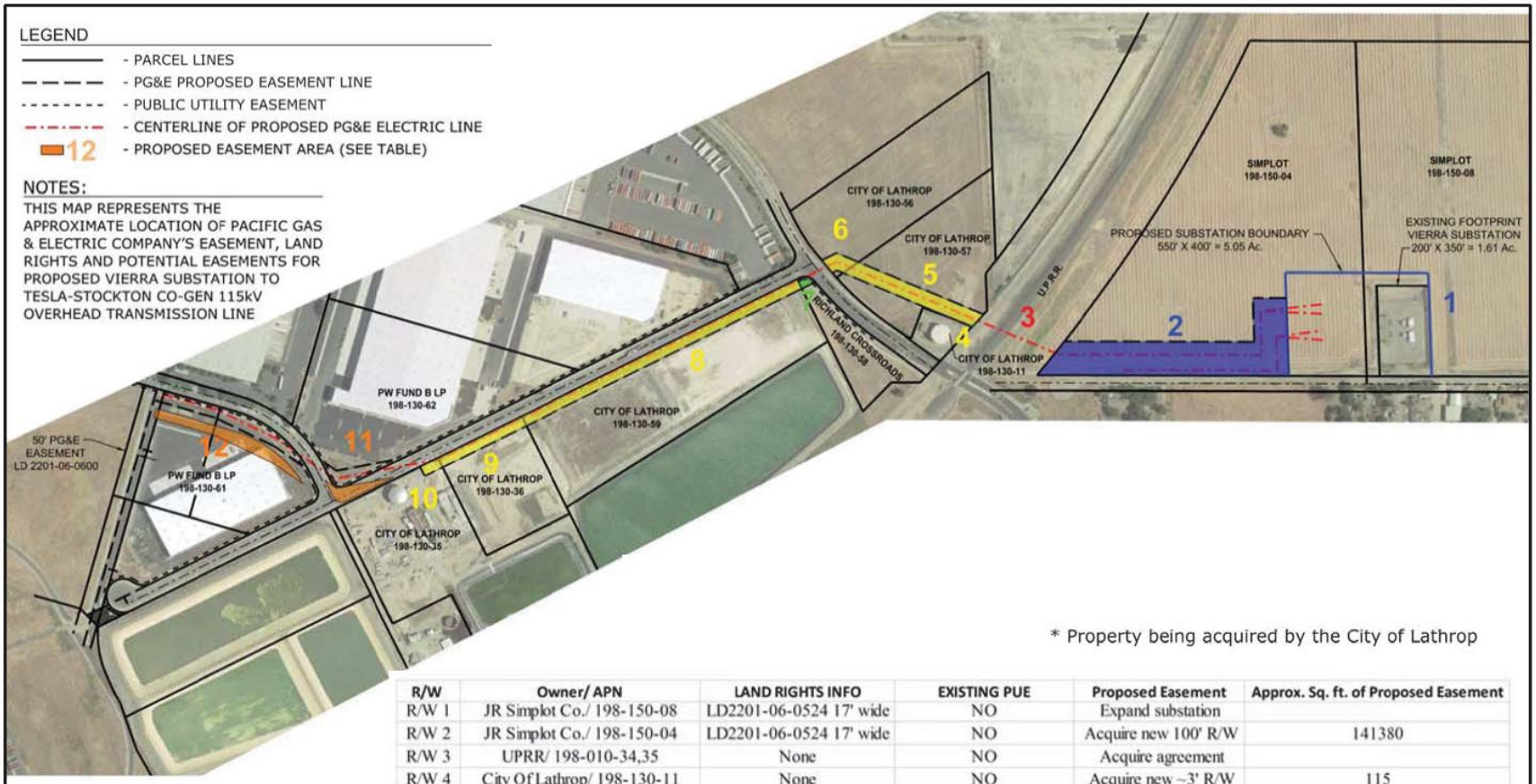
No land rights would need to be acquired for these project components.

4.6.3 Temporary Structures

New Power Line and Vierra Substation Expansion

Shoofly Poles

To accommodate the substation expansion and future improvements to Vierra Road, two existing TSPs that support both the Vierra-Tracy-Kasson 115 kV Power Line and the Manteca-Vierra 115 kV Power Line would be relocated, three other TSPs would be installed, and two existing TSPs would be removed. Approximately four temporary shoo-fly structures would be installed to support the relocation of these lines. **Figure 4-13** shows a drawing of typical shoo-fly structure.

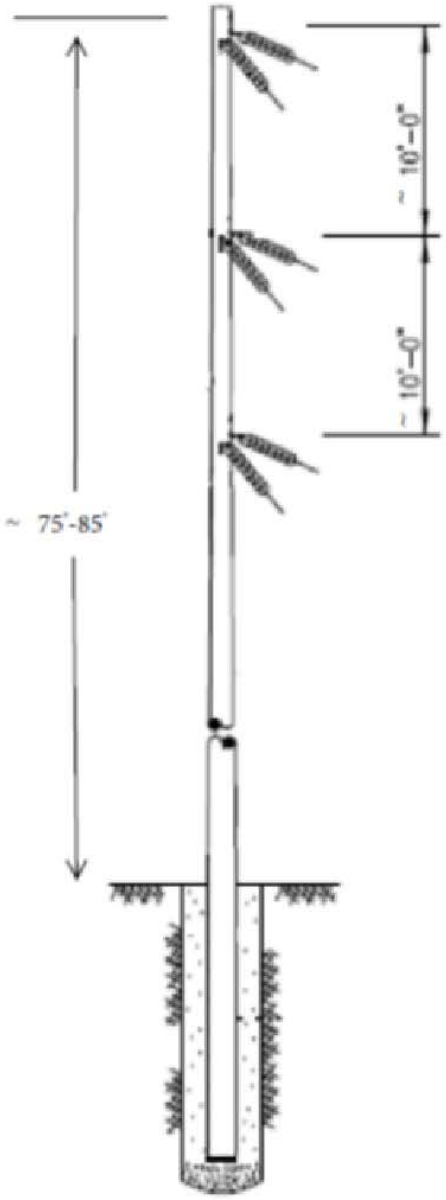


* Property being acquired by the City of Lathrop

R/W	Owner/ APN	LAND RIGHTS INFO	EXISTING PUE	Proposed Easement	Approx. Sq. ft. of Proposed Easement
R/W 1	JR Simplot Co./ 198-150-08	LD2201-06-0524 17' wide	NO	Expand substation	
R/W 2	JR Simplot Co./ 198-150-04	LD2201-06-0524 17' wide	NO	Acquire new 100' R/W	141380
R/W 3	UPRR/ 198-010-34,35	None	NO	Acquire agreement	
R/W 4	City Of Lathrop/ 198-130-11	None	NO	Acquire new ~3' R/W	115
R/W 5	City Of Lathrop/ 198-130-57	None	YES, 10' pue PM 23-47	Acquire new 60' R/W	31823
R/W 6	City Of Lathrop/ 198-130-56	None	NO	Acquire new 60 R/W	6004
R/W 7 *	Richland Crossroads/198-130-58	None	YES, 10' pue PM 23-47	Acquire new 30' R/W	1153
R/W 8	City Of Lathrop/ 198-130-59	None	NO	Acquire new 40' R/W	47538
R/W 9	City Of Lathrop/ 198-130-36	None	NO	Acquire new 40' R/W	14405
R/W 10	City Of Lathrop/ 198-130-35	None	NO	Acquire new 40' R/W	3058
R/W 11	PW FUND B LP/ 198-130-62	None	YES, 10' pue PM 23-47	Acquire new 35' R/W	8359
R/W 12	PW FUND B LP/ 198-130-61	LD2201-06-0600 50' wide	YES, 10' pue PM 23-47	Acquire new ~50' R/W	23601

Figure 4-12
Proposed Easement

Source: PGE, 2018b



Typical Temporary Wood Shoofly Pole

(Preliminary, Approximate, and Subject to Change)

Figure 4-13
Typical Shoo-fly Structure

Source: PGE, 2018e

Guard Structures

To prevent the conductor from sagging onto other utility lines or roads, temporary guard structures—consisting of either vertical wood poles with cross-arms and nets, or staged construction equipment—would be installed or mobilized at crossings of energized electric lines, railroad crossings, and/or major roadways, including Nestle Way, Christopher Way, South Howland Road, and D'Arcy Parkway. **Figure 4-14** shows a typical guard structure with and without netting.

Remote Substation Modifications and Remote Telecommunication Tower Upgrades

No temporary structures are anticipated to be necessary for these project components.

4.6.4 Construction Work Areas

The following work areas are based on typical construction practices and anticipated construction needs.

New Power Line

Pole Temporary Work Sites

TSP installation for the new line would require an approximately 0.1- to 0.5-acre temporary work site at each TSP location (typically ranging from approximately 100 by 40 feet to 185 by 90 feet). Construction materials would be installed using a line truck and staged at pole work locations. Construction crews would access work areas by truck or on foot. Approximately half of the pole work areas would be on paved surfaces, while the other pole work areas are either immediately adjacent to a paved road or would be accessed using existing dirt roads. If necessary, site preparation, including use of gravel and/or matting on non-paved work areas, would be utilized for construction work in the winter or during rain events. Ground vegetation may need to be mowed, and recently planted landscaping such as along Nestle Way and Christopher Way, including trees and shrubs, may need to be removed. There are approximately two pine trees, two oak trees, and one eucalyptus tree that would need to be removed, and based on the City of Lathrop's landscape plan for D'Arcy Parkway, an additional three eucalyptus trees may need to be removed. As the trees are container stock planted in 2017 or later, they would all be removed by hand digging. PG&E would coordinate with the City of Lathrop regarding tree replacement with species compatible with power line easements. Table 4-4 provides information for the temporary pole work areas for the project.

Guard Structure Work Areas

A work area up to approximately 0.03 acre in size (typically approximately 60 by 20 feet) would be required for each guard pole at crossings of energized electric lines, railroad crossings, and/or major roadways, including Nestle Way, Christopher Way, South Howland Road, and D'Arcy Parkway.

Pull Sites

Pull and tension sites are required to install the new conductor onto the TSPs. Approximately five pull sites would be located generally in line with the proposed power line alignment, typically at locations where the alignment changes direction. The longest distance between pull and tension sites would be approximately 3,500 feet, between the Vierra Substation and the western end of Christopher Way.

Example standard wood pole guard structure.

Example wood pole guyed guard structure with netting.

Figure 4-14
Typical Guard Structure and Netting

Source: CPUC, 2017

Along Nestle Way, a pull and tension site would be located at each pole as the alignment changes direction between each pole. The exact location of each site would depend on ground conditions and would not be determined until just prior to construction. Each pull site would have a footprint of up to approximately 0.2 to 0.5 acre (typically approximately 200 by 100 feet). The majority of pull sites would be located on paved areas, and no blading, grading, or filling would be required. Where appropriate, materials such as fiberglass mats, metal plates, or gravel would be laid down at the pull sites to minimize ground disturbance.

Pull sites would be used to stage conductor-pulling trucks and conductor reel trucks. Construction vehicles and equipment needed at the pull sites would be parked or staged within sidewalks and adjacent paved roads, which may require a lane closure. **Table 4-4** provides information for the temporary pull areas for the project.

Helicopter Landing Zone

One helicopter landing zone would be required for the approximately 2 days of helicopter operation to install the pulling line on the new TSPs. The landing zone would be approximately 0.5 acre in size, within the designated staging area on the west side of Vierra Substation referred to as SA-1. If this area is not available at the time of construction, the designated staging area on the north side of South Howland Road, east of D'Arcy Parkway, referred to as SA-2, would be used as the landing zone. The flight path of the helicopter would be directly over the top of the new line. Where appropriate, materials such as fiberglass mats or gravel would be laid down in the winter to provide ground stability.

Vierra Substation Expansion

The work area for the Vierra Substation expansion would consist of the existing substation, which is an area of approximately 1.6 acres, and approximately 3.4-acres on the west side of the existing substation. Temporary work areas outside of the expanded substation parcel may be required for construction of the substation expansion. The area of the substation expansion and adjacent possible temporary work area would be approximately 1,100 feet by 415 feet or 10.5 acres. PG&E anticipates using approximately 6 acres of the 10.5-acre temporary work area.

Remote Substation Modifications and Remote Telecommunication Tower Upgrades

No work areas are anticipated to be necessary for these project components because all work would be conducted with the existing substation and microwave station fence lines.

4.6.5 Construction Access

New Power Line and Vierra Substation Expansion

Vierra Substation currently has one entrance gate, located along Vierra Road. Two additional entrance gates along Vierra Road would be installed as part of the proposed expansion. The majority of project work areas for the pole line work would be accessed using paved public roads. No new roads would be established for these project components, as existing access roads would provide access to and/or near most of the pole sites. Temporary lane and sidewalk closures would occur during construction when equipment would be needed to work on poles adjacent to roads. Nestle Way, Christopher Way, South Howland Road, and D'Arcy Parkway would each need to be closed for up to approximately 5 minutes when the helicopter would pass over the road with the pulling line. A width of up to approximately 16 feet would be required for passage of construction vehicles. The existing dirt access road that extends from South Howland Road would require vegetation trimming and removal, and could require placement

of gravel to improve traction and all-weather access. In addition, overland access is proposed from the northeastern boundary of the substation expansion to temporary work area TWS-14. Overland access preparation would include mowing and light grading, as needed, with a typical access width of 14 to 18 feet (PGE, 2019a). The width, length, and area of the unpaved access to project sites that would require improvements or preparation are provided in **Table 4-3**. Minor adjustments to access may be necessary at the time of construction due to land use changes, unanticipated impacts, and other factors.

TABLE 4-3 UNPAVED ACCESS

Type of Access	Improvements/Preparation Required	Approximate Width (feet)	Approximate Length (feet)	Total Approximate Area (acres)
Existing Unpaved	Vegetation removal, minor grading, and gravel	14-18	808	0.26-0.33
Overland Access	Mowing and light grading	14-18	220	0.08

Sources: PGE, 2018a; 2019a

Remote Substation Modifications

Access to the Kasson, Manteca, Howland Road, Ripon Cogen, Tesla, and Tracy substations would be via existing entrances off public paved roads. No new access roads would be required.

Remote Telecommunication Tower Upgrades

Access to the towers would be via existing unpaved roads that would not require improvements. No new access roads would be required.

4.6.6 Construction Staging and Work Areas

New Power Line and Vierra Substation Expansion

Temporary staging areas would be used for a variety of purposes, including as conductor pull sites, storing construction materials and equipment, landing zones, parking of vehicles and equipment, and worker meeting areas. Any staging area that would be used to store material would typically be fenced using cyclone-type fencing with a double gate. Various existing PG&E industrial facilities and private parcels in the general project area would be used as temporary staging areas. These are identified in the vicinity of the Vierra Substation and along the new power line route in **Figures 4-4a** through **4-4d**, and include:

- An area of up to 6.0 acres on a 10.5-acre site west of Vierra Substation;
- A 1.6-acre area on the north side of South Howland Road, east of D'Arcy Parkway; and
- A 2.5-acre area on the west side of D'Arcy Parkway, north of South Howland Road.

Staging areas would range in size from approximately 2 to 10 acres. The footprint may be less depending on the area available for use at the time of construction and project needs. The project staging areas would be located on flat lands and preparation may require mowing of vegetation and minor grading. Minor ground disturbance at staging areas would occur, and some staging areas may need to be graveled prior to use. Temporary electrical service may be required at staging areas, and security fencing may be installed. **Table 4-4** shows information associated with the temporary staging areas for the project.

TABLE 4-4 TEMPORARY STAGING, PULL SITE, AND POLE WORK AREAS

Work Sites	Approximate Area (acres)	Figure No.	Currently Existing Land Cover
PS-1	0.5	4-4d	Undeveloped
TWS-1	0.4	4-4d	Undeveloped
PS-2	0.5	4-4d	Developed/ Paved
TWS-2	0.3	4-4d	Developed/ Paved
PS-3	0.5	4-4d	Developed/ Paved
TWS-3	0.2	4-4d	Developed/ Paved
PS-4	0.2	4-4d & 4-4c	Developed/ Unpaved
TWS-4	0.1	4-4d	Developed/ Unpaved
TWS-5	0.1	4-4c	Developed/ Unpaved
TWS-6	0.1	4-4c	Developed/ Unpaved
TWS-7	0.1	4-4c	Developed/ Unpaved
TWS-8	0.1	4-4c & 4-4b	Developed/ Unpaved
TWS-9	0.3	4-4b	Undeveloped
TWS-10	0.1	4-4b	Undeveloped
TWS-11	2.9	4-4b & 4-4a	Undeveloped
TWS-12	1.6	4-4a	Undeveloped
TWS-13	0.2	4-4a	Undeveloped
TWS-14	0.2	4-4a	Undeveloped
PS-14	0.5	4-4a	Undeveloped
SA-1	10.5	4-4a	Undeveloped
SA-2	1.6	4-4b	Undeveloped/vegetated
SA-3	2.5	4-4b	Undeveloped/vegetated

PS = pull site; TWS = pole temporary work site; SA = staging area.

Source: PGE, 2018a

Remote Substation Modifications

Staging areas would be in open areas within the existing graveled substation yards. The size of the staging areas would depend upon the size of the substation yard, the area within the yard to be used safely, and may consist of multiple smaller areas, rather than one single stating area.

Remote Telecommunication Towers Upgrades

A staging area of approximately 30 feet by 30 feet at the base of the tower would be needed at the telecommunication towers to off load the materials.

4.6.7 Helicopter Use

New Power Line

One small helicopter would be used to install the stringing rollers on the cross-arms at each TSP and a pulling line between each TSP. Use of the helicopter to install the pulling line would decrease the duration of construction. The pulling line would be connected to the conductor and would pull the new conductor through the stringing rollers, to be clipped into the insulators.

The typical payload would be workers, small materials, tools, and the pulling sock line, and the helicopter would be used approximately 4 hours per day, on 2 days in separate weeks. Helicopter refueling would take place at the helicopter landing zone carried out by a fuel truck provided by the helicopter company. The fuel truck would be equipped with a spill kit. Fuel would not be stored on the project site.

PG&E's helicopter operator would obtain all necessary FAA permits, comply with all applicable regulations regarding air traffic within 2 miles of the project alignment, and coordinate all project helicopter operations with the local airport before and during project construction. All employees involved with helicopter work methods would be required to have formal training and carry a card that the pilot of the helicopter reviews prior to performing the work. The helicopter would follow a designated flight path to the project and along the alignment, to the extent possible, to avoid potential risk to the public. Helicopters that are carrying equipment or construction materials would not pass over major highways, and they would pass near, but not directly over, a limited area containing habitable structures. Where appropriate, materials such as fiberglass mats or gravel would be laid down typically in the winter to provide ground stability.

Vierra Substation Expansion, Remote Substation Modifications, and Remote Telecommunication Tower Upgrades

Helicopters would not be used for the Vierra Substation expansion, remote substation modifications, or the remote telecommunication towers upgrades.

4.6.8 Vegetation Clearance

New Power Line and Vierra Substation Expansion

PG&E has contacted landowners about vegetation clearance requirements on their property. Mowing may be required at staging areas, pull sites, some access routes, and recently planted landscaping along Nestle Way and Christopher Way may need to be removed and replaced to establish construction work areas, project access, and provide clearance along the reconductored line to comply with CPUC General Order (GO) 95 requirements. Also, if the property owner agrees, the eucalyptus that is along the microwave path of the new microwave tower could be either trimmed or removed, which would possibly allow the new microwave tower to have a height of approximately 100 feet instead of the proposed height of 120 feet.

Remote Substation Modifications

No vegetation clearance is anticipated at Howland Road, Kasson, Manteca, Tracy, Ripon Cogen, or Tesla substations as there is no vegetation within these substations and work would occur within these substations.

Remote Telecommunication Tower Upgrades

No vegetation clearance would be required at the tower sites as the new microwave dishes would be installed by a construction worker climbing the structure.

4.6.9 Erosion and Sediment Control and Pollution Prevention During Construction

New Power Line and Vierra Substation Expansion

Construction of the new power line and substation expansion would require ground-disturbing activities on approximately 2.8 acres at Vierra Substation and 0.4 acre at each pole location, including minor vegetation trimming, tree removal, and pole installation and removal. Because these activities would result in disturbance of more than 1 acre in total, PG&E would obtain coverage under the State Water Resource Control Board (SWRCB) General Permit for Storm Water Discharges Associated with

Construction Activity Order No. 2009-0009-DWQ.[5] To obtain coverage under the permit, PG&E would develop and submit permit registration documents to the SWRCB prior to initiating construction activities, including a Notice of Intent, Stormwater Pollution Prevention Plan (SWPPP), risk assessment, site map, certification, and annual fee.

PG&E would implement the SWPPP during construction to prevent polluting storm drains with sediment or other polluted runoff related to project construction. The SWPPP would outline best management practices (BMPs) for each activity that has the potential to degrade surrounding water quality through erosion, sediment runoff, and other pollutants.

Remote Substation Modifications

Work at the remote substations with monopole installations would require ground disturbance of approximately an 11-square foot area for each of three monopoles. Work at Howland Road Substation would require an approximately 228-foot by 5-foot wide and 5-foot deep conduit trench, three approximately 12-foot deep by 4-foot wide piers for the circuit switcher foundation, and an approximately 9-foot deep by 2-foot diameter voltage transformer pier foundation (PGE, 2019d). No additional areas of ground disturbance would be required. Ground disturbance work would be covered under the project's SWPPP.

Remote Telecommunication Tower Upgrades

No ground disturbance would occur at either of the microwave stations.

4.6.10 Water Use

Water needs during construction would consist of approximately 10,000 gallons of water a day during an 8-week period of the substation expansion construction (560,000 gallons or 1.7 acre-feet [AF]), and approximately 5,000 gallons a week during the up to 4-month period of construction of the power line, for a total of approximately 80,000 gallons (0.2 AF) (PGE, 2018f). At the substation expansion site, the estimated 10,000 gallons a day of water would be used for dust suppression and compaction during construction of the substation pad. The estimated 5,000 gallons of water a week during construction of the power line is also for dust suppression, and includes dust suppression at the helicopter-landing zone for the 2 days of helicopter use. No water is needed for concrete mixing and washout. Concrete would arrive at the site premixed in the truck, and the chutes would have an on-board, self-contained washout system. Minimal water use (less than 100 gallons) is anticipated for the work at the remote substations and telecommunications sites. The sources of water for those locations is not known at this time (PGE, 2018d). The total water use for construction would be about 2 AF. The City of Lathrop has provided PG&E a commitment letter confirming their ability to meet the project's water needs (2 AF) (Lathrop, 2018b).

4.6.11 Cleanup and Post-Construction Restoration

Crews would be required to maintain clean work areas for all components of the project as they proceed through construction, and no debris would be permitted to be left behind at any stage of the project.

[5] Order No. 2009-0009-DWA-
https://www.waterboards.ca.gov/water_issues/programs/stormwater/docs/constpermits/wqo_2009_0009_complete.pdf

New Power Line and Vierra Substation Expansion

Poles used as guard structures would be taken to appropriate disposal facilities to be reused, recycled, or disposed of in accordance with applicable law. Restoration activities would be conducted as needed and in coordination with landowners, and would consist of restoring landscaped areas along Christopher Way and Nestle Way, and applying a native seed mix or other seed mix, as approved by landowners, in areas of ground disturbance. On the south side of Christopher Way, existing fence panels opposite the new TSPs would be replaced with non-conductive fencing. PG&E would conduct a final survey to ensure that cleanup activities have been successfully completed.

Remote Substation Modifications

Clean up at the remote substations with monopole installations and other ground-disturbing activities would include approximately 629 cubic yards[6] of soil that would be excavated, and after testing, would be disposed of at an appropriate location. Should dewatering be required during foundation construction, the water would be removed from the site and/or tested prior to discharge at the site.

Remote Telecommunication Tower Upgrades

No additional cleanup is identified for this project component.

4.6.12 Construction Workforce and Equipment

Construction of the new power line would require approximately 15 workers, the Vierra Substation expansion would require up to 19 workers, activities at each of the telecommunications work sites at the Vierra Substation and remote substations would require up to 8 workers (up to 10 workers for Howland Road Substation), and 3 workers for the telecommunications towers.

Construction activities would typically occur between the hours of 7:00 a.m. and 7:00 p.m., Monday through Friday, and between 9:00 a.m. and 7:00 p.m. Saturday. Some nighttime construction is anticipated to take advantage of line clearances during off-peak hours to reduce traffic impacts or for certain construction procedures, such as pole placement or conductor stringing, that cannot be interrupted because of safety considerations. Some Sunday work may also occur between 9:00 a.m. and 7:00 p.m. It is anticipated that construction crews would work concurrently, either 4 to 6 10-hour days per week, or on a rotating schedule of 11 days on and 3 days off.

Equipment types and quantifies that would be used during project construction are identified in **Table 4-5a**. **Table 4-5a** also describes a breakdown of the estimated duration of equipment use during construction, including days per week of operation, hours per day of operation, and the total duration of use (in weeks). **Table 4-5b** describes the proposed uses for each type of equipment. Not all equipment would be used during all stages of the project activity.

[6] Estimate of excavated soil for disposal is conservative and project analysis in this document is based on this conservative estimate. Based on the estimated volume of excavations for the remote substations, soil for disposal could range from 629 to 284 cy (PGE, 2019e; 2019f).

TABLE 4-5a PROPOSED CONSTRUCTION EQUIPMENT AND DURATION OF USE

Activity	Total Number of On-Site Workers	Estimated Quantity and Type of Equipment		Estimated Days per Week of Operation	Estimated Hours per Day of Operation	Estimated Duration of Use (weeks)
Vegetation trimming	2	1	Leaf blower	2	10	1
		1	Weed mover	2	10	1
		1	Pickup truck	2	10	1
Traffic control	4	2	Work site protection type vehicles	6	2	12
		2	Flasher board	6	8	12
TSP installation (includes foundation and augur TSP holes)	6	1	40-ton crane	4	1	8
		1	Tractor trailer	4	2	8
		1	Construction digger	2	6	8
		1	Crane with 120 boom	2	4	8
		1	Backhoe	4	2	8
		1	Dump truck	2	6	8
		1	Foreman pickup truck	6	1	8
		1	Crew-cab truck	6	1	8
		2	Cement truck	2	6	6
Conductor installation	15	1	V-Groove puller attached to line truck	3	6	5
		1	Helicopter (small)	1	3	2
		1	Tensioner attached to line truck	3	6	5
		1	40-ton crane	6	6	5
		2	Bucket truck	6	6	5
		2	Boom truck	6	6	5
		3	Crew-cab truck	6	2	5
		3	Foreman pickup truck	6	3	5
		1	Forklift	6	2	5
		1	Hardline puller	3	6	5
		2	Crane with 120 boom	6	6	5
Vierra Substation expansion A	19	2	Concrete truck	3	3	8
		2	D-3 Bulldozer	5	6	2
		1	Bucket truck	5	6	2
		1	Line truck	5	6	2
		1	50-ton crane	5	6	1
		2	Water truck	5	6	8
		2	Compactor	5	6	6
		1	Road grader, six wheel	5	6	2
		1	Elevating scraper	5	6	2
		2	Mini excavator	5	8	8

TABLE 4-5a PROPOSED CONSTRUCTION EQUIPMENT AND DURATION OF USE

Activity	Total Number of On-Site Workers		Estimated Quantity and Type of Equipment		Estimated Days per Week of Operation	Estimated Hours per Day of Operation	Estimated Duration of Use (weeks)
		1	Large excavator drill	5	6	4	
Vierra Substation Expansion B	18	3	Aerial man lift	5	5	20	
		2	2-ton flatbed truck	5	4	20	
		2	Fork lift	5	5	20	
		2	Backhoe	5	6	20	
		2	Skid-steer bobcat	5	4	30	
		1	Boom truck	5	6	20	
		2	Air compressor	5	2	30	
		1	Portable generator	5	4	30	
Vierra Substation Expansion C	0	2	Dump truck	5	NA	4	
Vierra Substation Expansion D	7	5	Pickup truck	5	4	52	
Howland Road Substation Civil Construction	5-10	1	Auger	3	10	1	
		1	Excavator	6	10	5	
		3	Concrete truck	2	10	1	
		2	Loader	6	10	5	
		6	Work Trucks (pick-up and line trucks)	6	10	5	
		1	Water truck	6	2	5	
		N/A	Dump/ Haul Trucks	See Note 2			
Howland Road Substation Equipment Installation and Outdoor Electrical Construction	5	1	Bucket truck	5	10	3	
		1	Water truck	5	2	3	
		1	Backhoe	5	10	2	
		1	Forklift	5	10	1	
		6	Worker trucks (pick-up)	5	10	3	
Howland Road Substation Indoor Electrical Construction and Testing	5	1	Forklift	5	10	1	
		6	Work Trucks (pick-up and line trucks)	5	10	3	
Telecom: Vierra Substation	Microwave tower/monopole foundation work (digging, framing, rebar, concrete pour, concrete test, concrete curing)	8	1	Backhoe	4	10	2
			1	Pickup truck	5	4	52
			1	Dump truck	2	10	1
			1	Concrete truck	2	10	1
	Microwave tower/monopole stacking and waveguide bridge	4	1	Crane	4	10	2
			1	Pickup truck	4	10	2

TABLE 4-5a PROPOSED CONSTRUCTION EQUIPMENT AND DURATION OF USE

Activity	Total Number of On-Site Workers		Estimated Quantity and Type of Equipment		Estimated Days per Week of Operation	Estimated Hours per Day of Operation	Estimated Duration of Use (weeks)
	Microwave antenna and waveguide installation	3	1	Crane	2	10	1
Telecom: Kasson Substation	Microwave tower/\monopole foundation work (digging, framing, Rebar, concrete pour, concrete test, concrete curing)	8	1	Backhoe	4	10	2
			1	Pickup truck	4	10	2
			1	Dump truck	1	10	1
			1	Concrete truck	1	10	1
	Microwave tower/monopole stacking and waveguide bridge	4	1	Crane	4	10	2
			1	Pickup truck	4	10	2
	Microwave antenna and waveguide installation	3	1	Crane	2	10	1
Telecom: Tracy Substation	Microwave tower/monopole foundation work (digging, framing, Rebar, concrete pour, concrete test, concrete curing)	8	1	Backhoe	4	10	2
			1	Pickup truck	4	10	2
			1	Dump truck	1	10	1
			1	Concrete truck	1	10	1
	Microwave tower/monopole stacking and waveguide bridge	4	1	Crane	4	10	2
			1	Pickup truck	4	10	2
	Microwave antenna and waveguide installation	3	1	Crane	2	10	1
Telecom: Manteca Substation	Microwave tower/monopole foundation work (digging, framing, rebar, concrete pour, concrete test, concrete curing)	8	1	Backhoe	4	10	2
			1	Pickup truck	4	10	2
			1	Dump truck	1	10	1
			1	Concrete truck	1	10	1
	Microwave tower/monopole stacking and waveguide bridge	4	1	Crane	4	10	2
			1	Pickup truck	4	10	2
	Microwave antenna and waveguide installation	3	1	Crane	2	10	1
Telecom: Mount Oso	Microwave antenna and waveguide installation	3	1	Pickup truck	2	10	1
Telecom: Highland Peak	Microwave antenna and waveguide installation	3	1	Pickup truck	2	10	1
Tesla Substation	Control room equipment upgrade	3	1	Pickup truck	5	10	2
Ripon Cogen Substation	Control room equipment upgrade	3	1	Pickup truck	5	10	2

Duration of use in weeks is rounded up to the closest week. Sources: PGE, 2018c; 2019a

TABLE 4-5b ANTICIPATED CONSTRUCTION EQUIPMENT USES

Equipment	Use
Crane	Lift heavy equipment and materials
Backhoe	Excavation
Bucket truck	Aerial lift for construction personnel
Cement truck and pump	Deliver cement to worksite
Construction digger	Install poles
Compressor	Operate tools
Dump truck	Remove garbage
Flasher board	Traffic control
Foreman pickup truck, crew-cab truck, boom truck	Transport workers, material, equipment, and supplies
Forklift	Lift materials
Generator	Portable power generation
Hardline puller	Install conductor
Helicopter (light)	Install conductor
Jackhammer	Excavate holes
Leaf blower	Vegetation removal
Tensioner attached to line truck	Install conductor
Tractor trailer	Deliver poles to the site
V-Groove trailer puller attached to line truck	Install conductor
Weed mower	Vegetation trimming
Work site protection type vehicle	Traffic control

Source: PGE, 2018a

4.6.13 Construction Schedule

Construction of the Vierra Substation expansion would take approximately 12 to 18 months to complete and would likely begin prior to construction of the new power line, which is estimated to take approximately 3 to 4 months to complete. The scheduling of electrical clearances would determine the overall schedule of the project. The pole installation crew would take approximately 3 days to complete one foundation and pole installation. Once all the poles and insulators have been installed, the new conductor would be installed within a period of 5 weeks. Construction at each of the remote substations would take approximately 2 weeks to complete, except for Howland Road Substation, where work would take approximately 4 to 6 weeks. Construction at the remote telecommunication towers would take less than a week for each tower. The earliest construction would commence is in Fall 2021, pending issuance of project approvals and acquisition of land rights. The project would be operational in 2023 or earlier depending how long it takes to acquire land rights and other factors.

4.7 Operation and Maintenance

4.7.1 System Monitoring and Control

PG&E would operate the expanded 115 kV substation remotely from its Grid Control Center located in Vacaville, California, consistent with current procedures. Station and line alarms would be transmitted by the dedicated phone line to the control center. If an alarm is triggered that requires an on-site visit, personnel would be dispatched from PG&E's local maintenance center in Stockton.

4.7.2 Facility Inspection

Regular inspection of equipment and electrical lines, support systems, and instrumentation and controls is critical for the safe, efficient, and economical operation of the project. Under normal circumstances, routine inspections of the substation by PG&E personnel would continue to occur on a monthly basis or as needed under emergency conditions. The power line would be inspected annually or as needed when driven by an event, such as an emergency. The current PG&E facility inspection process involves three types of inspections: (1) ground inspections, (2) aerial inspections, and (3) climbing, if ground inspections indicate a need. Typically, power line inspections occur annually, rotating between ground inspections and flyovers. Maintenance of the power line would generally be conducted on an as-needed basis, when equipment is discovered in need of repair during inspections, or in response to an emergency. A benefit of using TSPs for the project is that they generally require less maintenance than wood poles.

Facility inspection of the remote substations and telecommunication towers would not change from current practices.

4.8 Other Permits and Approvals

The CPUC is the lead agency for CEQA review of this project. In accordance with CPUC GO 131-D Section III.B (GO-131-D), PG&E prepared and submitted a PEA as part of its application for a PTC. The CPUC has exclusive authority to approve or deny PG&E's application; however, various permits from other agencies may also need to be obtained by PG&E for the project. Other state and federal agencies will rely on information in this IS/MND to inform them in their decision over issuance of specific permits related to project construction, operation, and/or maintenance. In addition to the CPUC, no local discretionary (e.g., use) permits would be required, since the CPUC has preemptive jurisdiction over the construction, operation, and maintenance of PG&E facilities in California. PG&E would still have to obtain all ministerial building, grading, and encroachment permits from City of Lathrop, and the CPUC's GO 131-D requires PG&E to comply with local building, design, and safety standards to the greatest degree feasible to minimize project conflicts with local conditions.

In the context of electric utility projects, CPUC GO 131-D, Section XIV.B, states that:

> 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 Commission's jurisdiction. However, in locating such projects, the public utilities shall consult with local agencies regarding land use matters.

The CPUC's authority does not preempt special districts, such as air quality districts, or other state agencies or the federal government. PG&E would obtain permits, approvals, licenses, and would participate in reviews and consultations as needed with, federal, state, and local agencies as shown in **Table 4-6**.

TABLE 4-6 PERMITS AND APPROVALS THAT MAY BE REQUIRED FOR THE PROJECT

Agency	Jurisdiction	Requirements
FEDERAL/STATE AGENCIES		
California Public Utilities Commission	Construction, modification, or alteration of substations and power line facilities.	PTC (GO-131-D) - A PTC is required under the CPUC's General Order No. 131-D, Section III.B.
State Water Resources Control Board	Construction activities disturbing 1 acre or more of soil. Applicant must submit a Notice of Intent to comply with the terms of the general permit and implement a SWPPP.	Coverage under General National Pollution Discharge Elimination System Storm Water Permit (ministerial).
Federal Communications Commission	Operation of microwave bands	License to operate
LOCAL/REGIONAL AGENCIES		
City of Lathrop	For construction activities completed within city road rights-of-way.	Encroachment Permit (ministerial) - Pull sites and work areas would be located within city roads.
	Cuts or fills in excess of 50 cubic yards.	Grading Permit (ministerial) - Grading of substation site.
	Construction of a wall.	Building Permit (ministerial) - Substation perimeter wall.
San Joaquin Valley Air Pollution Control District	Construction activities disturbing greater than 5 acres.	Approval of Dust Control Plan prepared pursuant to Regulation VIII (ministerial)
Contra Costa County	Modification to telecommunication tower (microwave dish)	Possible modification to use permit (discretionary)
Stanislaus County	Modification to telecommunication tower (microwave dish)	Possible modification to use permit (discretionary)
PRIVATE		
Union Pacific Railroad	For construction activities completed within or over Union Pacific Railroad rights-of-way.	Encroachment Permit - The new line would cross a segment of Union Pacific Railroad.

Sources: PGE, 2018a; 2019h

4.9 Applicant Proposed Measures

PG&E proposes to implement measures in an attempt to ensure that the project would occur with minimal environmental impacts in a manner consistent with applicable rules and regulations. PG&E proposes to implement these measures during the design, construction, and operation of the project in order to avoid or minimize environmental impacts.

APMs listed in **Table 4-7** are considered part of the project for the purpose of the evaluation of environmental impacts (see Section 5, *Environmental Analysis and Mitigation*). The CPUC's environmental review is based on PG&E adhering to the project as described in this project description and the APMs, as well as any adopted mitigation measures identified by this IS.

Table 4-7 details each APM by environmental issue area. These APMs are included as enforceable measures in Section 6, *Mitigation Monitoring Plan*. When there are no APMs proposed for an environmental issue area (e.g., Land Use and Planning), the technical section is not listed in the table below.

TABLE 4-7 APPLICANT PROPOSED MEASURES

APM Number	Issue Area
AESTHETICS	
APM AES-1:	Nighttime lighting to minimize potential visual impacts. Nighttime construction activities, if they occur, will incorporate measures such as use of non-glare or hooded fixtures and directional lighting to reduce spillover into areas outside the construction site and minimize the visibility of lighting from off-site locations wherever feasible.
APM AES-2:	Construction cleanup. Construction activities will be kept as clean and inconspicuous as practical. Construction debris will be picked up regularly from construction areas. The appearance of disturbed land areas will be restored to approximate pre-construction visual conditions, where feasible and consistent with landowner requests, through implementation of re-contouring and/or re-vegetation.
APM AES-3:	Use of galvanized finish on TSPs. Use of a galvanized finish that will weather to a dull, non-reflective patina on new TSPs will reduce the potential for a new source of glare resulting from introduction of project elements.
APM AES-4:	Perimeter wall, fence and landscaping for partial screening of substation expansion. A perimeter wall will be installed along the south side of the substation (facing Vierra Road) to provide partial screening of the expanded substation. A perimeter chain link fence with neutral gray slats will enclose the west side of the expanded substation (facing D'Arcy Parkway railroad overcrossing). The design of the wall and fence will be comparable to the design of the existing substation perimeter wall and fence. Landscaping along the substation perimeter will also be comparable to existing landscaping at the substation, and will include similar landscaping comprising drought-tolerant shrubs.
AGRICULTURAL AND FOREST RESOURCES	
APM AGR-1:	Landowner coordination. PG&E will coordinate with J. R. Simplot Company (or tenant) in advance of construction activities to minimize impacts on agricultural operations.
AIR QUALITY	
APM AIR-1:	Fugitive dust emissions minimization. Pursuant to SJVAPCD Regulation VIII, a Dust Control Plan will be submitted to the SJVAPCD for approval at least 30 days prior to commencing construction activities. Based on the SJVAPCD Guidance for Assessing and Mitigating Air Quality Impacts (SJVAPCD 2015), the following are examples of fugitive dust control measures that may be included in the Dust Control Plan to minimize dust emissions: • Apply water to unpaved surfaces and areas • Use non-toxic chemical or organic dust suppressants on unpaved roads and traffic areas • Limit or reduce speed vehicle speed on unpaved roads and traffic areas • Maintain areas in a stabilized condition by restricting vehicle access • Install wind barriers • During high winds, cease outdoor activities that disturb the soil • Keep bulk materials sufficiently wet when handling • When storing bulk materials, apply water to the surface or cover the storage pile with a tarp • Don't overload haul trucks. Overloaded haul trucks are likely to spill bulk materials • Cover haul trucks with a tarp or other suitable cover. Or, wet the top of the load enough to limit visible dust emissions • Clean the interior of cargo compartments on emptied haul trucks prior to leaving a site • Prevent trackout by installing a trackout control device • Clean up trackout at least once a day. If along a busy road or highway, clean up trackout immediately. • Monitor dust-generating activities and implement appropriate measures for maximum dust control
BIOLOGICAL RESOURCES	
APM BIO-1:	Avoid impacts on special-status plants and their habitat. Pre-construction surveys for special-status plant species in areas of suitable habitat will be conducted during the appropriate blooming period by a qualified biologist prior to the start of construction activities. A report documenting the survey results will be provided to the CPUC prior to construction. If any special-status plant species are found, the following actions will be implemented: • Special-status plants within and immediately adjacent to work areas and access routes will be marked by a qualified biologist and avoided to the extent feasible.

	• If impacts to special-status plants cannot be avoided, the impacts will be enumerated and described. PG&E will notify the landowner of the presence and location of the special-status plants and inform them of their right to contact CDFW to arrange for the plants to be salvaged. PG&E will proceed with construction activities unless notification is received from the landowner or CDFW within 48 hours indicating that the plants will be salvaged.
APM BIO-2:	Avoid impacts on nesting birds. If work is scheduled during the nesting season (February 1 through August 31), nest detection surveys will correspond with a standard buffer for individual species in accordance with the species-specific buffers set forth in Appendix D of the PEA and will occur within 15 days prior to the start of work activities at designated construction areas, staging areas, and landing zones to determine nesting status by a qualified wildlife biologist. Nest surveys will be accomplished by ground surveys and will support phased construction, with surveys scheduled to be repeated if construction lapses in a work area for 15 days between March and July. Access for ground surveys will be subject to property owner permission. If active nests containing eggs or young are found, the biologist will establish a species-specific nest buffer, as defined in Appendix D of the PEA. Where feasible, standard buffers will apply, although the biologist may increase or decrease the standard buffers in accordance with the factors set forth in Appendix D. Nesting pair acclimation to disturbance in areas with regularly occurring human activities will be considered when establishing nest buffers. The established buffers will remain in effect until the young have fledged or the nest is no longer active as confirmed by the biologist. Active nests will be periodically monitored until the biologist has determined that the young have fledged or once construction ends. Per the discretion of the biologist, vegetation removal by hand may be allowed within nest buffers or in areas of potential nesting activity. Inactive nests may be removed in accordance with PG&E's approved avian permits. The biologist will have authority to order the cessation of nearby project activities if nesting pairs exhibit signs of disturbance. All references in this APM to qualified wildlife biologists refer to qualified biologists with a bachelor's degree or above in a biological science field and demonstrated field expertise in ornithology, in particular, nesting behavior.
APM BIO-3:	Burrowing owl. Within 30 days of beginning ground-disturbing activities, a preconstruction survey for burrowing owl will be conducted by a qualified biologist in the vicinity of Vierra Substation and the railroad tracks and any other suitable habitat within 500 feet of the project area. If no burrowing owls are detected, no further measures are required. If burrowing owls are detected, no construction activities will occur within 250 feet of occupied burrows during the nesting season or within 160 feet of occupied burrows during the non-nesting season. For purposes of this measure, the nesting season is February 1st to August 31st. Additionally, burrowing owls will be monitored by a qualified biologist during construction to assess the sensitivity of the burrowing owls to the construction activities. The size of the avoidance buffer may be increased or decreased as determined by the monitoring biologist based on the planned construction activities and the sensitivity of the burrowing owls. If impacts on an active burrow cannot be avoided, passive relocation may be considered. Relocation will be conducted during the non-nesting season and only after a site-specific plan has been developed and implemented.
APM BIO-4:	Voluntary Compensatory Mitigation for Permanent Impacts to Burrowing Owl, Swainson's Hawk and White-tailed Kite Foraging Habitat. Prior to construction, PG&E shall mitigate for permanent impacts to agricultural lands that are potential foraging habitat for Burrowing Owl, Swainson's Hawk and White-tailed Kite through PG&E's San Joaquin Valley O&M Habitat Conservation Plan in the total amount of 2.63 acres. Confirmation of the completion of this obligation must be provided to the CPUC prior to the commencement of ground-disturbing activities in agricultural land.
CULTURAL AND PALEONTOLOGICAL RESOURCES	
APM CUL-1:	Worker education training. The following procedures will be implemented prior to commencement of any project-related construction activities: • All PG&E, contractor, and subcontractor project personnel will receive training regarding: o appropriate work practices necessary to effectively implement the APMs and to comply with the applicable environmental laws and regulations; o the potential for exposing subsurface cultural resources and paleontological resources; and o how to recognize possible buried cultural and paleontological resources. • This training will include a presentation of:

	○ procedures to be followed upon discovery or suspected discovery of historic or archaeological materials, including Native American remains and their treatment; ○ procedures to be followed upon discovery or suspected discovery of paleontological resources; and actions that may be taken in the case of violation of applicable laws.
APM CUL-2:	Inadvertent discovery of previously unidentified cultural resources. The following procedure will be employed if a previously undocumented cultural resource is encountered during construction: • All work within 100 feet (30 meters) of the find will be halted or redirected by the construction foreman and protective barriers or flagging will be installed along with signage identifying the area as an "environmentally sensitive area." Entry into the area will be limited to PG&E-approved/qualified cultural resources specialists, PG&E, and other authorized personnel. • PG&E and the CPUC will be notified immediately. • A qualified archaeologist will document the resource and coordinate with PG&E, the landowner, and the CPUC on the appropriate steps for evaluation and preservation of the find. The level of effort will be based on the size and nature of the resource, as determined by the archeologist and approved by the CPUC. • No work will occur within the environmentally sensitive area until clearance has been granted by the archaeologist or PG&E and the CPUC. Environmentally sensitive area flagging and signage will only be removed when authorized by PG&E or the archaeologist and the CPUC.
APM CUL-3:	Discovery of human remains. The following procedures will be implemented in the event of the discovery of human remains, in compliance with California law, including, but not limited to, the following provisions: CEQA Guidelines Section 15064.5(e); PRC Sections 5097.94, 5097.98, and 5097.99; and California Health and Safety Code Section 7050.5: • Work in the immediate area of the find will be halted and the PG&E archaeologist and County Coroner and the CPUC will be notified immediately. Work will remain suspended until the Coroner can assess the remains. In the event the remains are determined to be prehistoric in origin, the Coroner will notify the NAHC, which will then identify a Most Likely Descendent (MLD). The MLD will consult with PG&E's archaeologist within 48 hours of notification to determine further treatment of the remains.
APM CUL-4:	Undiscovered potential tribal cultural resources. The following procedure will be employed (after stopping work and following the procedure for determining eligibility in APM CUL-2) if a resource is encountered and determined by the project's qualified archaeologist to be potentially eligible for the CRHR or a local register of historic resources and is associated with a California Native American Tribe(s) with a traditional and cultural affiliation with the geographic area of the proposed project: • The project's qualified archaeologist will notify the CPUC for appropriate action. PG&E will assist the CPUC if needed to identify the lead contact person for the California Native American Tribe(s) potentially associated with the cultural resource and with a traditional and cultural affiliation with the geographic area of the proposed project. The CPUC will contact the lead contact person to set up a meeting with PG&E and the CPUC. • The project's qualified archaeologist will participate with the CPUC in discussions with the California Native American Tribe(s) to determine whether the resource is a "tribal cultural resource" as defined by PRC section 21074, and the tribe(s)' preferred method of mitigation, if the resource is determined to be a TCR. If no agreement can be reached for mitigation after discussions with the California Native American Tribe(s) or it is determined that the tribe(s)' preferred mitigation is not feasible, PG&E will consult with the CPUC and implement one of the example mitigation measures listed in PRC section 21084.3(b), or other feasible mitigation.
APM CUL-5:	Discovery of paleontological resources. If paleontological resources are discovered during construction activities, the following procedures will be followed: • Stop work immediately within 100 feet of the discovery. • Contact the designated project inspector PG&E CRS, and the CPUC immediately. • Protect the site from further impacts, including looting, erosion, or other human or natural damage. • PG&E's CRS will arrange for a Principal Paleontologist to evaluate the discovery. If the discovery is determined to be significant, PG&E will consult with the CPUC and implement appropriate measures to protect and document the paleontological resource. Examples of such measures include: establishing recovery standards, preparing specimens for identification and preservation, and securing a curation agreement from the appropriate agency.

	• Work may not resume within 100 feet of the find until approval by the paleontologist and PG&E CRS, and the CPUC.
GEOLOGY AND SOILS	
APM GS-1:	Minimization of construction above liquefiable soils or in soft or loose soils. PG&E will conduct geotechnical investigations prior to construction to identify liquefiable soils, soft soils or loose soils, and implement design and civil engineering standards in accordance with California Building Code (2016) and to comply with California State General Order 95 (2015) standards.
GREENHOUSE GAS EMISSIONS	
APM GHG-1:	Minimize GHG Emissions. The following procedures will be implemented: • Minimize unnecessary construction vehicle idling time. The ability to limit construction vehicle idling time will depend on the sequence of construction activities and when and where vehicles are needed or staged. Certain vehicles, such as large diesel-powered vehicles, have extended warm-up times following start-up that limit their availability for use following start-up. Where such diesel-powered vehicles are required for repetitive construction tasks, these vehicles may require more idling time. The project will apply a "common sense" approach to vehicle use, so that idling is reduced as far as possible below the maximum of 5 consecutive minutes allowed by California law; if a vehicle is not required for use immediately or continuously for construction activities, its engine will be shut off. Construction foremen will include briefings to crews on vehicle use as part of pre-construction conferences. Those briefings will include discussion of a "common sense" approach to vehicle use. • Maintain construction equipment in proper working conditions in accordance with PG&E standards. • Minimize construction equipment exhaust by using low-emission or electric construction equipment where feasible. Portable diesel fueled construction equipment with engines 50 hp or larger and manufactured in 2000 or later will be registered under the CARB Statewide Portable Equipment Registration Program. • Minimize welding and cutting by using compression of mechanical applications where practical and within standards. • Encourage the recycling of construction waste where feasible.
APM GHG-2:	Minimize SF6 emissions. The following procedures will be implemented: • Incorporate the new breakers to be installed at Vierra Substation into PG&E's system-wide SF6 emission reduction program. CARB has adopted the Regulation for Reducing Sulfur Hexafluoride Emissions from Gas Insulated Switchgear sections 95350 to 95359, title 17, California Code of Regulations, which requires that company-wide SF6 emission rate not exceed 1 percent by 2020. Since 1998, PG&E has implemented a programmatic plan to inventory, track, and recycle SF6 inputs, and inventory and monitor system-wide SF6 leakage rates to facilitate timely replacement of leaking breakers. PG&E has improved its leak detection procedures and increased awareness of SF6 issues within the company. X-ray technology is now used to inspect internal circuit breaker components to eliminate dismantling of breakers, reducing SF6 handling and accidental releases. As an active member of EPA's SF6 Emission Reduction Partnership for Electrical Power Systems, PG&E has focused on reducing SF6 emissions from its transmission and distribution operations. • Require that the new breakers at Vierra Substation have a manufacturer's guaranteed maximum leakage rate of 0.5 percent per year or less for SF6. • Maintain substation breakers in accordance with PG&E's maintenance standards. • Comply with California Air Resources Board Early Action Measures as these policies become effective.
HAZARDS AND HAZARDOUS MATERIALS	
APM HM-1:	Worker Environmental Training Program. An environmental training program will be established to communicate environmental concerns and appropriate work practices to all construction field personnel. The training program will emphasize site-specific physical conditions to improve hazard prevention, and will include: an overview of Personal Protection Equipment (PPE) (safety vest and hard had requirements); fire safety and fire control (general requirements, preventative steps, and PPE); personal health and safety, electrical safety, and safety procedures and protocols; and a review of the Stormwater Pollution Prevention Plan (SWPPP), which will also address spill response. The worker environmental training program will be provided to CPUC staff for review prior to construction.

APM HM-2:	Update Spill Prevention Control and Counter Measures (SPCC) Plan and Hazardous Materials Business Plan (HMBP). The expanded substation will be equipped with a retention basin that meets SPCC Guidelines (40 Code of Federal Regulations 112). Prior to operation of the project, PG&E will update the existing SPCC Plan and HMBP for Vierra Substation to include all new equipment and on-site hazardous materials associated with the substation expansion, and to address containment from an accidental spill. A copy of the updated SPCC Plan and HMBP will be submitted to the CPUC for record keeping.
APM HM-3:	Emergency spill response equipment and training. Emergency spill response and cleanup kits will be readily available at Vierra Substation for cleanup of an accidental spill. Construction crews will be trained in safe handling and cleanup responsibilities.
APM HM-4:	Soil testing and disposal. In the event soils suspected of being contaminated (on the basis of visual, olfactory, or other evidence) are removed during site grading or excavation activities, the excavated soil will be tested, and if measured above hazardous waste levels, will be contained and disposed of at a licensed waste facility. The presence of known or suspected contaminated soil will require testing and investigation procedures to be supervised by a qualified person, as appropriate, to meet state and federal regulations. In the event groundwater is encountered during construction, the groundwater will be tested prior to being discharged over land or removed from the site. Testing of groundwater will be supervised by a qualified person, as appropriate, to meet state and federal regulations.
HYDROLOGY AND WATER QUALITY	
APM HYDRO-1:	Stormwater Pollution Prevention Plan. PG&E will prepare and implement a SWPPP to prevent construction-related erosion, sediment runoff, and discharge of other pollutants into adjacent waterways and onto neighboring properties. Because project activities will result in ground disturbance of more than one acre, PG&E will obtain coverage under the SWRCB General Permit for Storm Water Discharges Associated with Construction Activity Order No. 2009-0009-DWQ (and as amended by 2010-0014-DWQ and 2012-006-DWQ). To obtain coverage under the permit, PG&E will develop and submit permit registration documents—including a Notice of Intent, SWPPP, risk assessment, site map, construction drawings, certification by Legally Responsible Person (LRP), contractor contact information, and annual fee—to the State of California's SMARTS database and obtain a WDID number prior to initiating construction activities. PG&E will prepare and implement a SWPPP to help stabilize disturbed areas and reduce erosion and sedimentation. A monitoring program will also be established to ensure that the prescribed BMPs are followed during project construction. A qualified SWPPP practitioner will oversee the implementation of the SWPPP and associated BMPs. The following measures are generally drawn from the permit and will be included in the SWPPP prepared for the construction of the project: • All BMPs will be on site and ready for installation before the start of construction activities. • BMPs will be developed to prevent the acceleration of natural erosion and sedimentation rates, such as the use of silt fence and wattles. • Prior to conducting clearing activities during the wet season and before the onset of winter rains or any anticipated storm events, erosion-control measures will be installed. Temporary measures such as silt fences or wattles, which are intended to minimize sediment transport from temporarily disturbed areas, will remain in place until disturbed areas have stabilized. If the project is exempt from local post-construction storm water BMP requirements, the permit registration documents shall contain: • A post-construction storm water system design • Demonstrated compliance with post-construction water balance calculator
NOISE	
APM NOI-1:	Construction schedule limits. Construction hours within the project area, which is industrially-zoned, will typically occur between the hours of 7:00 a.m. and 7:00 p.m., Monday through Friday, and between 9:00 a.m. and 7:00 p.m. Saturday. Nighttime work is not anticipated but may occur to take advantage of line clearances during off-peak hours, which would be short in duration. If nighttime work is needed because of clearance restrictions on the existing power lines connected to Vierra Substation, PG&E will take appropriate measures to minimize disturbances to local residents, including contacting nearby residences within 500 feet of the activity to inform them of the work schedule and probable inconveniences.

APM NOI-2:	Construction equipment noise reduction devices. Construction equipment will use noise reduction devices that are no less effective than those originally installed by the manufacturer.
APM NOI-3:	Placement of stationary construction equipment. Stationary equipment used during construction will be located as far as practical from sensitive noise receptors.
APM NOI-4:	Minimization of unnecessary engine idling. Construction crews will limit unnecessary engine idling. (See APM GHG-1.)
APM NOI-5:	Use of "quiet" equipment. Where feasible, equipment will be used that is specifically designed for low-noise emissions or that is powered by electric or natural gas as opposed to diesel or gasoline.
APM NOI-6:	Sensitive Receptor Notification. Sensitive receptors in areas of heavy construction noise, including helicopter usage, will be notified prior to commencing construction activities. Notification will include written notice and posting signs in appropriate locations, with a contact number to call with questions and concerns.
TRANSPORTATION AND TRAFFIC	
APM TRA-1:	Temporary traffic controls. PG&E will obtain any necessary transportation and/or encroachment permits, including those for transport of oversized loads and certain materials, and will comply with permit requirements designed to prevent excessive congestion or traffic hazards during lane closures. PG&E will develop lane closure/width reduction or traffic diversion plans, as required by the encroachment permits. Construction activities that are in, along, or cross local roadways and rail lines will follow best management practices to minimize impacts on traffic and transportation in the project area.
APM TRA-2:	Air transit and neighborhood coordination. PG&E will implement the following protocols that pertain to helicopter use and air traffic during construction: • PG&E will comply with all applicable FAA regulations regarding air traffic within 2 miles of the project alignment. • PG&E's helicopter operator will coordinate all project helicopter operations with the local airport before and during project construction.
APM TRA-3:	Crossroads Commerce Center coordination. Prior to the start of construction, PG&E will consult with the Crossroads Commerce Center regarding the schedule of traffic using the private rail spur that crosses Nestle Way to reduce potential interruption of rail services serving the industrial park.

Sources: PGE, 2018a; 2018d

4.10 Electric and Magnetic Fields Summary

This IS does not consider electric and magnetic fields (EMF) in the context of a CEQA analysis of potential environmental impacts because (1) there is no agreement among scientists that EMF creates a potential health risk, and (2) there are no defined or adopted CEQA standards for defining health risk from EMF. Section X of GO 131-D requires applications for a PTC to describe measures taken to reduce exposure to EMF generated by the proposed facilities. In 1993, the Commission issued Decision 93-11-013, which established EMF policy for California's regulated utilities. In 2006, the Commission updated its EMF policy in Decision 06-01-042. The Decision directed the utilities to use a four percent benchmark for low-cost measures.

PG&E included a Preliminary Transmission EMF Management Plan for the project in which no cost and low-cost field mitigation measures were considered for each line segment (PGE, 2018e). This plan considered four structures in the residential land uses area near Vierra Substation on Vierra Road for magnetic field reduction. Optimal phasing and raising the conductor by 10 feet over the required minimum clearance requirements of 30 feet (GO-95) were the two reduction measures considered. The phasing is already optimal, leaving raising the height of the conductors at the four transmission poles in the residential land use area (along Vierra Road). PG&E would raise the minimum conductor height to 40 feet (30-foot minimum clearance plus 10 feet). Appendix D presents the Preliminary Transmission EMF Management Plan submitted by PG&E for the project. For additional information about EMFs and CPUC guidelines, refer to:
http://www.cpuc.ca.gov/PUC/energy/Environment/ElectroMagnetic+Fields.

4.11 Lead Agency Contact

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4.12 Applicant Contact

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4.13 References

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Section 5

Environmental Analysis and Mitigation

5 Environmental Setting and Environmental Impacts

5.1 Aesthetics

This section describes the environmental and regulatory setting, and discusses impacts specific to aesthetics associated with the construction and operation of the proposed project in the existing *landscape*.[1] The aesthetic effects discussed are limited to the new power line, Vierra Substation expansion, and modifications within the Manteca, Tracy and Kasson substations.

The project includes modifications to other facilities; the Ripon Cogen, Tesla, and Howland Road substations, and the Mount Oso and Highland Peak microwave towers. Modifications at the Ripon Cogen and Tesla substations involve upgrading equipment within the existing control rooms. These improvements would not be publicly visible. Modifications at the Howland Road Substation include installing a new circuit switcher and voltage transformer, affixing a 12-foot tall antenna on an existing microwave tower, replacing a wood pole with a light-duty steel pole, and installing a new tubular steel pole. The substation is surrounded by industrial uses and screened from *public view*.[2] Upgrades to the Mount Oso and Highland Peak microwave towers entail installing three, 6-foot diameter microwave dishes on Mount Oso and one, 6-foot diameter dish on Highland Peak telecommunication towers. The towers are in remote areas in Stanislaus and Contra Costa counties and the upgrades would be an imperceptible change in the landscape. These components of the project would not have a substantial adverse effect pertaining to aesthetics and are not discussed further in this section.

AESTHETICS Except as provided in Public Resources Code Section 21099[3], would the project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Have a substantial adverse effect on a scenic vista?	☐	☐	☒	☐
b. Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a State scenic highway?	☐	☐	☒	☐
c. In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?	☐	☐	☒	☐

[1] For the purposes of this section, a *landscape* is defined as, "The outdoor environment, natural or built, which can be directly perceived by a person visiting and using that environment. A scene is the subset of a landscape which is viewed from one location (vantage point) looking in one direction." (Hull and Revell, 1989) "The term landscape clearly focuses upon the visual properties or characteristics of the environment, these include natural and man-made elements and physical and biological resources which could be identified visually; thus non-visual biological functions, cultural/historical values, wildlife and endangered species, wilderness value, opportunities for recreation activities and a large array of tastes, smells and feelings are not included."(Daniel and Vining, 1983)

[2] A *public view* is the visible area from a location where the public has a legal and physical right of access to real property (e.g., city sidewalk, public park, town square, state highway). See CEQA Guidelines Appendix G Environmental Checklist Form, I. Aesthetics, c. The California Courts of Appeal, Fourth District wrote, "under CEQA, the question is whether a project will affect the environment of persons in general, not whether a project will affect particular persons." (Mira Mar Mobile Community v. City of Oceanside (2004) 119 Cal. App. 4th 477.)

[3] Public Resources Code section 21099, asks is the proposed project an "employment center project" on an "infill site" within a "transit priority area" as defined in this section. Public Resources Code section 21099(d)(1) states, "Aesthetic and parking impacts of a residential, mixed-use residential, or employment center project on an infill site within a transit priority area shall not be considered significant impacts on the environment."

AESTHETICS Except as provided in Public Resources Code Section 21099[3], would the project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
d. Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	☐	☐	☒	☐

Environmental checklist established by California Environmental Quality Act Guidelines, Appendix G.

5.1.1 Setting

The new power line and Vierra Substation expansion are to be constructed in an industrial area within the southeast portion of the City of Lathrop, California. The San Joaquin River is approximately two miles to the west, the California Coast Ranges 40 miles farther. The City of Manteca and the Sierra Nevada are one-mile and 90 miles to the east, respectively. U.S. Interstate 5 (I-5), a major north-south transportation system, traverses the city. State Route (SR) 120, a major east-west system, is to the south. Warehousing and logistics facilities, wastewater treatment ponds, agricultural fields, undeveloped land, and scattered single-family residences are in the area.

The substation expansion proposes an upgrade to Pacific Gas and Electric's (PG&E's) existing 1.6-acre Vierra Substation (see **Figure 5.1-1**). The 3.4-acre addition is to permit a compact breaker and a half (BAAH) bus configuration and associated equipment, a 110-120-foot tall lattice tower affixed with one microwave dish six feet in diameter and a three-foot antenna (see **Figure 5.1-2**). The new power line involves the installation of a 115-kilovolt (kV) double-circuit power line with 16 galvanized tubular steel poles (TSPs) 80-90 feet tall spanning one-mile west to the Tesla-Stockton Cogen Junction 115-kV power line (see **Figure 5.1-3**). Refer to Section 4, *Project Description* for details regarding the project.

The Manteca Substation is located near the center of the City of Manteca. It is surrounded by low-density residential and medium-density residential. The Tracy Substation is in the northeast part of the City of Tracy and surrounded by industrial uses. The Kasson Substation is in the unincorporated area in southwestern San Joaquin County. It is surrounded by agricultural land, along I-5, and near the California Department of Corrections Deuel Vocational Institution.

Modifications within the Manteca, Tracy and Kasson substations involves installing telecommunications equipment. Specifically, the installing of a 60-foot tall monopole affixed with two six-foot diameter microwave dishes at Manteca and Tracy substations, and a 60-foot tall monopole affixed with a six-foot diameter microwave dish at Kasson.

Regulatory Background

Federal

No federal regulations related to aesthetics apply to the project.

State

California Public Utilities Commission General Order No. 131-D. The California Public Utilities Commission (CPUC) has sole and exclusive state jurisdiction over the siting and design of the project.

Figure 5.1-1
Existing View from D'Arcy Parkway looking east

Source: PGE, 2018a

Figure 5.1-2
Visual Simulation from D'Arcy Parkway looking east

Source: PGE, 2018g

Figure 5.1-3
Steel Tubular Pole Locations along Christopher Way

Source: California Energy Commission

Pursuant to CPUC General Order 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 Commission's jurisdiction." Local ordinances, policies, and requirements are summarized here for informational purposes.

California Scenic Highway Program. The California Scenic Highway Program is a provision of the Streets and Highways Code established by the Legislature in 1963 to preserve and enhance the natural beauty of California. The Scenic Highway Program includes highways that are eligible for designation as scenic highways or designated as such. A city or county may propose highways with outstanding scenic elements to the list of eligible highways; however, state legislation is required for a highway to be eligible for designation as a scenic highway. The status of a state scenic highway changes from eligible to officially designated when the local jurisdiction adopts a scenic corridor protection program, applies to the California Department of Transportation (Caltrans) for scenic highway approval, and receives the designation from Caltrans. Review of the California Scenic Highway Mapping System shows no designated state scenic highway near the new power line and Vierra Substation expansion, and substation modifications at Kasson, Manteca, and Tracy.

Local

City of Lathrop. The Comprehensive General Plan for the City of Lathrop (Lathrop General Plan) was adopted December 17, 1991, as amended, shows the area bordered by Louise Avenue, I-5, a Southern Pacific Railroad track, and McKinley Avenue within the General Industrial (GI) land use designation. The General Plan states "These areas provide opportunities for large-scale industries requiring substantial acreage with access to rail and freeway facilities. The term 'general' implies industrial operations which are relatively high in intensity of operation and which may require special conditions such as noise attenuation equipment or emission control equipment to mitigate potential adverse impacts." (Lathrop, 1991) "The purpose of this district is to provide for a full range of manufacturing, industrial processing, general service, and distribution uses. Residential housing is not permitted." (Lathrop, 1991)

The industrial development standards for the GI land use designation states "Because of often prominent visibility, industrial sites should be subject to the same standards for visual screening with ornamental walls, screen fencing and landscaping and street trees, frontage landscaping and parking lot landscaping as provided for commercial areas…. Architectural design standards are to be provided as deed restrictions within industrial parks." (Lathrop, 1991)

The Lathrop Zoning Code establishes zoning districts applied to individual properties consistent with the General Plan land use designations. For each of the zoning districts, the Code identifies land uses that are permitted, conditionally permitted, and not permitted. It also establishes standards such as minimum lot size, maximum building height, and the minimum distance buildings are set back from the street. Provisions for parking, landscaping, lighting, and other rules that guide the development of projects are also included.

The City of Lathrop Zoning Map shows the project and vicinity in the General Industrial (IG) zoning district. As stated in section 17.48.030 of the zoning code, "This district is intended for application to those urban areas of the city which are designated for heavy industrial use in the general plan." (Lathrop, 2018) A few examples of permitted uses within this zoning district include aircraft and aircraft accessories and parts manufacture, automobile, truck and trailer accessories and parts manufacturing, cement products manufacture, concrete and concrete products manufacture, machinery manufacture, steam electric generating stations, and steel products manufacture and assembly.

The following IG zoning code requirements have some relation to scenic quality. They are discussed in Section 5.1.3 *Environmental Impacts and Mitigation Measures*.

- Section 17.48.050 of the zoning code states screening and landscaping—Fences, walls and hedges shall conform to the provisions of Chapter 17.92.
- Section 17.92.030B states "Landscaping. All areas not used for structures, parking, driveways, walkways or other hardscape shall be landscaped and maintained as provided by the provisions of this title. At a minimum, ten percent (10%) of the net site area shall be landscaped and all areas of the project area abutting other properties or public rights-of-way shall include a continuous landscaped planting strip no smaller than five feet in width. All landscaping materials used shall be in accordance with Section 17.92.100 and in conformance with the approved tree and shrub schedule and criteria as provided in Section 17.92.090. All existing trees on the project site shall be maintained unless removal or relocation has been approved by the community development director or the city manager's designee, and as identified on an approved landscape plan pursuant to Section 17.92.040."
- Section 17.48.050G states the building height shall be no greater than 76 feet, unless a building height of no greater than 95 feet is determined to be warranted by the planning commission under the provisions of Chapter 17.100, and except that a greater height may be approved for tanks, towers, silos and similar facilities under the provisions of Chapter 17.112.
- Section 17.48.050I states no signs or outdoor advertising structure of any character shall be permitted, except as provided in Chapter 17.84.

Zoning Code section 17.108.080 states "the provisions of this chapter shall not be construed as to limit or interfere with the construction, installation, operation and maintenance of any uses coming under the jurisdiction of the public utilities commission, which uses are related to the public utility purposes of water and gas pipes … electric light and power distribution and transmission lines….".

City of Manteca. The Manteca General Plan 2023 Land Use Map shows the Manteca Substation land use designation Public/Quasi-Public. This designation provides for government owned facilities, public and private schools, institutions, civic uses and public utilities, and quasi-public uses such as hospitals and churches. Review of the Manteca General Plan Policy Document indicates that the substation is not located within a scenic vista. The city zoning district map shows the substation within the Public/Quasi-Public district. This zoning district provides for government-owned facilities, public and private schools, institutions, civic uses and public utilities, and quasi-public uses such as hospitals and religious institutions. There is no height requirement in this zoning district.

City of Tracy. The Tracy General Plan Land Use Designations shows the Tracy Substation as Industrial. This land use designation provides for uses such as warehouses and distribution facilities, light manufacturing, self-storage facilities, aggregate deposits and extraction operations, and automobile garages. Review of the Tracy General Plan indicates that the substation is not located within a scenic vista. The city zoning district map shows the substation within the Light Industrial district. This zoning district provides for commercial and industrial activities such as minor public services users, local public service and utility installations, crop and tree farming, warehousing and storage, small recycling collection facilities, light manufacturing uses. There is no height requirement in this zoning district.

San Joaquin County. The San Joaquin County General Plan Policy Document shows the Kasson Substation land use designation as Agricultural General (A/G). This designation provides for large-scale agricultural production and associated processing, sales, and support uses. Review of the General Plan indicates that

the Kasson Substation is not located within a scenic vista. The county zoning district map shows the substation within the General Agriculture (AG) zoning district. This zoning district is established to preserve agricultural lands for the continuation of commercial agriculture enterprises. There is no height requirement in this zoning district.

5.1.2 Applicant Proposed Measures

PG&E proposes to implement the following Applicant Proposed Measures (APMs) for aesthetics as part of the project.

APM AES-1: Nighttime lighting to minimize potential visual impacts. Nighttime construction activities, if they occur, will incorporate measures such as use of non-glare or hooded fixtures and directional lighting to reduce spillover into areas outside the construction site and minimize the visibility of lighting from off-site locations wherever feasible.

APM AES-2: Construction cleanup. Construction activities will be kept as clean and inconspicuous as practical. Construction debris will be picked up regularly from construction areas. The appearance of disturbed land areas will be restored to approximate pre-construction visual conditions, where feasible and consistent with landowner requests, through implementation of re-contouring and/or re-vegetation.

APM AES-3: Use of galvanized finish on TSPs. Use of a galvanized finish that will weather to a dull, non-reflective patina on new TSPs will reduce the potential for a new source of glare resulting from introduction of project elements.

APM AES-4: Perimeter wall, fence and landscaping for partial screening of substation expansion. A perimeter wall will be installed along the south side of the substation (facing Vierra Road) to provide partial screening of the expanded substation. A perimeter chain link fence with neutral gray slats will enclose the west side of the expanded substation (facing D'Arcy Parkway railroad overcrossing). The design of the wall and fence will be comparable to the design of the existing substation perimeter wall and fence. Landscaping along the substation perimeter will also be comparable to existing landscaping at the substation, and will include similar landscaping comprising drought-tolerant shrubs.

5.1.3 Environmental Impacts and Mitigation Measures

In the California Code of Regulations, section 15382, the California Environmental Quality Act (CEQA) Guidelines define a *significant effect on the environment* to mean "a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project including land, air, water, minerals, flora, fauna, ambient noise, and objects of historic or aesthetic significance." [Emphasis added].

The CEQA Guidelines Appendix G Environmental Checklist Form, I. Aesthetics (CCR, 2018) was used to assess the proposed project's potential environmental effect. The project's aesthetic effect is discussed below.

a. Would the project have a substantial adverse effect on a scenic vista?

Neither CEQA nor the CEQA Guidelines provide a clear-cut definition of what constitutes a scenic vista. Lead agencies may look to local planning thresholds for guidance when defining the visual impact

standard for the purposes of CEQA.[4] A general plan, specific plan, zoning code or other planning document may provide guidance.

Construction, Operation, and Maintenance

LESS THAN SIGNIFICANT IMPACT. The Lathrop General Plan does not designate a distinct scenic vista or provide a specific related policy. The General Plan states the following regarding scenic vista. "In addition to the San Joaquin River environment, there are scenic vistas of the Coast Range and the Sierra...." (Lathrop, 1991) The San Joaquin River is approximately two miles to the west of the project and not seen from the project site. A portion of the California Coast Ranges, the Diablo Range is about 40 miles to the west, and the Sierra Nevada is 90 miles to the east. In visual impact assessment, areas beyond the foreground-middleground zone from a viewpoint, but usually less than 15 miles away are in the background zone. Areas not seen as foreground-middleground or background are in the seldom-seen zone. The background and seldom-seen zones are viewed in less detail by the observer, and most impacts blend with the landscape because of distance. (BLM, 1986) The Diablo Range and Sierra Nevada are in the seldom-seen zone.

Review of the Manteca General Plan, Tracy General Plan and the San Joaquin County General Plan indicate that the Manteca, Tracy and Kasson substations are not located within a scenic vista.

In addition, this analysis used as the definition for a scenic vista "a distant view of high pictorial quality perceived through and along a corridor or opening." The California Energy Commission in its Commission Decision (certification) for a number of thermal power plant projects used this definition.[5] The new power line, Vierra Substation expansion area, and the Manteca, Tracy, and Kasson substations are located on a relatively unenclosed plain, the San Joaquin Valley floor. A site visit, review of site photographs (applicant, staff and other), and aerial and street view imagery using Google Earth Pro (build date March 5, 2019) concluded the new power line and the Vierra Substation expansion area are not located within a scenic vista as defined. Similarly, review of site photographs and aerial and street view imagery concluded the Manteca, Tracy, and Kasson substations are not located within a scenic vista. Therefore, construction, operation and maintenance of the project would not have a substantial adverse effect on a scenic vista and the impact would be less than significant.

Mitigation Measures: None recommended.

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b. Would the project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?

Neither CEQA nor the CEQA Guidelines provide a clear-cut definition of what constitutes a scenic resource. A scenic resource may be explained in general as a widely recognized natural or man-made

[4] *Mira Mar Mobile Community v. City of Oceanside* (2004) 119 Cal. App. 4th 477.

[5] California Energy Commission Final Decision for GWF Tracy Combined Cycle Power Plant Project Docket Number 08-AFC-7, Visual Resources, p. 321; California Energy Commission Decision for Mariposa Energy Project Docket Number 09-AFC-3, Visual Resources, p. 5; California Energy Commission Decision for Blythe Solar Power Project Docket Number 09-AFC-6, Visual Resources, p. 514; California Energy Commission Decision for Genesis Solar Energy Project Docket Number 09-AFC-8, Visual Resources, p. 7-8; California Energy Commission Decision for Pio Pico Energy Center Docket Number 11-AFC-01, Visual Resources, p. 8.5-4.

feature tangible in the landscape (e.g., a scenic resource designated in an adopted federal, state, or local government document or plan, a landmark, or a cultural resource [historic values however differ from aesthetic or scenic values]). This analysis evaluated if the project would substantially damage—eliminate or obstruct—the public view of a scenic resource, and if the project is situated so that it changes the visual aspect of the scenic resource by being different or in sharp contrast.

Construction, Operation, and Maintenance

LESS THAN SIGNIFICANT IMPACT. A site visit, and review of site photographs, aerial and street view imagery, and the Lathrop General Plan found no scenic resource on the site or in the area of the new power line and Vierra Substation expansion.

Review of the Manteca and Tracy General Plans and the San Joaquin County General Plan, site photographs, and aerial and street view imagery found no scenic resource on the site or in the vicinity of the Manteca, Tracy and Kasson substations.

The construction, operation and maintenance of the new power line, Vierra Substation expansion, and modifications within the Manteca, Tracy and Kasson substations would not substantially damage a scenic resource. The impact would be less than significant.

Mitigation Measures: None recommended.

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c. Would the project in non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?

Public Resources Code section 21071 defines an *urbanized area*.[6] The applicable parts of the above question are discussed below dependent on whether the project or part thereof is in an urbanized area as defined or in a non-urbanized area.

Construction

LESS THAN SIGNIFICANT IMPACT. For the reasons explained below for Operation and Maintenance, construction-related activities would not conflict with applicable zoning and other regulations governing scenic quality and would not substantially degrade the existing visual character or quality of public views of the site and its surroundings.

In addition, construction-related activities would not result in a permanent view alteration to the landscape provided the surface area(s) where the activity takes place is returned/restored to its pre-construction condition. The cleanup and post-construction restoration activities discussed in Section 4, *Project Description*, and proposed by PG&E in APM AES-2 would ensure no significant effects from construction-related activity.

Mitigation Measures: None recommended.

[6] An *urbanized area* includes "(a) An incorporated city that meets either of the following criteria: (1) Has a population of a least 100,000 persons. (2) Has a population of less than 100,000 persons if the population of that city and not more than two contiguous incorporated cities combined equals at least 100,000 persons." (Public Resources Code section 21071)

Operation and Maintenance

LESS THAN SIGNIFICANT IMPACT. The new power line and Vierra Substation expansion area are within an urbanized area. Based on information from the U.S. Census Bureau, the City of Lathrop estimated 2019-population was 23,284 and the contiguous City of Manteca estimated 2019-population was 81,592 (U.S. Census, 2019). The two contiguous incorporated cities combined population totals 104,876 greater than 100,000 thereby constituting an urbanized area.

The City of Lathrop IG zoning district is intended for application to those areas of the city designated for heavy industrial use in the General Plan. According to section 17.48.030 of the zoning code, the new power line and Vierra substation structures are permitted in the zoning district that includes "public utility and public service structures and facilities, such as communications equipment buildings, electric distribution substations, electric transmission substations, gas regulator stations, pumping stations, public utility service yards, corporation yards, railroad rights-of-way and stations, reservoirs and storage tanks." (Lathrop, 2018).

The new power line and Vierra Substation expansion would not conflict with the following zoning regulations governing scenic quality.

- Section 17.48.050 of the zoning code notes that the IG zoning district requires screening and landscaping—fences, walls and hedges conform to the provisions of Chapter 17.92 (Lathrop, 2018).

The Vierra Substation expansion area will be largely hardscape. All unpaved areas will have aggregate spread over. Paved roads will be constructed within the expanded substation to provide access to equipment and connect to asphalt roadways within the existing substation. (PGE, 2018a) The expansion area would have a precast concrete wall along the south side facing Vierra Road, consistent with the existing substation wall, and nine-foot-tall chain link fencing consisting of an eight-foot-tall chain link fence topped with one-foot of barbed wire on the remaining sides, or as in accordance with security requirements. Consistent with the existing substation, the substation expansion area will have landscaping (nonnative trees and shrubs, common oleander) in front of the new wall and fence.

The TSP location will dictate pole landscaping. Restoration of the TSP site is required in accordance to APM AES-2. TSPs will be approximately two to four feet wide at the base. All TSPs will have concrete pier foundations measuring approximately four to six feet in diameter. Approximately half of the TSP work areas will be on paved surfaces other pole work areas are immediately adjacent to a paved road. Landscaping planted along Nestle Way and Christopher Way may need to be removed. Currently there are approximately two pine trees, two oak trees, and one eucalyptus tree that will need to be removed. (PGE, 2018a) **Figure 5.1-4** is a view from the main vehicle entrance to the City of Lathrop Consolidated Treatment Facility (wastewater treatment facility) looking northeast along Christopher Way. Four 80-90-foot tall galvanized TSPs are to be installed south of the street along the wastewater treatment facility. **Figure 5.1-5** is a view from the intersection of Christopher Way and Nestle Way near the main entrance to the wastewater treatment facility approximately 285 feet east of a TSP site. **Figure 5.1-6** shows the existing view with a photo-realistic simulation of the TSP. The City of Lathrop's landscape plan for D'Arcy Parkway indicates three eucalyptus trees may need to be removed.

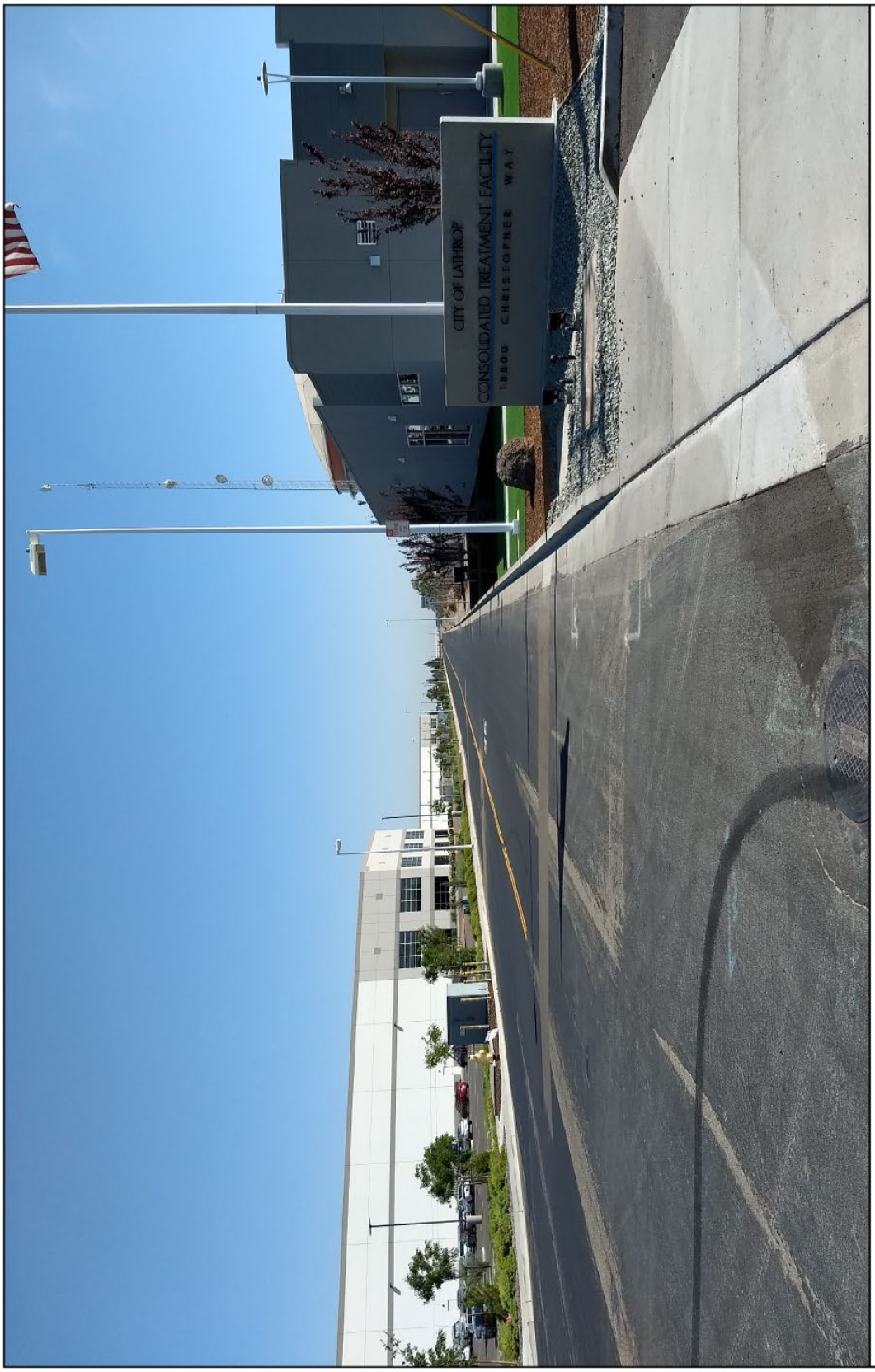

Figure 5.1-4
Existing View Along Christopher Way Looking Northeast

Source: California Energy Commission

Figure 5.1-5
Existing View from Christopher Way at Nestlé Way Looking West
Source: PGE, 2018a

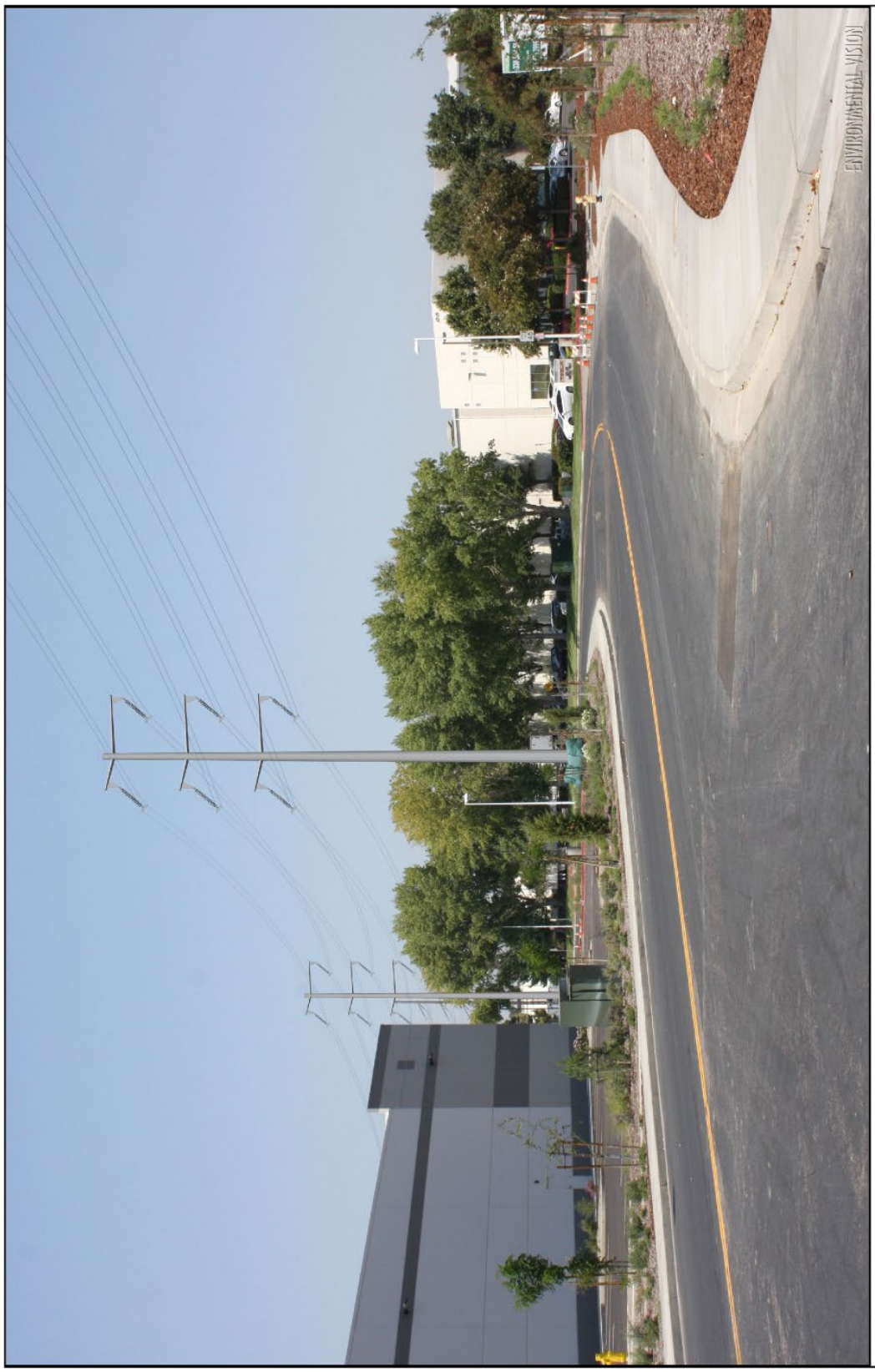

Figure 5.1-6
Visual Simulation from Christopher Way at Nestlé Way Looking West
Source: PGE, 2018a

PG&E is to coordinate with the City of Lathrop regarding tree replacement with species compatible with power line easements. (PGE, 2018a)

- Section 17.48.050G of the zoning code notes the IG zoning district requires the building height be no greater than 76 feet, unless a building height of no greater than 95 feet is determined to be warranted by the planning commission under the provisions of Chapter 17.100, and except that a greater height may be approved for tanks, towers, silos and similar facilities under the provisions of Chapter 17.112. (Lathrop, 2018)

The Vierra Substation expansion area includes a 100-120-foot tall lattice tower, and the installation of a 115-kV double-circuit power line on 16 TSPs ranging 80 to 90 feet in height. Proposed project structures would conform to the zoning district requirement.

- Section 17.48.050I of the zoning code notes the IG zoning district requirement states no signs or outdoor advertising structure of any character shall be permitted, except as provided in Chapter 17.84. (Lathrop, 2018)

The applicant is not installing any signs in the Vierra Substation expansion area or along the new power line.

For the above reasons, the new power line and structures in the Vierra Substation expansion area would not conflict with applicable zoning and other regulations governing scenic quality. The new power line and Vierra substation structures would have a less than significant effect within this urbanized area.

Manteca, Tracy, and Kasson Substations

The Manteca Substation is a ten-acre site in the City of Manteca. Manteca is an urbanized area. The city-zoning map shows the substation in the Public/Quasi-Public district. This zoning district permits outright utility facilities and infrastructure. The landscape surrounding the substation consists of low-density residential (1 to 8 units per acres) and medium–density residential (8 to 15 units per acres). Review of Google Earth Pro aerial and street view images and site photographs concluded the construction and installation of a 60-foot tall monopole affixed with two six-foot wide microwave dishes inside the Manteca Substation would not conflict with applicable zoning and other regulations governing scenic quality. The modification would have a less than significant effect within this urbanized area.

The Tracy Substation is a one and three-quarter-acre site within the incorporated City of Tracy. Tracy is not an urbanized area per Public Resources Code section 21071. The city had an estimated 2019 population of 91,812 (U.S. Census, 2019), less than 100,000. The city-zoning map shows the substation within the Light Industrial zoning district. This zoning district allows as a permitted use local public service and utility installations. The landscape surrounding the substation consist of industrial uses; mainly distribution centers (e.g., PepsiCo, Inc.). Aboveground buildings, structures, and trees surround the project site. For this analysis, Google Earth Pro aerial and street view imagery and site photographs were reviewed. The landscape view character surrounding the substation is considered moderate. The prominence of the substation modification in the landscape would be negligible. The visual absorption capability of the landscape to absorb the modification is considered high. The magnitude of change created by the modification to the landscape would be unobtrusive. Therefore, the construction and installing of a 60-foot tall monopole affixed with two six-foot wide microwave dishes inside the Tracy Substation would not substantially degrade the existing visual character or

quality of public views of the site and its surroundings. The modification would have a less than significant effect within this non-urbanized area.

The Kasson Substation is a three and a half-acre site within the unincorporated area of San Joaquin County. The portion of unincorporated area is a non-urbanized area per Public Resources Code section 21071.[7] The county zoning map shows the substation in the General Agricultural zoning district. The landscape surrounding the substation includes agricultural land, I-5, transmission line lattice towers, and the California Department of Corrections Deuel Vocational Institution. Google Earth Pro aerial and street view imagery and site photographs were reviewed. The landscape view character surrounding the substation is considered low. The prominence of the substation modification in the landscape would be negligible. The visual absorption capability of the landscape to absorb the modification is considered moderate. The magnitude of change created by the modification to the landscape would be unobtrusive. Hence, the construction and installing of a 60-foot tall monopole affixed with one six-foot wide microwave dish inside the Kasson Substation would not substantially degrade the existing visual character or quality of public views of the site and its surroundings. The modification would have a less than significant effect within this non-urbanized area.

Mitigation Measures: None recommended.

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d. Would the project create a new source of substantial light or glare that would adversely affect day or nighttime views in the area?

Light trespass is "light falling where it is not wanted or needed" (e.g., spill light, obtrusive light) (IDA, 2017). Glare is "intense and blinding light that reduces visibility. A light within the field of vision that is brighter than the brightness to which the eyes are adapted" (IDA, 2017). Sky glow is a result of light fixtures that emit a portion of their light directly upward into the sky where light scatters, creating an orange-yellow glow in the nighttime sky. Reflectivity "…does not create its own light. It borrows light from another source. The borrowed light waves strike an object and 'bounce' from it. The reflectance of the object–how bright it shines–depends on the intensity of the light striking it and the materials from which it is made." (3M, 2017)

Construction

LESS THAN SIGNIFICANT IMPACT. Construction during the nighttime is not anticipated. Staging areas may have nighttime light for security purposes. Outdoor light fixtures would be non-reflective, hooded, and directional to prevent light trespass, glare, and reflectivity exiting the construction site(s). APM AES-1 would prevent the project's construction-related activities from creating new substantial light, glare, and reflectivity that would adversely affect day and nighttime views in the area. Consequently, the impact would be less than significant.

Mitigation Measures: None recommended.

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[7] An unincorporated area that is not completely surrounded by one or more incorporated cities, and the following criteria are met:
The population of the unincorporated area and the population of the surrounding incorporated city or cities equals less than 100,000 persons.
The population density of the unincorporated area is less than the population density of the surrounding city or cities. It is not located within an urban growth boundary in an adopted General Plan and has an existing residential population of at least 5,000 persons per square mile. (Public Resources Code section 21071)

Operation and Maintenance

LESS THAN SIGNIFICANT IMPACT. No lighting is to be installed along the new power line. The Vierra Substation expansion area would have outdoor nighttime light for safety and security purposes. Outdoor light fixtures would be non-reflective, hooded, and directional to prevent light trespass and glare.

Substation expansion area structures and TSPs would have a galvanized finish that would weather to a dull, non-reflective patina to reduce reflectivity.

The substation expansion includes a new perimeter wall that would have a neutral gray color with a non-reflective finish, and non-native trees, shrubs and oleanders planted on the outside of the wall (see **Figure 5.1-2**).

No lighting is to be installed on the 60-foot tall monopoles at the Manteca, Tracy and Kasson substations.

APM AES-1, APM AES-3, and APM AES-4 would prevent the project's operation and maintenance from creating a new source of substantial outdoor light, glare, and reflectivity from adversely affecting day and nighttime views in the area. Therefore, the impact would be less than significant.

Mitigation Measures: None recommended.

5.1.3 References

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5.2 Agriculture and Forestry Resources

This section describes the environmental and regulatory setting and discusses impacts associated with the construction and operation of the project with respect to agriculture and forestry resources.

Analysis of impacts is limited to the new power line and Vierra Substation expansion project components. The proposed upgrade work at the remote telecommunication towers involves modifications to existing structures where there would be no ground disturbance and existing access roads would be used to access the sites. The remote substations are existing industrial facilities with utility infrastructure. All telecommunications equipment, including new monopoles with dishes, and piers for the new transformer and trench for conduit would be installed within existing walls/fence lines and existing roads would be used to access the sites. Installation of telecommunication equipment would not constitute a change in land use, and thus would not convert or conflict with existing zoning with respect to agriculture and forestry resources. Therefore, these project components would have no impact on agricultural resources or forest land and they are not discussed further in this section.

AGRICULTURE AND FORESTRY RESOURCES

In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Department of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment Project; and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board.

Would the project:	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less than Significant Impact	No Impact
a. Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☐	☐	☒	☐
b. Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☐	☒
c. Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?	☐	☐	☐	☒
d. Result in the loss of forest land or conversion of forest land to non-forest use?	☐	☐	☐	☒
e. Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to non-agricultural use or conversion of forest land to non-forest use?	☐	☐	☒	☐

Environmental checklist established by California Environmental Quality Act Guidelines, Appendix G.

5.2.1 Setting

The new power line and Vierra Substation expansion components of the project are located in the City of Lathrop in southern San Joaquin County. These project components would be located on land designated for General Industrial uses (Lathrop, 2017a). Both of these project components would cross some land currently used for agriculture and land mapped as Prime Farmland and Farmland of Statewide Importance. The triangular parcel at the northern corner of the intersection of Christopher Way and Nestle Way (the location of pole 4 shown in Figure 4-4d) is mapped as a combination of Prime Farmland and Farmland of Statewide Importance (CDOC, 2016a); however, this site is now fully developed and has not been available for agricultural use since at least 2017 (Google, 2017). Therefore, this parcel no longer meets the qualifications of Important Farmland. A desktop review of aerial and street-level photography indicates that there are no forested lands along the power line alignment or at the Vierra Substation expansion location (Google, 2018; 2019).

The only portion of any of the project sites with existing agricultural use is the parcels on Vierra Street, west of the existing Vierra substation. The parcels are owned by J.R. Simplot Company (the "Simplot property") and would be the location of the substation expansion and temporary work area (staging area and pole work areas). The 2016 Farmland Mapping and Monitoring Program (FMMP) map identifies the Simplot property as Farmland of Statewide Importance, and the Proponent's Environmental Assessment (PEA) indicates that it was planted with alfalfa as of June 2018 (PGE, 2018a; 2018b).

Regulatory Background

Federal

No federal regulations related to agriculture and forestry resources apply to the project.

State

Williamson Act. The Williamson Act, or California Land Conservation Act (California Government Code Section 51200 et seq.), is designed to preserve agricultural and open space land. It allows private landowners to enroll in contracts that voluntarily restrict land to agricultural and open space uses. In return, Williamson Act parcels receive a lower property tax rate consistent with agricultural and open space use instead of their market rate value. The California Department of Conservation shows the project would not be located on land under a Williamson Act contract (CDOC, 2016a).

Farmland Mapping and Monitoring Program. The California Department of Conservation established the Farmland Mapping and Monitoring Program (FMMP) in 1982 to assess the location, quantity, and quality of agricultural lands and conversion of these lands to other uses. Every even-numbered year, FMMP publishes a Farmland Conversion Report. FMMP data are used in elements of some county and city general plans, in regional studies on agricultural land conversion, and in environmental documents as a way of assessing project-specific impacts on farmland.

The FMMP identifies and maps agricultural lands as Prime Farmland, Farmland of Statewide Importance, and Unique Farmland. The FMMP shows that project components would be located in areas identified as Prime Farmland and Farmland of Statewide Importance as described in Section 5.2.1. The Prime Farmland categorization is applied to land that comprises the optimal combination of physical and chemical features for long-term agricultural production. This land has the soil quality, growing season, and moisture supply needed to produce sustained high yields. The Farmland of Statewide Importance categorization is similar to Prime Farmland but with minor shortcomings, such as greater slopes or less ability to store soil moisture. For both categorizations the land must have been used for irrigated agricultural production

some time during the four years prior to the mapping date. Project components do not cross any land mapped as Unique Farmland (CDOC, 2016b).

Local

The project is not subject to local discretionary regulations because the California Public Utilities Commission (CPUC) has exclusive jurisdiction over the siting, design and construction of the project under CPUC General Order No. 131-D. Local ordinances, policies, and requirements are summarized here for information purposes.

Lathrop General Plan/Zoning Ordinance. The Lathrop General Plan has three sub-planning areas and the project is located within Sub-Plan Area (SPA) #1. There is no land designated or zoned as agriculture in SPA #1. The Project location is designated and zoned as General Industrial (Lathrop, 2017a; 2017b). There is no land designated or zoned as forest within the city (Lathrop 2004, 2017a, 2017b).

5.2.2 Applicant Proposed Measures

Pacific Gas and Electric Company (PG&E) proposes to implement the following Applicant Proposed Measure (APM) for agriculture and forestry resources as part of the project.

APM AGR-1: Landowner Coordination. PG&E will coordinate with J. R. Simplot Company (or tenant) in advance of construction activities to minimize impacts on agricultural operations.

5.2.3 Environmental Impacts and Mitigation Measures

a. Would the project convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as Shown on the Maps Prepared Pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to Non-agricultural use?

Construction

LESS THAN SIGNIFICANT IMPACT. Construction of the new power line and Vierra Substation expansion would result in temporary impacts to 0.40 acre of Prime Farmland and 9.72 acres of Farmland of Statewide Importance. **Table 5.2-1** shows the acres of agricultural land based on FMMP mapped Farmland with temporary and permanent impacts. **Table 5.2-2** shows the acres of agricultural lands based on current use with temporary and permanent impacts. For purposes of this analysis, construction impacts are defined as effects that would occur in temporarily disturbed areas during construction and end when construction is complete. Long-term impacts that would continue for the life of the project are described as Operation and Maintenance impacts below, even if they would begin to occur during construction.

TABLE 5.2-1 AGRICULTURAL LANDS BASED ON FMMP MAPPING

Project Component	Temporary Impacts (acres)			Permanent Impacts (acres)
	Farmland of Local Importance	Farmland of Statewide Importance	Prime Farmland	Farmland of Statewide Importance
Vierra Substation expansion	n/a	n/a	n/a	2.47
Pole Work Areas, Pull Sites, Staging Areas, Guard Structures	1.77	9.64	0.40	n/a
Access Road	n/a	0.08	n/a	n/a
TOTAL ACRES	1.77	9.72	0.40	2.47

n/a- not applicable Source: PGE 2018b

TABLE 5.2-2 AGRICULTURAL LANDS BASED ON CURRENT USE

Project Component	Temporary Impacts (acres)		Permanent Impact (acres)
	Farmland of Local Importance	Farmland of Statewide Importance	Farmland of Statewide Importance
Vierra Substation expansion	n/a	n/a	2.47
Pole Work Areas, Pull Sites, Staging Areas, Guard Structures	0.62	9.33	n/a
Access Roads	n/a	0.08	n/a
TOTAL ACRES	0.62	9.41	2.47

n/a- not applicable Source: PGE 2018b

The parcel located at the northeast corner of Christopher Way and Nestle Way is identified as Prime Farmland. The land is located in an industrial park and is currently not being used for agricultural production. A tubular steel pole (TSP) would be installed in a landscaped area between the sidewalk and parking lot. Temporary impacts to 0.40 acre of Prime Farmland would be at the pull site and pole work area.

The parcels west of the Vierra Substation are on land identified as Farmland of Statewide Importance. The land is owned by J. R. Simplot Company and is being leased for agricultural production. Construction would cause temporary impacts to 9.72 acres of Farmland of Statewide Importance for working areas around the TSPs, staging areas, access roads, guard structures, and pull and tension sites (see **Figure 4-4a** and **4-4b**).

Construction activities could interfere with agricultural operations surrounding the substation by temporarily restricting landowner and/or tenant access and through mowing, clearing, and/or crushing existing vegetation to accommodate construction activities. At the TSP sites, the temporary impact from construction would occur over approximately two days at each TSP site.

All temporary construction work areas in agricultural areas would be restored once construction is completed. APM AGR-1 specifies that PG&E would coordinate with the J.R. Simplot Company (or tenant) to minimize impacts on agricultural operations. Therefore, project construction would have a less than significant impact on the conversion of Farmland to non-agricultural use.

Mitigation Measures: None recommended.

Operation and Maintenance

LESS THAN SIGNIFICANT IMPACT. The permanent presence of the new power line and Vierra Substation expansion would result in the permanent conversion of approximately 2.47 acres of mapped Farmland of Statewide Importance to non-agricultural use. There would be six TSPs and three distribution poles (poles) from the relocated power line located on Farmland of Statewide Importance outside the permanent footprint of the Vierra Substation expansion (see **Figure 4-4a** and **Figure 4-4b**). The poles would result in the permanent loss of an area approximately 4 to 6 feet in diameter at each pole location, for a total

footprint between 0.003 acre (113 square feet) and 0.006 acre (255 square feet), and would not preclude continued agricultural production from occurring around each pole location.

The project site is designated and zoned General Industrial by the City of Lathrop, which includes public utilities and public service structures and facilities as permitted uses. Although project components would physically convert 2.47 acres of mapped Farmland of Statewide Importance to non-agricultural use, the resulting expanded substation use would be consistent with local land use plans, policies, and regulations, which designate the area for General Industrial use (see Section 5.11, *Land Use and Planning*, for more detail regarding general plan and zoning designations).

To determine the potential significance of the project's permanent conversion of agricultural land, an analysis using the California Department of Conservation's Land Evaluation and Site Assessment (LESA) Model was conducted. The LESA Model is a point-based approach for rating the relative importance of agricultural land resources based upon specific measurable features such as soil resource quality, the project's size, water resource availability, surrounding agricultural lands, and surrounding protected resource lands (CDOC, 1997). The LESA score calculated for the potential significance of the project's conversion of agricultural land is 49.5 (*Appendix E*). A total LESA score of 40-59 points is not considered significant according to the LESA Model Scoring Thresholds. Therefore, the project's conversion of farmland to non-agricultural use would be a less than significant impact.

Mitigation Measures: None recommended.

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b. Would the project conflict with existing zoning for agricultural use, or a Williamson Act contract?

Construction, Operation, and Maintenance

NO IMPACT. The new power line and Vierra Substation expansion would not be located on land zoned for agricultural use or located on land under a Williamson Act contract. Therefore, the project could have no impact with respect to agricultural zoning or conservation under the Williamson Act.

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c. Would the project conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?

Construction, Operation, and Maintenance

NO IMPACT. There is no land zoned for forest land or timberland in the project area. Therefore, construction, operation, and maintenance of the new power line and Vierra Substation expansion would not conflict with existing zoning for, or cause the rezoning of, forest land or timberland. There would be no impact.

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d. Would the project result in the loss of forest land or conversion of forest land to non-forest use?

Construction, Operation, and Maintenance

NO IMPACT. There is no forest land in the project area. Therefore, construction, operation, and maintenance of the new power line and Vierra Substation expansion would not result in the loss or conversion of forest land to non-forest uses and there would be no impact.

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e. Would the project involve other changes in the existing environment, which, due to their location or nature, could result in conversion of Farmland to non-agricultural use or conversion of forest land to non-forest use?

Construction

LESS THAN SIGNIFICANT IMPACT. Construction of the new power line and Vierra Substation expansion would not interfere with the use of adjacent land for agriculture or involve other changes beyond those described under question a) that could result in the conversion of Farmland to non-agricultural use. APM AGR-1 would require PG&E to coordinate construction activities with land owners or tenants to minimize impacts on agricultural operations. There is no forest land in the area of the project components, so there would be no conversion of forest land to non-forest use. With implementation of APM AGR-1 impacts would be less than significant.

Mitigation Measures: None recommended.

Operation and Maintenance

NO IMPACT. Operation and maintenance of the new power line and expanded Vierra Substation would not involve other changes in the existing environment such as precluding access or water supply to an agricultural area that would result in conversion of Farmland to non-agricultural use. The location of the new power line and relocated power line would be near the southern boundary of the Simplot property and adjacent to Vierra Road. The new power line and substation would be compatible with the existing zoning and land uses. Operation of the Vierra Substation would be conducted remotely from PG&E's Grid Control Center. Inspection and maintenance activities by existing PG&E staff would occur monthly for the expanded substation and annually for the new power line, or as needed for an event such as an emergency. Operation and maintenance would not result in the conversion of Farmland to non-agricultural uses or forest land to non-forest uses, and there would be no impact.

5.2.4 References

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5.3 Air Quality

This section describes the environmental and regulatory setting and discusses impacts associated with the construction and operation of the project with respect to air quality.

AIR QUALITY Where available, the significance criteria established by the applicable air quality management district or air pollution control district may be relied upon to make 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?	☐	☐	☒	☐
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?	☐	☐	☒	☐
c. Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☒	☐
d. Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?	☐	☐	☒	☐

Environmental checklist established California Environmental Quality Act Guidelines, Appendix G.

5.3.1 Setting

Air Basin

Construction of the project would occur in two air basins: the San Joaquin Valley Air Basin (SJVAB) and the San Francisco Bay Area Air Basin (SFBAAB). Construction of the new power line, the Vierra Substation expansion, and modifications at the remote Howland Road, Kasson, Manteca, Tracy, and Ripon Cogen substations would all be in San Joaquin County. Upgrades to the telecommunication tower at the remote Mount Oso microwave station would be in Stanislaus County. Both San Joaquin County and Stanislaus County are within the SJVAB. Upgrades would also be needed at the remote Tesla Substation located in eastern Alameda County, and at the Highland Peak microwave station located in southern Contra Costa County (PGE, 2018a; 2019a). Alameda County and Contra Costa County are within the Bay Area Air Quality Management District (BAAQMD) and therefore within the legally described boundary of the SFBAAB.

The SJVAB includes Fresno, Kings, Madera, Merced, San Joaquin, Stanislaus, and Tulare Counties, as well as the San Joaquin Valley (SJV) portion of Kern County. The SJVAB stretches about 250 miles and comprises the southern half of California's Central Valley. It averages approximately 35 miles wide. The SJV is bordered by the Sierra Nevada Mountains in the east (8,000 to 14,491 feet in elevation), the Coast Ranges in the west (averaging 3,000 feet in elevation), and the Tehachapi mountains in the south (6,000 to 7,981 feet in elevation). There is a slight downward elevation gradient from Bakersfield in the southeast end (elevation 408 feet) to sea level at the northwest end where the valley opens to the San Francisco Bay at the Carquinez Straits. At its northern end is the Sacramento Valley, which comprises the northern half of California's Central Valley. The San Joaquin Valley Air Pollution Control District (SJVAPCD) has jurisdiction over most air quality matters in the SJVAB (SJVAPCD, 2015a).

The SFBAAB is under the jurisdiction of the BAAQMD. The SFBAAB derives its name from the surrounding mountains that confine the movement of air and the pollutants it contains. This area includes all of Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, and Santa Clara counties, the western half of Solano County, and the southern half of Sonoma County.

Climate and Meteorology

The overall climate in the SJVAB is warm and semi-arid. The SJV is in a Mediterranean Climate Zone. Mediterranean Climates Zones occur on the west coast of continents at 30 to 40 degrees latitude and are influenced by a subtropical high-pressure cell most of the year. Mediterranean Climates have sparse rainfall, which occurs mainly in winter. Summers are hot and dry. Summertime maximum temperatures often exceed 100 degrees Fahrenheit (°F) in the SJVAB. There is only one wet season during the year, which is from October through April, when the SJVAB receives 90 percent of its annual precipitation. During the summer, wind usually originates at the north end of the valley and flows in a south-southeasterly direction through the valley and the Tehachapi Pass, into the Mojave Desert. During the winter months, the SJV experiences light and variable winds that are normally less than 10 miles per hour.

The subtropical high-pressure cell is strongest during spring, summer, and fall and produces subsiding air, which can result in temperature inversions in the SJVAB. A temperature inversion can act like a lid, inhibiting vertical mixing of the air mass at the surface. Any emissions of pollutants can be trapped below the inversion. Wintertime high pressure events can often last many weeks with surface temperatures often lowering into the 30s °F. During these events, fog can be present and inversions are extremely strong. These wintertime inversions can inhibit vertical mixing of pollutants to a few hundred feet (SJVAPCD, 2015a).

The regional climate within the SFBAAB is considered semi-arid and is characterized by warm summers, mild winters, infrequent seasonal rainfall, moderate daytime on-shore breezes, and moderate humidity. In the immediate area, average summer temperatures peak in the high 70s °F and drop to the low mid-50s °F, while average winter temperatures peak in the high 50s °F and drop to the upper 30s °F. Approximately 80 percent of annual rainfall in the area occurs during the period of November through March. Annual average wind speeds range from 5 to 10 miles per hour throughout the region, with higher wind speeds usually found along the coast. The prevailing winds along the region's coast are from the west, although individual sites can show significant differences. On the east side of the mountains, winds are generally from the west, with wind patterns in this area often influenced greatly by local topographic features.

Ambient Air Quality

The United States Environmental Protection Agency (U.S. EPA) and the California Air Resources Board (CARB) have established ambient air quality standards for several pollutants based on their adverse health effects (for discussion of health effects, see *Health Effects of Criteria Pollutants*, below). The U.S. EPA has set National Ambient Air Quality Standards (NAAQS) for ozone (O_3), carbon monoxide (CO), nitrogen dioxide (NO_2), particulate matter less than 10 microns (PM10), fine particulate matter less than 2.5 microns (PM2.5), sulfur dioxide (SO_2), and lead (Pb). These pollutants are commonly referred to as "criteria pollutants." Primary standards were set to protect public health; secondary standards were set to protect public welfare against visibility impairment, damage to animals, crops, vegetation, and buildings. In addition, CARB has established California Ambient Air Quality Standards (CAAQS) for these pollutants, as well as for sulfate (SO_4), visibility reducing particles, hydrogen sulfide (H_2S), and vinyl chloride. California standards are generally stricter than national standards. The standards currently in effect in California are shown in **Table 5.3-1**.

TABLE 5.3-1 NATIONAL AND CALIFORNIA AMBIENT AIR QUALITY STANDARDS

Pollutant	Averaging Time	California Standards [a]	National Standards [b]	
			Primary	Secondary
O_3	1-hour	0.09 ppm (180 µg/m³)	—	Same as Primary Standard
	8-hour	0.070 ppm (137 µg/m³)	0.070 ppm (137 µg/m³)	
PM10	24-hour	50 µg/m³	150 µg/m³	Same as Primary Standard
	Annual Mean	20 µg/m³	—	
PM2.5	24-hour	—	35 µg/m³	Same as Primary Standard
	Annual Mean	12 µg/m³	12.0 µg/m³	15 µg/m³
CO	1-hour	20 ppm (23 mg/m³)	35 ppm (40 mg/m³)	—
	8-hour	9.0 ppm (10 mg/m³)	9 ppm (10 mg/m³)	—
NO_2	1-hour	0.18 ppm (339 µg/m³)	100 ppb (188 µg/m³) [c]	—
	Annual Mean	0.030 ppm (57 µg/m³)	0.053 ppm (100 µg/m³)	Same as Primary Standard
SO_2 [d]	1hour	0.25 ppm (655 µg/m³)	75 ppb (196 µg/m³)	—
	3hour	—	—	0.5 ppm (1,300 µg/m³)
	24hour	0.04 ppm (105 µg/m³)	0.14 ppm (for certain areas)	—
	Annual Mean	—	0.030 ppm (for certain areas)	—
Pb	30-Day Average	1.5 µg/m³	—	—
	Calendar Quarter	—	1.5 µg/m³ (for certain areas)	Same as Primary Standard
	Rolling 3-Month Average	—	0.15 µg/m³	
Visibility Reducing Particulates	8-Hour	In sufficient amount to produce an extinction coefficient of 0.23 per kilometer due to particles when the relative humidity is less than 70%.	No National Standards	
SO_4	24-Hour	25 µg/m³		
H_2S	1-Hour	0.03 ppm (42 µg/m³)		
Vinyl Chloride (chloroethene)	24-Hour	0.01 ppm (26 µg/m³)		

ppm=parts per million; ppb = parts per billion; µg/m³ = micrograms per cubic meter; mg/m³ = milligrams per cubic meter; "—" = no standard

[a] California standards for O_3, CO (except 8-hour Lake Tahoe), SO_2 (1 and 24 hour), NO_2, 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.

[b] National standards (other than O_3, PM, NO_2 [see note c below], and those based on annual arithmetic mean) are not to be exceeded more than once a year. The O_3 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.

[c] 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.

[d] 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 nonattainment for the 1971 standards, the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standards are approved.

Source: CARB, 2016a

The U.S. EPA, CARB, and the local air districts classify an area as attainment, unclassified, or nonattainment. The classification depends on whether the monitored ambient air quality data show compliance, insufficient data are available, or non-compliance with the ambient air quality standards, respectively. **Table 5.3-2** summarizes attainment status for the criteria pollutants in the SJVAB and SFBAAB with both the federal and state standards.

TABLE 5.3-2 ATTAINMENT STATUS

Pollutant	SJVAB		SFBAAB	
	Federal Designation	State Designation	Federal Designation	State Designation
O_3 (1-hour)	No Federal Standard [a]	Nonattainment/Severe	No Federal Standard	Nonattainment
O_3 (8-hour)	Nonattainment/Extreme [b]	Nonattainment	Nonattainment	Nonattainment
PM10	Attainment [c]	Nonattainment	Unclassified	Nonattainment
PM2.5	Nonattainment [d]	Nonattainment	Nonattainment	Nonattainment
CO	Unclassified/Attainment	Attainment/Unclassified	Attainment	Attainment
NO_2	Unclassified/Attainment	Attainment	Attainment	Attainment
SO_2	Attainment/Unclassified	Attainment	Attainment/Unclassified	Attainment
Pb	Unclassifiable/Attainment	Attainment	Attainment	Attainment
H_2S	No Federal Standard	Unclassified	No Federal Standard	Unclassified
SO_4	No Federal Standard	Attainment	No Federal Standard	Attainment
Visibility Reducing Particles	No Federal Standard	Unclassified	No Federal Standard	Unclassified
Vinyl Chloride	No Federal Standard	Attainment	No Federal Standard	No Information Available

[a] Effective June 15, 2005, U.S. EPA revoked the federal 1-hour ozone standard, including associated designations and classifications. U.S. EPA had previously classified the SJVAB as extreme nonattainment for this standard. U.S. EPA approved the 2004 Extreme Ozone Attainment Demonstration Plan on March 8, 2010 (effective April 7, 2010). Many applicable requirements for extreme 1-hour ozone nonattainment areas continue to apply to the SJVAB.

[b] Though the SJV was initially classified as being in serious nonattainment for the 1997 8-hour ozone standard, U.S. EPA approved the reclassification to extreme nonattainment in the Federal Register on May 5, 2010. On April 30, 2018, U.S. EPA designated the SJV as extreme nonattainment for the 2015 ozone standards.

[c] On September 25, 2008, U.S. EPA redesignated the SJV to attainment for the PM10 NAAQS and approved the PM10 Maintenance Plan.

[d] The SJV is designated nonattainment for the 1997 PM2.5 NAAQS. U.S. EPA designated the SJV as nonattainment for the 2006 PM2.5 NAAQS on November 13, 2009 (effective December 14, 2009). On December 18, 2014, U.S. EPA designated the SJV as nonattainment for the 2012 annual PM2.5 standard.

Sources: BAAQMD, 2018a; CARB, 2018; SJVAPCD, 2018a; U.S. EPA, 2014; 2018

The SJVAPCD, CARB, National Park Service, and tribal nations operate an extensive network of air monitoring sites throughout the SJVAB. A total of 38 air monitoring sites are currently in operation in the SJVAB, three of which are located in San Joaquin County and two of which are located in Stanislaus County (SJVAPCD, 2018b). The BAAQMD began measuring air quality in the San Francisco Bay Area in 1957. In 2017, there were 32 air monitoring stations in operation within the BAAQMD (BAAQMD, 2018b).

Table 5.3-3 presents the air quality monitoring data for ozone, PM10, and PM2.5 (nonattainment pollutants) in San Joaquin County, Stanislaus County, SJVAB, Alameda County, Contra Costa County, and SFBAAB from 2015 through 2018[1], the most recent years for which data are available.

[1] It should be noted that the maximum concentration values shown for 2018 have not been screened to remove values that are designated as extreme events. Extreme events, such as wildfires, are normally excluded from consideration as AAQS violations for their short-term or long-term ambient pollutant concentration contributions. Extreme events undoubtedly affected many of the maximum concentration values listed for 2018, most of which occurred in mid-November during a period of extensive wildfire activity.

TABLE 5.3-3 AMBIENT AIR QUALITY MONITORING DATA FOR NONATTAINMENT POLLUTANTS

Pollutant	Area	2015	2016	2017	2018	2015	2016	2017	2018**
		# Days > State 1-hour Standard				Max 1-hour Observation			
	San Joaquin County	4	4	0	1	0.107	0.109	0.093	0.099
	Stanislaus County	6	8	3	7	0.113	0.105	0.114	0.108
O_3 (1-hour)	SJVAB	47	51	48	42	0.135	0.131	0.143	0.129
	Alameda County	6	6	5	2	0.105	0.109	0.139	0.099
	Contra Costa County	1	2	3	0	0.106	0.101	0.104	0.093
	SFBAAB	7	6	6	2	0.106	0.109	0.139	0.099
		# Days > State 8-hour Standard				Max State 8-hour Average			
	San Joaquin County	21	19	8	8	0.091	0.092	0.082	0.082
	Stanislaus County	33	31	36	30	0.100	0.092	0.100	0.096
O_3 (8-hour)	SJVAB	99	113	126	112	0.110	0.101	0.113	0.102
	Alameda County	9	15	6	3	0.085	0.087	0.110	0.078
	Contra Costa County	8	3	4	2	0.085	0.083	0.081	0.078
	SFBAAB	12	15	6	3	0.085	0.087	0.110	0.080
		# Days > National 24-Hour Standard				Max National 24-Hour Average			
	San Joaquin County	16.1	5.1	16.9	25	62.1	50.8	53.7	188.0
	Stanislaus County	16.8	13.8	29.2	25.8	60.9	53.6	74.5	189.8
PM2.5	SJVAB	38	25.5	33.8	43.3	107.8	66.4	113.4	189.8
	Alameda County	3.3	0.0	8.0	14.6	44.7	23.9	70.8	172.6
	Contra Costa County	0.0	0.0	9.3	14.4	33.2	20.7	89.4	195.4
	SFBAAB	3.3	0.0	13.3	16.4	49.4	26.5	199.1	197.2
		# Days > State 24-Hour Standard				Max State 24-Hour Average			
	San Joaquin County	24.5	30.6	42.9	31.7	55.3	66.5	92.6	198.6
	Stanislaus County	50.6	*	91.8	79.6	90.3	81.5	128.9	250.4
PM10	SJVAB	121.4	157.9	145.5	164.4	140.3	132.5	210.0	250.4
	Alameda County	*	*	*	*	*	*	*	*
	Contra Costa County	0	0	25.8	*13.1	43.0	34.0	98.0	201.0
	SFBAAB	6.1	0	25.8	13.1	58.0	41.0	98.0	201.0

* No data available
** See footnote 1 above
Source: CARB, 2019

Health Effects of Criteria Pollutants

Below are descriptions of the health effects of criteria pollutants that are a concern in the regional study area.

Ozone. Ozone is a respiratory irritant and an oxidant that increases susceptibility to respiratory infections and that can cause substantial damage to vegetation and other materials. Ozone is not emitted directly into the atmosphere, but is a secondary air pollutant produced in the atmosphere through a complex series of photochemical reactions involving reactive organic gases (ROG) and oxides of nitrogen (NOx), including nitrogen dioxide (NO_2). ROG and NOx are known as precursor compounds for O_3. Significant ozone production generally requires ozone precursors to be present in a stable atmosphere with strong sunlight for approximately 3 hours.

Ozone can cause the muscles in the airways to constrict, potentially leading to wheezing and shortness of breath (U.S. EPA, 2019). Ozone can make it more difficult to breathe deeply and vigorously and cause shortness of breath and pain when taking a deep breath. Ozone can cause coughing and sore or scratchy throat and can inflame and damage the airways. Ozone can aggravate lung diseases such as asthma, emphysema, and chronic bronchitis and increase the frequency of asthma attacks. Ozone can make the lungs more susceptible to infection; continue to damage the lungs even when the symptoms have disappeared; and cause chronic obstructive pulmonary disease (U.S. EPA, 2019). Long-term exposure to ozone is linked to aggravation of asthma, and is likely to be one of many causes of asthma development, and long-term exposures to higher concentrations of ozone may also be linked to permanent lung damage, such as abnormal lung development in children (U.S. EPA, 2019). Inhalation of ozone causes inflammation and irritation of the tissues lining human airways, causing and worsening a variety of symptoms, and exposure to ozone can reduce the volume of air that the lungs breathe in and cause shortness of breath (CARB, 2016b).

People most at risk from breathing air containing ozone include people with asthma, children, older adults, and people who are active outdoors, especially outdoor workers (U.S. EPA, 2019). Children are at greatest risk from exposure to ozone because their lungs are still developing and they are more likely to be active outdoors when ozone levels are high, which increases their exposure (U.S. EPA, 2019). Studies show that children are no more or less likely to suffer harmful effects than adults; however, children and teens may be more susceptible to ozone and other pollutants because they spend nearly twice as much time outdoors and are engaged in vigorous activities compared to adults (CARB, 2016b). Children breathe more rapidly than adults, inhale more pollution per pound of their body weight than adults, and are less likely than adults to notice their own symptoms and avoid harmful exposures. Further research may be able to better distinguish between health effects in children and adults (CARB, 2016b).

Particulate Matter. PM10 and PM2.5 represent fractions of particulate matter that can be inhaled into air passages and the lungs and can cause adverse health effects. Very small particles of certain substances (e.g., sulfates and nitrates) can cause lung damage directly, or can contain absorbed gases (e.g., chlorides or ammonium) that may be injurious to health. Particulates can also damage materials and reduce visibility.

Other Criteria Pollutants. Breathing air with a high concentration of NO_2 can irritate airways in the human respiratory system. Such exposures over short periods can aggravate respiratory diseases, particularly asthma, leading to respiratory symptoms (such as coughing, wheezing or difficulty breathing), hospital admissions and visits to emergency rooms. Longer exposures to elevated concentrations of NO_2 may contribute to the development of asthma and potentially increase susceptibility to respiratory infections. People with asthma, as well as children and the elderly are generally at greater risk for the health effects of NO_2. NO_2 along with other NOx reacts with other chemicals in the air to form both particulate matter and ozone.

CO is a non-reactive pollutant that is a product of incomplete combustion and is mostly associated with motor vehicle traffic. High CO concentrations develop primarily during winter when periods of light winds combine with the formation of ground level temperature inversions (typically from the evening through early morning). These conditions result in reduced dispersion of vehicle emissions. Motor vehicles also exhibit increased CO emission rates at low air temperatures. When inhaled at high concentrations, CO combines with hemoglobin in the blood and reduces the oxygen-carrying capacity of the blood. This results in reduced oxygen reaching the brain, heart, and other body tissues. This condition is especially critical for people with cardiovascular diseases, chronic lung disease, or anemia.

SO_2 is produced through combustion of sulfur or sulfur-containing fuels such as coal. SO_2 is also a precursor to the formation of atmospheric sulfate and particulate matter (PM10 and PM2.5) and contributes to potential atmospheric sulfuric acid formation that could precipitate downwind as acid rain.

Lead has a range of adverse neurotoxin health effects, and was formerly released into the atmosphere primarily via leaded gasoline. The phase-out of leaded gasoline has resulted in decreasing levels of atmospheric lead.

Toxic Air Contaminants

According to section 39655 of the California Health and Safety Code, a toxic air contaminant (TAC) is "an air pollutant which may cause or contribute to an increase in mortality or an increase in serious illness, or which may pose a present or potential hazard to human health." TACs, also referred to as hazardous air pollutants (HAPs) or air toxics, are different from criteria air pollutants such as ground-level ozone, particulate matter, carbon monoxide, nitrogen dioxide, sulfur dioxide, and lead. Criteria air pollutants are regulated using national and state Ambient Air Quality Standards as noted above. However, there are no ambient standards for TACs so site-specific health risk assessments (HRAs) are conducted to evaluate whether risks of exposure to TACs create an adverse impact. TACs that have been identified by CARB are listed at Title 17, California Code of Regulations, sections 93000 and 93001. TACs include asbestos, chemical compounds, diesel exhaust, and certain metals. The requirements of the Air Toxic “Hot Spots” Information and Assessment Act apply to facilities that use, produce, or emit toxic chemicals.

Health Effects of TACs

The health effects associated with TACs are quite diverse and generally are assessed locally, rather than regionally. TACs could cause long-term health effects such as cancer, birth defects, neurological damage, asthma, bronchitis or genetic damage; or short-term effects such as eye watering, respiratory irritation (a cough), running nose, throat pain, and headaches (BAAQMD, 2017a). Numerous other health effects also have been linked to exposure to TACs, including heart disease, Sudden Infant Death Syndrome, respiratory infections in children, lung cancer, and breast cancer (OEHHA, 2015).

The primary TAC of concern from construction activities is diesel particulate matter (diesel PM or DPM). Diesel exhaust is a complex mixture of thousands of gases and fine particles and contains over 40 substances listed by the U.S. EPA as hazardous air pollutants and by CARB as toxic air contaminants. DPM is primarily composed of aggregates of spherical carbon particles coated with organic and inorganic substances. Diesel exhaust deserves particular attention mainly because of its ability to induce serious noncancerous effects and its status as a likely human carcinogen.

Diesel exhaust is classified by CARB as “particulate matter from diesel-fueled engines.” The impacts from human exposure would include both short- and long-term health effects. Short-term effects can include increased coughing, labored breathing, chest tightness, wheezing, and eye and nasal irritation. Effects from long-term exposure can include increased coughing, chronic bronchitis, reductions in lung function, and inflammation of the lung. Epidemiological studies strongly suggest a causal relationship between occupational diesel exhaust exposure and lung cancer. Diesel exhaust is listed by the U.S. EPA as “likely to be carcinogenic to humans” (U.S. EPA, 2003).

Valley Fever

As a population with 35 cases per year of Valley Fever per 100,000 people, San Joaquin County is considered “highly endemic” (San Joaquin County, 2019). Valley Fever is an infectious disease caused by

the fungus Coccidioides immitis. Valley Fever is also known as San Joaquin Valley Fever, Desert Fever, Coccidioidomycosis or Cocci. In susceptible people and animals, infection occurs when a Coccidioides immitis spore is inhaled. Fungal spores become airborne when soil is disturbed by natural processes such as wind or earthquakes, or by human-induced ground disturbing activities such as construction and farming.

The California Department of Public Health reports that farm workers, construction workers, others who engage in soil-disturbing activities, and anyone spending time outdoors in areas with high rates of Valley Fever, such as San Joaquin County, are at risk for Valley Fever (CDPH, 2019). High winds can carry dust containing the spores long distances. Most people infected with Valley Fever have no symptoms, but if symptoms develop, they usually occur in the lung and initially resemble the flu or pneumonia (e.g., fatigue, cough, shortness of breath, chest pain, fever, rash, headache and joint aches). Valley Fever is not contagious, and secondary infections are rare. A 2012 study found that an average of fewer than 200 deaths per year in the U.S. were attributable to Valley Fever between 1990 to 2008, and that the number of Valley Fever-associated deaths each year has been fairly stable since 1997 (Huang, et al., 2012). The number of cases of Valley Fever in San Joaquin County has steadily increased over the past several years. Between 2014 and 2018, the total number of cases increased from 73 to 259. Those most at risk of developing severe symptoms include African Americans, Filipinos, pregnant women, adults of older age groups, and people with weakened immune systems (CDPH, 2019).

Sensitive Receptors

Sensitive receptors refer to those segments of the population most susceptible to poor air quality (i.e., children, the elderly, and those with pre-existing serious health problems). Hospitals, schools, convalescent facilities, and residential areas generally contain sensitive receptors (SJVAPCD, 2015a). The locations of sensitive receptors are needed to assess toxic impacts on public health (SJVAPCD, 2015a).

Sensitive Receptors in the Project Area

The Air Quality and Land Use Handbook (Handbook) indicates several source categories that have the potential to cause long-term public health risk impacts (CARB, 2005). The proposed project components do not fall within any of the categories listed by the 2005 Handbook. However, the 2005 Handbook recommends that sensitive receptors should be located farther than 1,000 feet from a Distribution Center, where trucks, trailers, shipping containers, and other equipment with diesel engines produce diesel particulate matter emissions. Since most of the emissions generated from the proposed project would be exhaust gases and fugitive particulate matter generated by equipment operated during the project's construction, sensitive receptors located within 1,000 feet of the proposed project components were evaluated in order to assess the impacts. There are no schools, parks, playgrounds, day care centers, nursing homes, or hospitals located within 1,000 feet of the proposed project.

Vierra Substation Expansion and New Power Line

There are ten residences and one place of worship within 1,000 feet of the new power line and Vierra Substation expansion. The nearest sensitive receptors to the Vierra Substation expansion are six residences located on the south side of Vierra Road across from the existing substation. All of these residences are within 500 feet of the proposed project. Light of the World Christian Center on Yosemite Avenue is located approximately 500 feet south of the existing substation. The alignment of the new double-circuit 115 kV power line extends through an area that is primarily industrial and commercial. The westernmost residence on Vierra Road is approximately 100 feet from the pole work area. See **Figure 5.3-**

1 for the map of sensitive receptors near the proposed Vierra Substation expansion site and power line alignment.

Remote Substation and Telecommunication Sites

Below are descriptions of the sensitive receptors in the vicinity of the proposed remote substation sites.

- The Howland Road Substation is surrounded by agricultural and industrial uses, in addition to railroad tracks that are 100 feet to the east. The nearest sensitive receptor is a residential area located more than 1,000 feet to the north-northwest and is separated from the substation by the Simplot fertilizer manufacturing company.
- The Kasson Substation is surrounded by agricultural property with the nearest sensitive receptor, a residence, about 500 feet west from the proposed monopole site at the substation.
- Residences and a skate park surround the Manteca Substation. The nearest residences to the proposed monopole site at the substation are across the street along Elm Avenue, at a distance of approximately 250 feet.
- The closest residential area to Tracy Substation is approximately 500 feet to the west, beyond the railroad tracks and industrial area.
- The closest sensitive receptor to Ripon Cogen Substation is a residence approximately 100 feet to the west.
- The closest sensitive receptor to the Tesla Substation site is a residence approximately 800 feet to the south.

There are no sensitive receptors within 1,000 feet of the telecommunication towers at the Highland Peak and Mount Oso microwave stations.

Please see **Figure 5.3-2a** and **Figure 5.3-2b** for the maps of sensitive receptors near the remote substations and remote telecommunications sites, respectively.

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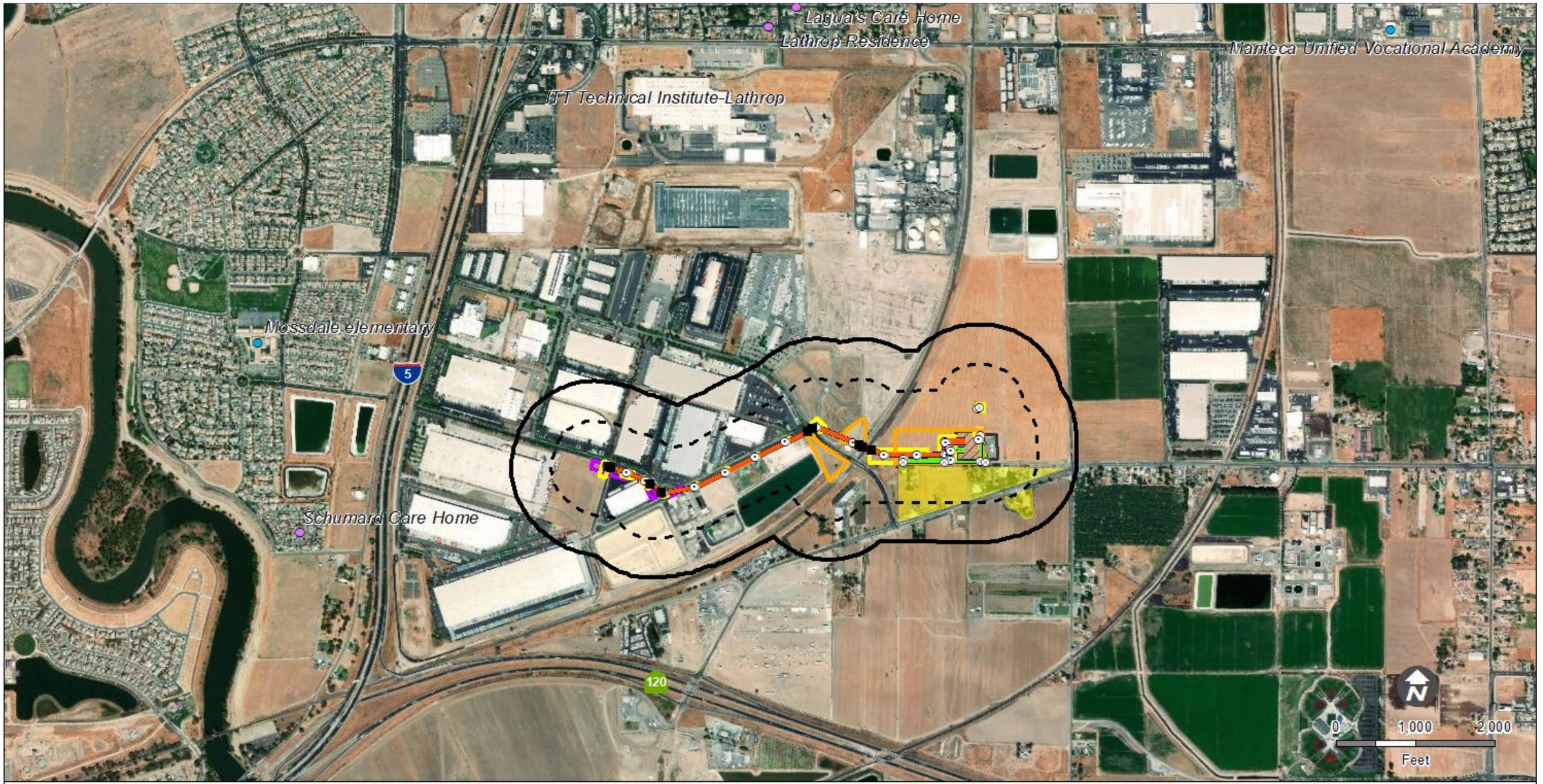


Sensitive Receptors Outside 1,000 Foot Influence Zone
- Day Care Facility
- College/University
- Health Care Facility
- Nursing Home
- School

Pole Locations
- New Pole to be Installed
- Existing Pole to be Removed
- Guard Structures
- New 115 kV Line To Be Installed
- Vierra-Tracy-Kasson 115 kV Power Line Work

Construction Work Area
- Guard Structure Work
- Pull Sites
- Pole Work Area
- Staging Area

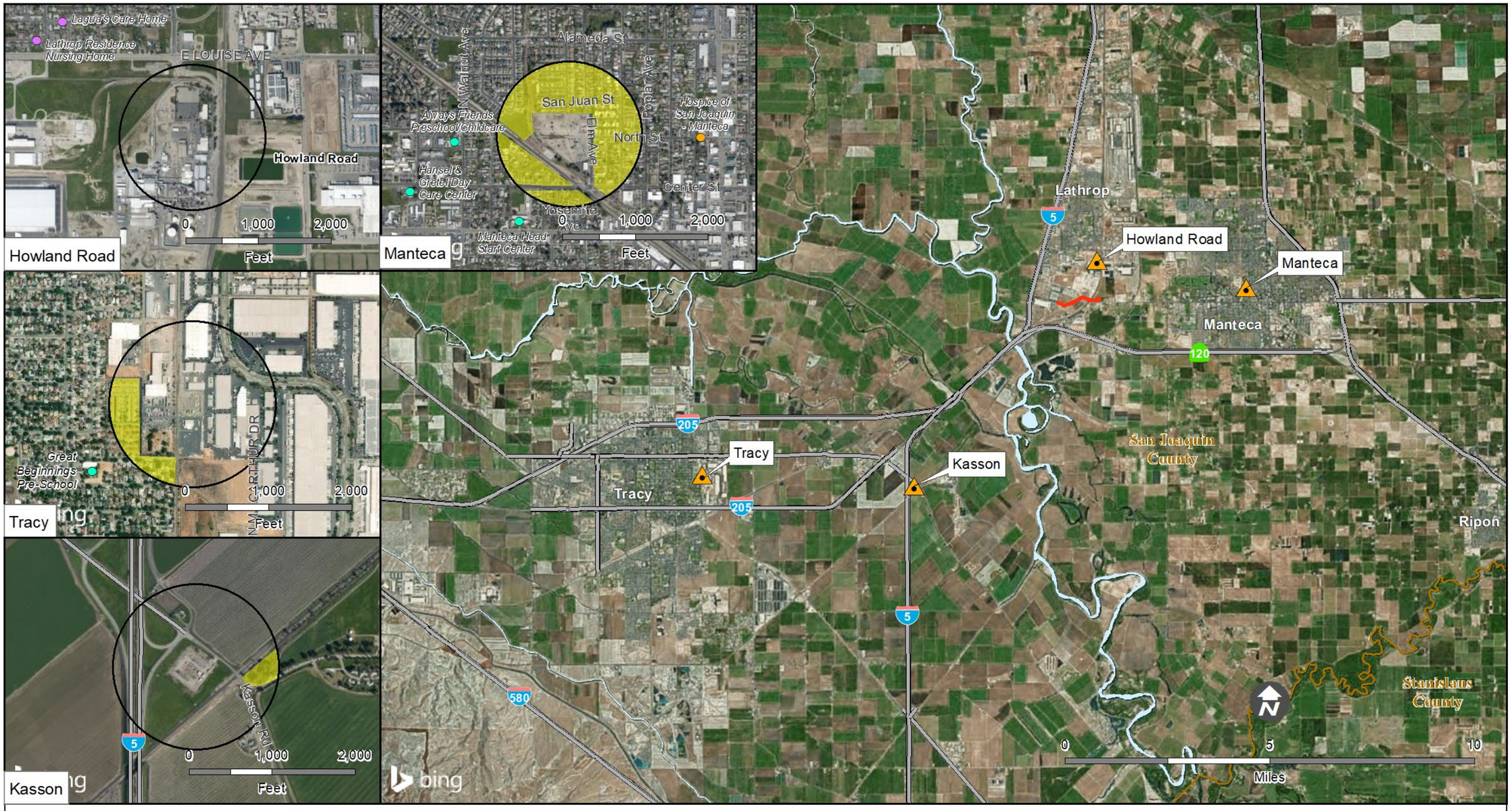
Vierra Substation Footprint
- Existing Substation
- Substation Expansion

- 1,000 Foot Influence Zone
- 500 Foot Influence Zone

- Residential Community

Figure 5.3-1
New Power Line and Vierra Substation Expansion
1,000 Foot Influence Zone

Sources: California Energy Commission; HIFLD; PGE; USGS; NAIP



Sensitive Receptors Outside 1,000 Foot Influence Zone

- Day Care Facility
- Nursing Home
- College/University
- Health Care Facility
- Remote Substation Upgrade
- New 115 kV Line To Be Installed
- 1,000 Foot Influence Zone
- Residential Community

Figure 5.3-2a
Remote Substations
1,000 Foot Influence Zone

Sources: PGE, 2018g; ESRI; BING; Open Street Map; California Energy Commission; TeleAtlas

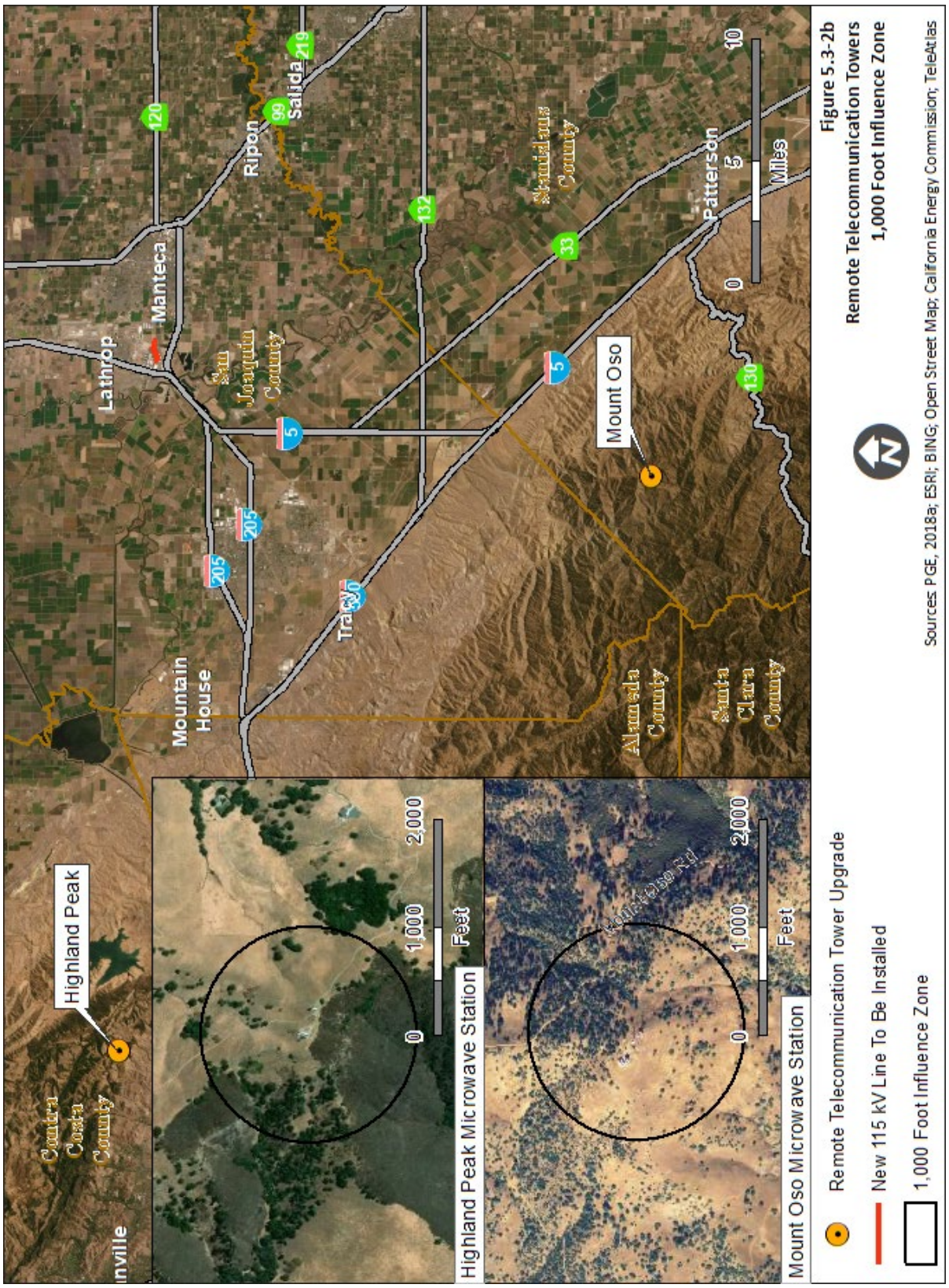


Figure 5.3-2b
Remote Telecommunication Towers
1,000 Foot Influence Zone

Regulatory Background

Federal

Clean Air Act. The federal Clean Air Act (CAA) establishes the statutory framework for regulation of air quality in the United States. Under the CAA, the U.S. EPA oversees implementation of federal programs for permitting new and modified stationary sources, controlling toxic air contaminants, and reducing emissions from motor vehicles and other mobile sources.

Title I (Air Pollution Prevention and Control) of the CAA requires establishment of NAAQS, air quality designations, and plan requirements for nonattainment areas. States are required to submit a state implementation plan (SIP) to the U.S. EPA for areas in nonattainment with NAAQS. The SIP, which is reviewed and approved by the U.S. EPA, must demonstrate how state and local regulatory agencies will institute rules, regulations, and/or other programs to achieve attainment with NAAQS.

Title II (Emission Standards for Mobile Sources) of the CAA contains a number of provisions regarding mobile sources, including requirements for reformulated gasoline, new tailpipe emission standards for cars and trucks, standards for heavy-duty vehicles, and a program for cleaner fleet vehicles.

National Emission Standard for Hazardous Air Pollutants. The CAA defines HAPs as a variety of substances that pose serious health risks. Direct exposure to HAPs has been shown to cause cancer, reproductive effects or birth defects, damage to brain and nervous system, and respiratory disorders. Categories of sources that cause HAP emissions are controlled through separate standards under CAA section 112: National Emission Standards for Hazardous Air Pollutants (NESHAP). These standards are specifically designed to reduce the potency, persistence, or potential bioaccumulation of HAPs.

Although asbestos is not expected to be present at the project site as discussed below, asbestos is addressed here for completeness. Asbestos is a HAP regulated under the U.S. EPA NESHAP. The asbestos NESHAP is intended to provide protection from the release of asbestos fibers during activities involving the handling of asbestos. Air toxics regulations under the CAA specify work practices for asbestos to be followed during operations of demolitions and renovations. The regulations require a thorough inspection of the area where the demolition or renovation operations would occur and advance notification of the appropriate delegated entity. Work practice standards that control asbestos emissions must be implemented, such as removing, wetting, and sealing in leak-tight containers all asbestos-containing materials (ACM) and disposing of the waste as expediently as practicable.

State

California Clean Air Act. The California CAA outlines a statewide air pollution control program in California. CARB is the primary administrator of the California CAA, while local air quality districts administer air rules and regulations at the local and regional levels. CARB is responsible for California air quality management, including establishment of CAAQS, mobile source emission standards, greenhouse gas (GHG) regulations, as well as oversight of local or regional air quality districts and preparation of implementation plans, including regulations for stationary sources of air pollution.

Air Toxic "Hot Spots" Information and Assessment Act. The Air Toxic "Hot Spots" Information and Assessment Act, also known as Assembly Bill (AB) 2588, identifies toxic air contaminant hot spots where emissions from specific stationary sources may expose individuals to an elevated risk of adverse health effects, particularly cancer or reproductive harm. Many toxic air contaminants are also classified as HAPs. AB 2588 requires that a business or other establishment identified as a significant stationary source of

toxic emissions provide the affected population with information about health risks posed by their emissions.

Off-Road Mobile Sources Emission Reduction Program. The California Clean Air Act mandates that CARB achieve the maximum degree of emission reductions from all off-road mobile sources in order to attain the state ambient air quality standards. Off-road mobile sources include construction equipment. The exhaust emissions standards for the off-road mobile sources and ongoing rulemaking jointly address emissions of nitrogen oxides (NOx) and toxic particulate matter from diesel combustion.

Regulation for In-Use Off-Road Diesel-Fueled Fleets. CARB has established the Regulation for In-Use Off-Road Diesel-Fueled Fleets to reduce NOx, DPM, and other criteria pollutant emissions from in-use off-road diesel-fueled vehicles in Title 13, California Code of Regulations, section 2449. This regulation applies to all self-propelled off-road diesel vehicles rated 25 horsepower (hp) or greater, including vehicles that are rented or leased (rental or leased fleets), and requires restricted vehicle idling time, reporting of vehicle use and labeling, and compliance with fleet-average emission standards.

Airborne Toxic Control Measure for DPM from Portable Engines Rated at 50 Horsepower and Greater. In an effort to reduce DPM emissions throughout the state, CARB has established the Airborne Toxic Control Measure (ATCM) for DPM from Portable Engines Rated at 50 Horsepower and Greater (Cal. Code Regs., tit. 13, § 93116). This ATCM requires portable diesel-fueled engines having a maximum rating of 50 hp and greater to meet fleet-average DPM emissions standards.

Airborne Toxic Control Measure to Limit Diesel-Fueled Commercial Motor Vehicle Idling. CARB has established the ATCM to Limit Diesel-Fueled Commercial Motor Vehicle Idling to reduce public exposure to DPM and other air contaminants by establishing idling restrictions, emission standards, and other requirements for heavy-duty diesel engines and alternative idle reduction technologies to limit the idling of diesel-fueled commercial motor vehicles (Cal. Code Regs., tit. 13, § 2485).

Portable Equipment Registration Program. CARB has also established the Portable Equipment Registration Program to allow owners or operators of portable engines and associated equipment commonly used for construction or farming to register their units under a statewide portable program that allows them to operate their equipment throughout California without having to obtain individual permits from local air districts.

Asbestos Airborne Toxic Control Measure for Construction, Grading, Quarrying, and Surface Mining Operations. CARB has established the Asbestos ATCM for Construction, Grading, Quarrying, and Surface Mining Operations to minimize the generation of asbestos from earth disturbance or construction activities. The Asbestos ATCM applies to any project that would include sites to be disturbed in a geographic ultramafic rock unit area or an area where naturally occurring asbestos (NOA), serpentine, or ultramafic rocks are determined to be present. Based upon review of the U.S. Geological Survey map detailing natural occurrence of asbestos in California, NOA is not expected to be present at the project site (CDOC, 2011).

Regional

San Joaquin Valley Air Pollution Control District

The SJVAPCD is responsible for managing and permitting existing, new, and modified sources of air emissions within its boundaries. The SJVAPCD has established rules and regulations that would apply to the project to ensure compliance with local, state, and federal air quality regulations.

CEQA Guidance. The SJVAPCD developed the Guidance for Assessing and Mitigating Air Quality Impacts (SJVAPCD, 2015a) to provide technical guidance for the review of air quality impacts from proposed projects within the boundaries of the SJVAPCD. This document provides SJVAPCD staff uniform procedures for assessing potential air quality impacts of proposed projects and for preparing the air quality section of environmental documents. It is also intended to be an advisory document for use by other agencies, consultants, and project proponents.

Regulation VIII (Fugitive PM10 Prohibition). Regulation VIII contains rules developed pursuant to U.S. EPA guidance for serious PM10 nonattainment areas. The purpose of Regulation VIII is to reduce ambient concentrations of PM10 by requiring actions to prevent, reduce, or mitigate anthropogenic fugitive dust emissions. Regulation VIII requires property owners, contractors, developers, equipment operators, farmers, and public agencies to control fugitive dust emissions from specified outdoor fugitive dust sources including construction, demolition, excavation, extraction, and other earthmoving activities; bulk material handling, storage, and transport; carryout and trackout; open areas; paved and unpaved roads; unpaved vehicle/equipment traffic areas; and agricultural sources.

The project would disturb more than 5 acres of surface area for non-residential development. Therefore, SJVAPCD Rule 8021 would require PG&E to submit a Dust Control Plan prior to the start of any construction activity. The Dust Control Plan must identify the fugitive dust sources at the construction site and describe all fugitive dust control measures to be implemented before, during, and after any dust generating activity.

Extreme 1-hour Ozone Attainment Demonstration Plan. The Extreme Ozone Attainment Demonstration Plan was adopted by the SJVAPCD in 2004 and approved by the U.S. EPA in 2010. In 2012, the U.S. EPA withdrew its 2010 approval of the SJVAPCD's 2004 plan and required submittal of a new plan for the revoked 1-hour standard. The new plan was adopted by SJVAPCD on September 19, 2013. In 2016, the U.S. EPA determined that the San Joaquin Valley has attained the standard.

Eight-Hour Ozone Plan. The Eight-Hour Ozone Plan was adopted by the SJVAPCD in 2007 and approved by the U.S. EPA in 2012. This plan projects that the SJV will achieve the 1997 8-hour ozone standard of 0.08 parts per million (ppm) (rounded from 84 parts per billion [ppb]) for all areas of the SJVAB no later than 2023. In 2008, U.S. EPA reduced the 8-hour ozone standard to 0.075 ppm (75 ppb). In June 2016, the SJVAPCD approved the 2016 Plan for the 2008 8-Hour Ozone Standard (2016 Ozone Plan). The plan sets out the strategy to attain the 2008 8-hour ozone standard by 2031. On July 21, 2016, CARB approved the SJVAPCD 2016 Ozone Plan. In response to court decisions, some elements included in the 2016 Ozone Plan required updates. CARB staff prepared the 2018 Updates to the California SIP to update SIP elements for nonattainment areas throughout the state as needed. CARB adopted the 2018 SIP Update on October 25, 2018. On March 25, 2019, the U.S. EPA took final action in approving the 2018 Updates and

the 2016 Ozone Plan with a conditional approval given that the remaining SIP elements would be completed.

PM10 Maintenance Plan. The SJVAPCD adopted the PM10 Maintenance Plan and Request for Redesignation in 2007, following the U.S. EPA's finding that the SJVAB had attained the federal PM10 standards. In 2008, the U.S. EPA approved the plan and re-designated the SJVAB to attainment for PM10 NAAQS.

PM2.5 Attainment Plans. The SJV is designated as nonattainment for federal PM2.5 standards. The SJVAPCD adopted the 2008 PM2.5 Attainment Plan to set out the strategy to attain the federal 1997 Annual PM2.5 standard of 15 micrograms per cubic meter ($\mu g/m^3$) by 2015. Most of its provisions were approved by the U.S. EPA in 2011. On April 16, 2015, the SJVAPCD adopted the 2015 Plan for the 1997 PM2.5 Standard with a request for deadline extension. The U.S. EPA failed to act on the 2015 Plan for the 1997 PM2.5 Standard by the mandated date of July 2016, and as a result, the U.S. EPA denied a request for extension of attainment date and issued Finding of Failure to Attain (SJVAPCD, 2018c).

On October 17, 2006, the U.S. EPA reduced the 24-hour PM2.5 standard from 65 $\mu g/m^3$ to 35 $\mu g/m^3$. The U.S. EPA designated the SJV as nonattainment for the 2006 PM2.5 NAAQS in 2009. The SJVAPCD 2012 PM2.5 Attainment Plan is designed to achieve the federal 2006 24-hour PM2.5 NAAQS by 2019. CARB approved this plan in 2013. In 2016, the U.S. EPA reclassified the SJV as Serious nonattainment and approved the 2012 PM2.5 Plan.

On December 14, 2012, the U.S. EPA reduced the annual PM2.5 standard from 15 $\mu g/m^3$ to 12 $\mu g/m^3$. On December 18, 2014, the U.S. EPA designated the SJV as nonattainment for the 2012 annual PM2.5 standard. On September 15, 2016, the SJVAPCD adopted the 2016 Moderate Area Plan for the 2012 PM2.5 Standard. The plan includes an attainment impracticability demonstration and request for reclassification of the SJV from Moderate nonattainment to Serious nonattainment. On October 20, 2016, CARB tabled adoption of the 2016 Moderate Area Plan for the 2012 PM2.5 Standard. CARB did not forward the plan to the U.S. EPA and committed to revisit the plan at a later date. On November 15, 2018, the SJVAPCD adopted the 2018 Plan for the 1997, 2006, and 2012 PM2.5 Standards (SJVAPCD, 2018c).

Rule 9510 (Indirect Source Review). The Indirect Source Review rule seeks to reduce the growth in NOx and PM10 emissions associated with construction and operation of new development, and transportation and transit projects in the SJV. The Indirect Source Review rule requires developers to reduce construction NOx and PM10 exhaust emissions by 20 percent and 45 percent, respectively, and reduce operational NOx and PM10 emissions by 33.3 percent and 50 percent, respectively, as compared to the unmitigated baseline. Developers can achieve the required reductions through any combination of SJVAPCD approved on-site emission reduction measures. When a developer cannot achieve the required reductions through on-site measures, off-site mitigation fees are imposed to mitigate the difference between the required emission reductions and the mitigations achieved on-site. The total area for all portions of the project would be 6,490 square feet (PGE, 2018b), which is less than the threshold of 9,000 square feet for projects in the "other" land use category (Section 2.1.10) in Rule 9510. CPUC staff confirmed with SJVAPCD that the project would not be subject to Rule 9510 (CPUC, 2018).

Bay Area Air Quality Management District

Tesla Substation and the Highland Peak communication tower is located in the BAAQMD. The BAAQMD is the regional agency charged with preparing, adopting, and implementing emission control measures and standards for stationary sources of air pollution pursuant to delegated state and federal authority,

for all projects located within their jurisdiction. Under the California CAA, the BAAQMD is required to develop an air quality plan to achieve and/or maintain compliance with federal and state nonattainment criteria pollutants within the air district's boundary.

2001 Ozone Attainment Plan. BAAQMD prepared the 2001 Ozone Attainment Plan to reduce ozone-forming emissions in the SFBAAB by implementing emissions reductions measures for stationary, area, and mobile sources. Strategies include reductions in off-gassing of architectural coatings and organic liquids, low emissions vehicles, expansion of express bus systems, and bicycle and pedestrian programs. The 2001 Ozone Attainment Plan was adopted on November 1, 2001, as a revision to the California State Implementation Plan. The 2001 Ozone Attainment Plan identified proposed control measures to improve air quality and re-attain the national 1-hour ozone standard in the SFBAAB. In a *Federal Register* notice dated April 22, 2004 (69 FR 21717), the U.S. EPA determined that the Bay Area had attained the national 1-hour ozone standard and approved portions of the 2001 Ozone Attainment Plan.

Bay Area 2017 Clean Air Plan. BAAQMD adopted the Bay Area 2017 Clean Air Plan (CAP) on April 19, 2017 (BAAQMD, 2017b). The 2017 Plan provides a regional strategy to protect public health and the climate. To protect public health, the plan describes how the air district will continue its progress toward attaining all state and federal air quality standards and eliminating health risk disparities from exposure to air pollution among Bay Area communities. To protect the climate, the plan defines a vision for transitioning the region to a post-carbon economy needed to achieve ambitious GHG reduction targets for 2030 and 2050, and provides a regional climate protection strategy that will put the Bay Area on a pathway to achieve those GHG reduction targets. See Section 5.8, *Greenhouse Gas Emissions***,** for further information on GHGs.

BAAQMD California Environmental Quality Act Guidelines. BAAQMD publishes CEQA guidelines to assist lead agencies in evaluating a project's potential impacts on air quality. The BAAQMD published the most recent version of its CEQA Guidelines in May 2017 (BAAQMD, 2017a).

Local

No local regulations related to air quality apply to the project.

5.3.2 Applicant Proposed Measures

PG&E proposes to implement the following Applicant Proposed Measure (APM) for air quality as part of the project. Additionally, APM GHG-1 would ensure that generalized procedures for operating and maintaining equipment and limiting idling periods to the minimum necessary to minimize exhaust emissions would be in place and followed. See Section 5.8, *Greenhouse Gas Emissions*, for a full description of APM GHG-1.

APM AIR-1: Fugitive dust emissions minimization. Pursuant to SJVAPCD Regulation VIII, a Dust Control Plan will be submitted to the SJVAPCD for approval at least 30 days prior to commencing construction activities. Based on the SJVAPCD Guidance for Assessing and Mitigating Air Quality Impacts (SJVAPCD, 2015a), the following are examples of fugitive dust control measures that may be included in the Dust Control Plan to minimize dust emissions:

- Apply water to unpaved surfaces and areas;
- Use non-toxic chemical or organic dust suppressants on unpaved roads and traffic areas;
- Limit or reduce vehicle speed on unpaved roads and traffic areas;

- Maintain areas in a stabilized condition by restricting vehicle access;
- Install wind barriers;
- During high winds, cease outdoor activities that disturb the soil;
- Keep bulk materials sufficiently wet when handling;
- When storing bulk materials, apply water to the surface or cover the storage pile with a tarp;
- Don't overload haul trucks. Overloaded trucks are likely to spill bulk materials;
- Cover haul trucks with a tarp or other suitable cover. Or, wet the top of the load enough to limit visible dust emissions;
- Clean the interior of cargo compartments on emptied haul trucks prior to leaving a site;
- Prevent trackout by installing a trackout control device;
- Clean up trackout at least once a day. If along a busy road or highway, clean up trackout immediately;
- Monitor dust-generating activities and implement appropriate measures for maximum dust control.

5.3.3 Environmental Impacts and Mitigation Measures

Methodology

As part of the CPUC's Permit to Construct application process, PG&E provided construction-related air pollutant emissions calculations and estimates for the construction activities that would be associated with the project (see Appendix B, *Air Quality and Greenhouse Gas Emissions Calculations*). The California Emissions Estimator Model (CalEEMod version 2016.3.2) was used to estimate the construction emissions (excluding those from helicopters), emissions from soil disturbance, and emissions from vehicle travel on paved and unpaved roads. Helicopter emissions were estimated manually using emissions factors obtained from the Swiss Federal Office of Civil Aviation (FOCA), Federal Aviation Administration (FAA), and Strategic Environmental Research and Development (SERDP). Short-term construction emissions of NOx, CO, sulfur oxides (SOx), PM10, and PM2.5 were evaluated. Emissions of Reactive Organic Gases (ROGs) were also evaluated because they are precursors for O_3.

PG&E's emission calculations were independently reviewed by CPUC staff and were found to be technically adequate with the following exceptions. Construction emissions associated with Ripon Cogen and Tesla substations were not included in the emissions estimates provided by PG&E; however, based on the construction requirements presented in **Table 4-5a** in Section 4, *Project Description*, annual construction emissions associated with vehicle trips to and from Ripon Cogen and Tesla substations would be approximately five times the emissions associated with vehicle trips to and from the Highland Peak or Mount Oso microwave stations, and daily vehicle trip emissions associated with work at Ripon Cogen and Tesla substations would be approximately the same as daily emissions associated with construction at the Highland Peak or Mount Oso microwave stations. Therefore, PG&E's construction emission estimates were updated to include emission estimates for Ripon Cogen and Tesla substations based on PG&E's emission estimates for Highland Peak and Mount Oso (see more details in Appendix B, Attachment 3) (ESA, 2019a). However, the total annual emissions from vehicle trips from Ripon Cogen and Tesla substations combined would only be a small part (about 0.2 percent, except for PM10, which would be about 0.4 percent) of the total annual construction emissions. The total daily emissions from vehicle trips from Ripon Cogen and Tesla substations combined would only be 0.08 percent to 1.8 percent of the total

daily construction emissions for different pollutants. In addition, PG&E's emission calculations for helicopter activities did not consider fugitive dust; therefore, these emissions were updated to include fugitive dust associated with helicopter take-offs and landings using emission factors from Strategic Environmental Research and Development (SERDP, 2007). See Appendix B, Attachment 3 (ESA, 2019a).

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

The SJVAPCD has adopted several attainment plans that outline long-term strategies designed to achieve compliance with the NAAQS and CAAQS. The plans and the goals applicable to the proposed project are presented in Section 5.3.1, *Setting*, above and include: the Extreme 1-hour Ozone Attainment Demonstration Plan, the Eight-Hour Ozone Plan, the PM10 Maintenance Plan, and the PM2.5 Attainment Plans. The applicable plans are largely based on emission reductions to be achieved through implementation of offset requirements. The SJVAPCD has established thresholds of significance for criteria pollutant emissions (shown in **Table 5.3-4**), based on SJVAPCD New Source Review offset requirements for stationary sources. The SJVAPCD Guidance for Assessing and Mitigating Air Quality Impacts establishes that emission reductions achieved through implementation of SJVAPCD offset requirements are a major component of the SJVAPCD's air quality plans (SJVAPCD, 2015a). Thus, projects with emissions below the thresholds of significance for criteria pollutants would be determined to not conflict or obstruct implementation of the SJVAPCD's air quality plan. Therefore, the thresholds of significance for air quality described in the SJVAPCD Guidance for Assessing and Mitigating Air Quality Impacts were used to assess the significance of whether the project components within the SJVAB and under jurisdiction of SJVAPCD, which is a majority of the project, could result in a conflict with or obstruct implementation of applicable air quality plans (SJVAPCD, 2015a).

For the project components under the jurisdiction of BAAQMD, the applicable air quality plan is the Bay Area 2017 CAP. BAAQMD considers a project consistent with their 2017 CAP if (1) the project supports the primary goals of the 2017 CAP, (2) the project includes applicable control measures from the 2017 CAP, and (3) the project does not disrupt or hinder implementation of any 2017 CAP control measures (BAAQMD, 2017a). The BAAQMD-recommended guidance for determining project support of the goals of the 2017 CAP is to compare the estimated project emissions with BAAQMD-approved CEQA thresholds of significance. If project emissions would not exceed the thresholds of significance after the application of all feasible mitigation measures, the project would be consistent with the goals of the 2017 CAP. Therefore, if the project emissions would not exceed the thresholds after application of all feasible mitigation, the project would be considered consistent with the 2017 CAP (BAAQMD, 2017a). The BAAQMD's average daily criteria air pollutant and precursor thresholds of significance are for construction activity exhaust emissions. These thresholds of significance are shown in **Table 5.3-5**. There is no numerical threshold for fugitive dust that would be generated during construction in SFBAAB. Instead, the BAAQMD recommends implementation of its Basic Control Mitigation Measures in order to conclude that impacts from fugitive dust emissions would be less than significant.

The significance thresholds discussed above were set at emission levels tied to the region's attainment status; they are emission levels at which CEQA projects must use feasible mitigations, and they are not intended to be indicative of any localized human health impact that a project may have (See generally SCAQMD, 2015; SJVAPCD, 2015b). Therefore, a project's exceedance of the mass regional emissions threshold (e.g., pounds per day NOx thresholds) prior to mitigation from construction-related activities does not necessarily indicate that the project would cause or contribute to the exposure of sensitive receptors to ground-level concentrations in excess of health-protective levels.

Furthermore, available models today are designed to determine regional, population-wide health impacts, and cannot accurately quantify ozone-related health impacts caused by a project's NOx or ROG emissions. Therefore, it is infeasible to connect the project level precursor emissions to ozone-related health impacts at this time (SCAQMD, 2015; SJVAPCD, 2015b).

The primary health concern with exposure to NOx emissions is the secondary formation of ozone. Because of the complexity of ozone formation and given the state of environmental science modeling in use at this time, it is infeasible to determine whether, or the extent to which, a single project's precursor (i.e., NOx and ROG) emissions would potentially result in the formation of secondary ground-level ozone and the geographic and temporal distribution of such secondary formed emissions (See generally SCAQMD, 2015; SJVAPCD, 2015b). Meteorology, the presence of sunlight, seasonal impacts, and other complex chemical factors all combine to determine the ultimate concentration and location of ozone. Furthermore, available models today are designed to determine regional, population-wide health impacts, and cannot accurately quantify local ozone-related health impacts at the level that would be caused by project-related NOx or ROG emissions; therefore, no impact conclusion regarding this issue is made in this Initial Study.

Construction

LESS THAN SIGNIFICANT IMPACT. PM10, PM2.5, and NOx are generally the primary air pollutants resulting from construction activities. The PM10 and PM2.5 emissions are the composite of fugitive dust and exhaust emissions. Typical fugitive dust sources include earth-moving activities (such as grading and improvement of access roads) and vehicle travel across unpaved roads. Exhaust emissions result from the combustion of fossil fuels in both off-road construction equipment and on-road vehicles.

Construction of the project would occur in two air basins: the SJVAB and the SFBAAB. Construction emissions were analyzed based on the air basin within which they would be generated. Emissions that would be generated within SJVAB include those from construction of the new power line, the Vierra Substation expansion, and modifications at the remote Howland Road, Kasson, Manteca, Tracy, and Ripon Cogen substations, Mount Oso telecommunication tower, and helicopter activities. Emissions that would be generated within SFBAAB include those from the upgrades at the remote Tesla Substation and remote Highland Peak telecommunication tower. See Appendix B for detailed emissions calculations.

Table 5.3-4 presents estimated worst-case daily and annual construction emissions that would be generated within SJVAB. Although APM AIR-1 commits PG&E to preparing a Dust Control Plan pursuant to SJVAPCD Regulation VIII, it only includes examples of fugitive dust control measures that may be included in the Dust Control Plan, and does not commit to implementing any specific dust control measures. Therefore, because it is currently unknown which measures would be implemented as part of the plan, the emissions below were estimated with no emission reductions associated with APM AIR-1. **Table 5.3-5** presents estimated worst-case daily construction emissions for the portion of the project within SFBAAB (BAAQMD). The emission values shown in **Table 5.3-4** and **Table 5.3-5** assume a worst-case scenario where all construction equipment activities (except TSP installation and conductor installation activities, which would take place sequentially), on-road traffic, and helicopter use would occur at the same time.

Table 5.3-4 shows that the worst-case unmitigated construction emission rates within SJVAB would be below SJVAPCD thresholds of significance described in the Guidance for Assessing and Mitigating Air Quality Impacts (SJVAPCD, 2015a). Therefore, the project would not conflict with or obstruct

implementation of the applicable air quality plans of SJVAPCD. APM AIR-1 would require preparation and implementation of a Dust Control Plan. PG&E would also implement APM GHG-1, which would require generalized procedures for operating and maintaining equipment and limiting idling periods to the minimum necessary to reduce exhaust emissions. Implementation of APM AIR-1 would reduce fugitive dust emissions and APM GHG-1 would reduce exhaust emissions from construction activities. Impacts would be less than significant.

For the construction work components within the SFBAAB under the jurisdiction of BAAQMD, **Table 5.3-5** shows that the worst-case construction exhaust emission rates would be below the thresholds of significance from the BAAQMD CEQA Guidelines. In addition, implementation of BAAQMD Basic Control Mitigation Measures would not be required because construction activities at Tesla Substation and Highland Peak communication tower would involve no ground disturbing activities and would only generate emissions associated with six commuting workers for approximately 2 weeks. The project would not conflict with or obstruct implementation of the control measures defined in the BAAQMD 2017 CAP (BAAQMD, 2017b). Impacts from construction work within the SFBAAB would not conflict with or obstruct implementation of the applicable BAAQMD air quality plan and impacts would be less than significant.

TABLE 5.3-4 ESTIMATED CONSTRUCTION EMISSIONS IN SJVAB [a]

Pollutant	Daily Maximum Emissions (pounds per day [lbs/day]) [b]	Annual Emissions (tons/year)	Thresholds of Significance for Construction Emissions (tons/year)	Threshold Exceeded?
ROG	16.3	0.4	10	No
CO	74.9	2.7	100	No
NOx	93.0	3.7	10	No
SOx [c]	0.9	<0.01	27	No
PM10 [d]	14.0	0.4	15	No
PM2.5 [d]	7.1	0.2	15	No

[a] Emissions in SJVAB include those estimated using CalEEMod for the construction work in SJVAB and those from the helicopter.

[b] The daily emission estimates from CalEEMod were the worst-case daily emissions from either summer or winter computer runs.

[c] CPUC revised the SOx emissions of the helicopter using the correct unit of weight consistent with other pollutants. CPUC also calculated the emissions of SOx as SO_2, which is about twice of the weight of sulfur.

[d] CPUC supplemented PM10 and PM2.5 emissions to include fugitive dust associated with helicopter take-offs and landings using emission factors from Strategic Environmental Research and Development (SERDP, 2007)

Sources: PGE, 2018a; 2018c 2019b; SJVAPCD, 2015a; ESA, 2019a

TABLE 5.3-5 ESTIMATED CONSTRUCTION EMISSIONS IN SFBAAB

Pollutant	Daily Maximum Emissions (lbs/day)	BAAQMD Significance Thresholds for Construction-related Average Daily Emissions (lbs/day)	Threshold Exceeded?
ROG	0.1	54	No
CO	0.5	None	No
NOx	0.5	54	No
SOx	<0.01	None	No
PM10 exhaust	<0.01	82	No
PM2.5 exhaust	<0.01	54	No
PM10 fugitive dust	0.1	Best Management Practices	No
PM2.5 fugitive dust	<0.1	Best Management Practices	No

Construction Emissions in SFBAAB include those estimated using CalEEMod for the upgrades at Highland Peak communication tower, and Tesla Substation, which are estimated to be the same as for Highland Peak communication tower.
Sources: BAAQMD, 2017a; PGE, 2019b; ESA, 2019a.

Mitigation Measures: None recommended.

Operation and Maintenance

LESS THAN SIGNIFICANT IMPACT. Existing PG&E operation and maintenance staff would operate and maintain the expanded Vierra Substation as part of their current operation and maintenance activities. Vierra Substation is currently remotely operated and monitored. Vehicle trips and maintenance activities for the expanded Vierra Substation would be comparable to the current level of vehicle trips and maintenance activities. The new power line would be inspected annually and maintenance would generally be conducted on an as-needed basis, when equipment is discovered in need of repair during inspections or in response to an emergency. Vehicle trips and maintenance activities for the remote substations and communication towers would be comparable to the current level of vehicle trips and maintenance activities. None of these activities would differ substantially from baseline operation and maintenance conditions in the area. Therefore, operation and maintenance of the project would not result in a material increase in emissions that would conflict with applicable air quality plans. Therefore, the impact would be less than significant.

Mitigation Measures: None recommended.

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b. 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?

Construction

LESS THAN SIGNIFICANT IMPACT. Both SJVAB and SFBAAB are nonattainment for state and federal ozone and PM2.5 standards and nonattainment for state PM10 standards. Construction of the project would lead to a temporary increase in emissions of criteria air pollutants. However, all criteria air pollutant emissions from the construction work located within SJVAB would be well below the applicable

SJVAPCD thresholds of significance (as shown in **Table 5.3-4**). Furthermore, the unmitigated exhaust emissions from the portion of the construction work within SFBAAB would be well below the applicable BAAQMD thresholds of significance (as shown in **Table 5.3-5**). Project construction would not result in a cumulatively considerable net increase of these criteria pollutants in either SJVAB or SFBAAB. The impact would be less than significant.

Mitigation Measures: None recommended.

Operation and Maintenance

LESS THAN SIGNIFICANT IMPACT. Operation and maintenance activities for the expanded Vierra Substation, the remote substations, and remote communication towers would not substantially differ from those currently being conducted for the existing substations. The new power line would be inspected annually, and maintenance activities would generally be conducted on an as-needed basis, when equipment is discovered in need of repair during inspections, or in response to an emergency. This minimal level of activity would not contribute to a cumulatively considerable net increase in emissions of pollutants for which the project area is nonattainment. Therefore, the impact would be less than significant.

Mitigation Measures: None recommended.

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

Construction

LESS THAN SIGNIFICANT IMPACT.

New Power Line and Vierra Substation Expansion

As noted above, there are ten residences and one place of worship located within 1,000 feet of the new power line and Vierra Substation expansion site. There are no schools, parks, playgrounds, day care centers, nursing homes, or hospitals located within 1,000 feet. The nearest sensitive receptors to the Vierra Substation expansion are six residences located on the south side of Vierra Road across from the existing substation. All of these residences are within 500 feet of the proposed project. Light of the World Christian Center on Yosemite Avenue is located approximately 500 feet south of the existing substation. The alignment of the new double-circuit 115 kV power line extends through an area that is primarily industrial and commercial. The westernmost residence on Vierra Road is approximately 100 feet from the pole work area.

Construction of the project would involve use of diesel-fueled vehicles and equipment that would result in the generation of toxic air contaminants, specifically DPM. During construction, because of their proximity to the new power line and Vierra Substation expansion, some sensitive receptors in the project vicinity would be exposed to increased levels of TACs due to project-generated DPM.

The health impacts due to exposure of DPM emissions include acute health risks, and cancer and noncancer chronic risks, which are long-term effects. The SJVAPCD significance thresholds for TACs, including carcinogens and non-carcinogens, are as follows (SJVAPCD, 2015a):[2]

- Carcinogens: Maximally Exposed Individual risk equals or exceeds 10 in one million; and
- Non-Carcinogens - Chronic: Hazard Index equals or exceeds 1 for the Maximally Exposed Individual.

The dose to which receptors are exposed is the primary factor affecting health risk from TACs. Dose is a function of the concentration of a substance or substances in the environment and the duration of exposure to the substance. According to the Office of Environmental Health Hazard Assessment (OEHHA), health risk assessments (HRAs), which determine the exposure of sensitive receptors to TAC emissions, should be based on 9-, 30-, and/or 70-year exposure periods when assessing TACs (such as DPM) that have only cancer or chronic non-cancer health effects. However, such HRAs should be limited to the duration of the emission-producing activities associated with the project, unless the activities occur for less than 6 months. Activities that would last more than 2 months, but less than 6 months, are recommended to be evaluated as if they would last for 6 months. The OEHHA does not recommend assessing cancer risk for projects lasting less than 2 months (OEHHA, 2015).

As part of the CPUC's Permit to Construct application process, PG&E provided an HRA for construction of the Vierra Substation expansion (PGE, 2018d). PG&E's HRA used outdated emissions estimates that included a shorter duration (40 days not 50 days) for Phase 5A, Substation Expansion; lower horsepower (hp) plate compactors (8 hp) instead of rollers (80 hp); and the emissions were estimated assuming a calendar year of 2022 instead of 2020. PM10 emissions (a surrogate for DPM emissions) modeling for the HRA was revised using the updated assumptions with the refinements to daily equipment hours identified in the HRA to more accurately reflect equipment usage at the site. This increased the PM10 exhaust emission rate from on-site construction equipment from 68.66 pounds to 109.74 pounds, resulting in an associated cancer risk of 12.2 in a million and the chronic hazard index is 0.0175 at Point of Maximum Impact (PMI), the maximum exposed individual (see Appendix B, Attachment 4 [ESA, 2019b]). However, by looking at the modeling results, CPUC staff noticed that the modeled PMI would be located on the trees at the property boundary of the nearest residence, not on the residence building. CPUC staff does not expect a person to stay at the PMI location throughout the construction period. CPUC staff expects there is a stronger possibility that a person would be in the actual residence building. Therefore, CPUC staff recalculated the cancer risk at the nearest residence building as the Maximally Exposed Individual Resident (MEIR). The maximum cancer risk at MEIR would be 9.3 for an infant (0 to 2 years) residential receptor.

Air Quality checklist question "c" asks about the project's impact to sensitive receptors such as residences, schools, day-care centers, extended-care facilities, and hospitals. Therefore, CPUC staff believes it is appropriate to use MEIR Instead of PMI to evaluate compliance with this question.

The cancer risk at MEIR would be less than the SJVAPCD's significance threshold of 10 in a million, representing no significant impact relative to exposure of sensitive receptors to substantial pollutant concentrations. Therefore, since construction activities of the proposed project would be sporadic, temporary and limited in duration, the expected actual exposure to TACs would be significantly reduced. Also, the calculation of excess cancer risk is based on conservative assumptions (i.e.

[2] The SJVAPCD also has a significance threshold for acute hazard index, but HRAs that evaluate DPM typically do not address the acute hazard index.

assuming a person stays at that location for the entire construction period); therefore, the cancer risk is conservatively estimated. Moreover, **APM GHG-1** would ensure that cancer-related impacts of diesel exhaust emissions for the public and off-site workers are mitigated during construction to a point where they are not considered significant. Therefore, CPUC staff concludes that impacts associated with DPM emissions due to construction activities would be less than significant.

Helicopter Use

Helicopter landings would generate wind-blown dust. Residences on the south side of Vierra Road may experience increased dust during helicopter take-off and landing activities in staging areas. However, helicopter activities would only be required for approximately 2 days during the entire construction period, for a total time of approximately 6 hours. Landings would be brief and dust effects would be localized. The closest staging area is 100 feet from the nearest residence; however, to the extent feasible, helicopter take-off and landing activities would occur on portions of the staging area that are farthest from the nearest residence (PGE, 2018a).

Remote Substations and Telecommunication Towers

As discussed previously and shown on Figure 5.3-2a, there are residential communities within 1,000 feet of the Manteca, Tracy, Kasson, Ripon Cogen, and Tesla substations, but none within 1,000 feet of Howland Road Substation. However, construction activities at each of the remote substation sites would last no longer than 2 to 6 weeks (i.e., less than OEHHA's 2-month screening threshold for quantitative analyses). Therefore, there would be no significant project impacts in the vicinity of the remote substation sites. The impacts associated with the DPM from these finite construction activities would be less than significant at all remote substation locations.

As discussed in the environmental setting, there are no sensitive receptors within 1,000 feet of the telecommunication towers at Highland Peak and Mount Oso microwave stations. Therefore, there would be no health risk impacts from these project components.

Mitigation Measures: None Recommended.

Operation and Maintenance

NO IMPACT. Operation and Maintenance activities for the expanded Vierra substation, the new power line, and the remote substations would emit minimal air pollutants and TACs. Operation and maintenance activities would not substantially differ from those currently being conducted for the existing substation and other existing power lines in the area. SJVAPCD thresholds would not be exceeded and exposure of sensitive receptors to air pollutants and TACs would be less than significant (PGE, 2018a).

d. Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?

Construction

LESS THAN SIGNIFICANT IMPACT. Typical odor nuisances include hydrogen sulfide, ammonia, chlorine, and other sulfide-related emissions. No sources of these pollutants would exist during construction. An additional potential source of project-related temporary odor would be diesel engine emissions. However, since all potential sources of odors would be temporary and spatially diverse, and any associated odors would dissipate quickly from the sources, these sources would not affect a substantial number of people. Therefore, impacts related to odor generated during construction of the project would be less than significant.

Project-related ground disturbance would result in dust that could cause the Coccidioides fungus spores to become airborne. In susceptible people, infection may occur when a spore is inhaled. Construction workers in endemic areas have contracted Valley Fever even though protected by measures implemented pursuant to state workplace protection laws. The issue of fugitive dust carrying the spores that cause Valley Fever also could be a concern for residents of nearby communities. Coccidioides fungus spores have been found to frequently occur in the soil in the following areas:

- Sites with many animal burrows,
- Old (prehistoric) Native American campsites,
- Areas with sparse vegetation,
- Areas adjacent to arroyos,
- Packrat middens,
- Upper 12 inches of undisturbed soil, and
- Sandy well aerated soil with high water holding capacity (KCPH, 2019).

Valley Fever-causing spores have been found to not likely occur in the following areas:

- Cultivated fields,
- Heavily vegetated areas,
- Higher elevations (above about 7,000 feet),
- Areas where commercial fertilizers have been applied,
- Paved or oiled areas, and
- Heavily urbanized areas where there is relatively little undisturbed soil (KCPH, 2019).

In review of these conditions and the fact that the vast majority of land that would be disturbed by the project is in cultivated fields or urbanized areas, the project is not likely to disturb active spores. In addition, PG&E would implement APM AIR-1, which would require preparation and implementation of a Dust Control Plan, which would also serve to limit the Coccidioides fungus spores from becoming airborne. Therefore, impacts to sensitive receptors from exposure to Valley Fever-causing spores would be less than significant.

Mitigation Measures: None recommended.

Operation and Maintenance

NO IMPACT. Operation and maintenance activities for the new power line, expanded Vierra Substation, the remote substations, and telecommunication towers would not change substantially from existing conditions. Operation and maintenance activities of the project would not cause detectable odors affecting a substantial number of people. Therefore, no impacts related to creating objectionable odors would occur.

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5.4 Biological Resources

This section describes the environmental and regulatory setting and discusses impacts associated with the construction and operation of the project with respect to biological resources that occur in the project area.

Analysis of impacts is limited to project components where ground or aerial (noise-driven, visual, or air quality) disturbance or operation of new facilities would affect biological resources. These project components include the new power line and Vierra Substation expansion.

The proposed modifications at Howland Road, Kasson, Manteca, and Tracy substations would involve ground or aerial disturbance; however, construction and operation of these modifications would not affect biological resources. California Natural Diversity Database (CNDDB) showed special-status species (e.g., Swainson's hawk) within 2 miles of these remote substations; however, there is no vegetation removal at these remote substation sites, and therefore, no potential for impacts to this species. There is no known riparian habitat, or sensitive natural communities, or wetlands, or wildlife movement corridors or fish or wildlife species near these remote substations. Also, the modifications would not conflict with local policies or ordinances protecting biological resources. Therefore, there would be no effect on biological resources, and these components are dismissed from further consideration.

The proposed work at the remote Tesla and Ripon Cogen substations, and Mount Oso and Highland Peak microwave stations involves modifications within and to existing structures where there would be no ground disturbance, aerial disturbance, or operation of loud construction equipment. No sensitive biological resources are expected within the substations, and aerial elements would be mounted to existing towers or other structures and would not increase avian collision hazards. Therefore, there would be no effect on biological resources, and these components are dismissed from further consideration.

BIOLOGICAL RESOURCES Would the project:	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?	☐	☒	☐	☐
b. Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?	☐	☐	☐	☒
c. Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☐	☐	☒
d. Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	☐	☐	☐	☒
e. Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☒	☐	☐

f. Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	☐	☒	☐	☐

Environmental checklist established by California Environmental Quality Act Guidelines Appendix G.

5.4.1 Setting

The Setting section describes the existing biotic environment, including common plants and wildlife, plant communities including sensitive habitats, special-status species and their locations in relation to the project. **Figure 5.4-1** presents the vegetation communities near the proposed new power line and Vierra Substation expansion.

Regional

The new power line and Vierra Substation expansion are proposed at the eastern boundary of the City of Lathrop, in southern San Joaquin County. These project components are situated primarily near industrial land uses, but also agricultural, commercial, and residential land uses are in the area. The route of the new power line crosses or runs parallel to public roadway corridors, including Vierra Road, D'Arcy Parkway, Christopher Way, and Nestle Way. Refer to **Figure 4-1** in Section 4, *Project Description*, for the location of the project.

The new power line, Vierra Substation expansion and remote substation modifications have been considered for direct and indirect impacts. Information used to define the baseline biological resources setting was derived from:

- Pacific Gas and Electric Company's (PG&E's) Proponent's Environmental Assessment (PGE, 2018a);
- PG&E's Responses to Deficiency letter (PGE, 2018b);
- PG&E's Responses, Part A to Data Request Set No. 1 (PGE, 2018c);
- PG&E's Responses, PG&E Response Part B to Data Request, Set No. 1 (PGE, 2018d);
- PG&E Responses to Data Request Set No. 2 Part A (PGE, 2018e);
- PG&E Responses to Data Request Set No. 1- Part C and Set No. 2- Part B (PGE, 2018f);
- PG&E Responses to Data Request Set No. 3- Part A (Initial Responses) (PGE, 2018g);
- PG&E Responses to Data Request Set No. 3- Part B (PGE, 2019a);
- PG&E Project Description Refinement (PGE, 2019b).
- Biological Constraints Analysis for Vierra Loop Project (Stillwater Sciences, 2017a);
- Biological Resources Technical Memorandum (Stillwater Sciences, 2017b);
- San Joaquin County Multi-Species Habitat Conservation and Open Space Plan (San Joaquin County, 2000);
- Local plans for the cities of Lathrop, Tracy, and Manteca;
- A California Public Utilities Commission (CPUC) consultant team site visit on September 26, 2018;
- California Natural Diversity Data Base (CNDDB) records search of USGS 7.5-minute Lathrop quadrangle and the eight surrounding quadrangles (Stockton West, Stockton East, Manteca, Ripon, Vernalis, Tracy, Union Island, and Holt) (CDFW, 2018);

- New Pole to be Installed
- Existing Pole to be Replaced
- New115 kV Line to be Installed

Vierra-Tracy-Kasson 115 kV Power Line

- Existing to be Removed
- To be Relocated

- Existing Vierra Substation
- Planned Vierra Substation Expansion
- Guard Structure Work
- Pole Work Areas
- Pull Sites
- Staging Areas

Vegetation Type

- Agricultural
- Bare Ground
- Developed
- Ornamental
- Ruderal Herbaceous

- Union Pacific Railroad

SA: Staging Area
TWS: Tower Work Site
PS: Pull Site

Figure 5.4-1
Vegetation Communities in the Project Area

Sources: Stillwater Sciences, 2017a; PGE, 2018a; 2018d; 2019a

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- CNDDB records search of USGS 7.5-minute quadrangles within a 2-mile radius of the remote substations (Tracy, Manteca, and Kasson);
- California Native Plant Society's (CNPS) 2018 online Inventory of Rare and Endangered Plants of California for San Joaquin County (CNPS, 2018);
- United States Fish and Wildlife Service (USFWS) list of endangered, threatened, or proposed species for San Joaquin County (USFWS, 2018);
- USFWS Information for Planning and Conservation (IPaC) Resource Report for 10 square miles around the Vierra Substation expansion site (area includes the new power line and remote substations) (USFWS, 2018);
- *A Manual of California Vegetation*, 2nd Edition (Sawyer et al., 2009);
- eBird, online database of bird distribution and abundance (Cornell, 2018);
- *Jepson Manual*, 2nd Edition: Vascular Plants of California (Baldwin et al., 2012); and
- Aerial photographs.

Biological Surveys

Stillwater Sciences prepared a desktop review and conducted a windshield field survey of the project area on December 6, 2016 on behalf of PG&E (Stillwater Sciences, 2017a). Further biological resources surveys were conducted on May 25, 2017, including a rare plant survey, targeting round-leaved filaree (*California macrophylla*) for an alternative configuration of transmission line corridors labeled A through W in the Applicant's Biological Resources Technical Memorandum, and a preliminary waters/wetlands assessment focused on corridors P, R, and W (Stillwater Sciences, 2017b). Additionally, a preliminary western burrowing owl (*Athene cunicularia*) habitat assessment and burrow survey was conducted in suitable habitats located within a 200-meter survey buffer of the following areas (Stillwater Sciences, 2017b):

- along the south side of Christopher Way (proposed corridors J and K);
- along South Howland Road (proposed corridor G); and
- around the Vierra substation expansion area.

CPUC's consultant conducted a survey of the Vierra Substation expansion and corresponding mile-long power line to the existing Tesla-Stockton Cogen Junction 115 kV Power Line during a site visit on September 26, 2018. This site visit entailed walking and driving the proposed alignment of the new power line and Vierra Substation expansion.

Agency Consultation

The CPUC consulted and coordinated with the following agencies in conducting the research and analysis for this section:

- California Department of Fish and Wildlife (CDFW), Region 2: Kyle Stoner, various email and phone conversations to initiate discussion and initial comments on the project and to confirm findings. Mr. Stoner confirmed he was the current contact and was instrumental in determining scale of impacts to biological resources and appropriate mitigation of impacts to biological resources (CEC, 2019a; 2019b).

- USFWS: email and phone conversations in 2019 with Margaret Sepulveda, Sacramento USFWS Office to establish contact and solicit any initial comments or questions on the project. Ms. Sepulveda provided initial comments and questions.
- San Joaquin Council of Governments (SJCOG): email and telephone conversations with Steve Mayo, Project Manager with the SJCOG, on February 5, 11, and 14th, 2019, to transmit information regarding biological resource issues in the vicinity of the project, respond to questions from Mr. Mayo regarding the project, and discuss appropriate mitigation for project impacts (CEC, 2019c). The SJCOG oversees the San Joaquin Multiple Species Habitat Conservation Plan (SJMSCP).
- Email conversations in July, 2020 with Craig Bailey and Sarah Bahm of CDFW, Region 4, to explore PG&E's ability to participate in the PG&E San Joaquin Valley Operations and Maintenance Habitat Conservation Plan.
- Email conversation October 1, 2020, with Kristi Lazar, CDFW, CNDDB Rare Plant Specialist, regarding round-leaved filaree (*California macrophylla*).

Vegetation and Wildlife Habitats

Vegetation and wildlife habitat nomenclature follows CDFW's List of California Terrestrial Natural Communities. Reconnaissance surveys performed for PG&E's Proponent's Environmental Assessment (PEA) identified four habitat types/land uses in the project area, which include the following: agriculture, bare ground, developed, ornamental landscaping, and ruderal herbaceous. **Table 5.4-1** provides the approximate acreage of each habitat type within the new power line route and Vierra Substation expansion, as mapped by PG&E and confirmed by CPUC consultant staff.

TABLE 5.4-1 VEGETATION AND WILDLIFE HABITAT AND ACRES FOR THE NEW POWER LINE AND VIERRA SUBSTATION EXPANSION

Work Area	Vegetation Type	Approximate Acres
Temporary Impacts		
Access Road, Guard Structure Work Area, Pole Work Areas, Pull Sites, Staging Areas	Agriculture	8.01
	Bare Ground	0.10
	Developed	1.88
	Ornamental Landscaping	0.40
	Ruderal Herbaceous	2.00
Permanent Impacts		
Substation	Agriculture	2.63
	Developed	0.04
	Ruderal Herbaceous	0.12
Poles	Agriculture	0.00432
	Bare Ground	0.00144
	Developed	0.00108
	Ornamental Landscaping	0.00036
	Ruderal Herbaceous	0.00072

1. TSPs average 5 feet in diameter (15.7 square feet, or 0.00036 acre). 2. Poles located within the substation footprint were not calculated separately. 3. Only SA-1 is included as only one staging area will be required. This is the preferred staging area. 4. Work at the remote substations will be within existing graveled substation yards. No vegetation will be impacted

Source: PGE, 2018g

Landcover, Vegetation, and Wildlife Habitats: New Power Line and Vierra Substation Expansion

Habitat types and land uses in the new power line and Vierra Substation expansion area and vicinity consist of industrial development (typically associated with cement/asphalt, bare ground, and/or ornamental landscaping) and agricultural land, with scattered residential areas south of Vierra Road, and some undeveloped areas dominated by ruderal herbaceous plant species. The predominant plant community is agricultural, occurring immediately around the Vierra Substation and expansion area. Following that is ruderal herbaceous, consisting of weedy species such as non-native annual grasses and thistle (*Carduus* sp.) that are often found in disturbed areas. This cover type is found in thin strips along most roads and in fallow agricultural fields in the Vierra Substation expansion area. Ornamental landscaping surrounding the industrial development and residential areas is predominantly cultivated lawn with nonnative trees and shrubs (e.g., blue gum [*Eucalyptus globulus*], common oleander [*Nerium oleander*], London plane tree [*Platanus* × *hispanica*], ornamental plums [*Prunus* spp.], pears [*Pyrus* spp.], salt cedar [*Tamarix ramosissima*], etc.), although some native trees were also documented (e.g., northern California black walnut [*Juglans hindsii*], Fremont cottonwood [*Populus fremontii* subsp. *fremontii*], coast redwood [*Sequoia sempervirens*], etc.).

Wetlands and Aquatic Resources. No wetlands or aquatic resources were identified in the new power line and Vierra Substation expansion area during the reconnaissance surveys in December 2016 and the focused surveys in May 2017, nor during CPUC consultant staff's September 2018 site visit.

Noxious Weeds and Invasive Plants. A noxious weed is any plant designated by federal, state, or local government officials as injurious to public health, agriculture, recreation, wildlife, or property. Invasive plants are non-native plants that establish, persist and spread widely in natural ecosystems outside the plant's native range and are often also classified as noxious weeds by government agencies. In California, the two lists that identify invasive plants are the California Invasive Plant Council (Cal-IPC) Inventory and the California Department of Food and Agriculture (CDFA) Noxious Weed List. The Cal-IPC Inventory includes species that cause ecological harm in the state's wildlands while the CDFA Noxious Weed List primarily lists plants that cause, or have the potential to cause, economic damage to the state's agricultural industry (Cal-IPC, 2019). CDFA has legal authority to regulate plants on this list (Cal. Code Regs., tit. 3, § 4500) (CDFA, 2016).

Noxious weeds and invasive plants are fast growing with high seed production and rapid maturation that, combined with a lack of natural predators and diseases, rapidly overwhelm and displace native vegetation. Noxious weeds and invasive plants threaten native habitats by altering ecosystem processes and deteriorating habitats for many native plants and animals, including rare, threatened, and endangered species. Construction equipment, fill, aeolian processes and use of purchased mulch can act as vectors introducing noxious weeds and invasive plants into an area.

Special-Status Plants and Animals

Special-status species include plants and animals that are listed under federal or state endangered species acts, or meet the definitions of "Endangered" or "Rare" under CEQA Guidelines Section 15380, such as species considered to be rare by resource agencies, professional organizations (e.g., CNPS), local ordinances, and the scientific community. Special-status species in this document include species listed as Endangered, Threatened, Candidate, or Proposed under the federal Endangered Species Act (ESA); listed as Endangered, Threatened, Candidate, or Rare under the California ESA; designated as Watch List, Fully Protected, or Species of Special Concern or listed under the California Native Plant Protection

Act by CDFW; USFWS Birds of Conservation Concern; or California Rare Plant Ranks (CRPR) 1A, 1B, 2A, 2B, 3, or 4.

Table 5.4-2 identifies occurrences of special-status species assessed using the data sources and survey results described in above Section 5.4.1. Species that are present and are possible or likely to occur are discussed further.

Likelihood of Presence for Special-Status Species

Using the information generated from literature reviews and field surveys, the list of special-status species with the potential to occur was further refined. The likelihood of special-status species occurrence was determined based on natural history parameters, including but not limited to, the species' range, habitat, foraging needs, migration routes, and reproductive requirements, using the following general categories:

- *Present* – Reconnaissance-level, focused, or protocol-level surveys documented the occurrence or observation of a species in the project area.
- *Seasonally present* – Individuals were observed in the project area (includes new power line and Vierra Substation expansion), but are only present in the area during certain times of the year.
- *Likely to occur (on site)* – The species has a strong likelihood to be found in the project area prior to or during construction but has not been directly observed to date during project surveys. The likelihood that a species may occur is based on the following considerations: suitable habitat that meets the life history requirements of the species is present on or near the project area; migration routes or corridors are near or within the project area; records of sighting are documented on or near the project area; and there is an absence of invasive predators (e.g., bullfrogs). The main assumption is that records of occurrence have been documented within or near the project area, the project area falls within the range of the species, suitable habitat is present, but it is undetermined whether the habitat is currently occupied.
- *Potential to occur*: There is a possibility that the species can be found in the project area prior to or during construction, but has not been directly observed to date. The likelihood that a species may occur is based on the following conditions: suitable habitat that meets the life history requirements of the species is present on or near the project area; migration routes or corridors are near or within the project area; and there is an absence of invasive predators (e.g., bullfrogs). The main assumption is that the project area falls within the range of the species, suitable habitat is present, but no records of sighting are located within or near the project area and it is undetermined whether the habitat is currently occupied. The primary difference between Likely to Occur and Potential to Occur is the presence of recent records of sighting.
- *Unlikely to occur* – The species is not likely to occur in the project area based on the following considerations: lack of suitable habitat and features that are required to satisfy the life history requirements of the species (e.g., absence of foraging habitat; lack of reproductive areas, and lack of sheltering areas); presence of barriers to migration/dispersal; presence of predators or invasive species that inhibit survival or occupation (e.g., the presence of bullfrogs or invasive fishes); lack of hibernacula, hibernation areas, or estivation areas on site.
- *Absent* – Suitable habitat does not exist in the project area, the species is restricted to or known to be present only within a specific area outside of the project area, or focused or protocol-level surveys did not detect the species.

TABLE 5.4-2 SPECIAL-STATUS SPECIES THAT COULD OCCUR IN THE PROJECT VICINITY

Plants

Common Name (Scientific Name)	Status[a]	Habitat Associations	Blooming Period	Likelihood to Occur in Project Area
alkali milk-vetch (*Astragalus tener* var. *tener*)	-- / -- / 1B.2	Playas, adobe clay in valley and foothill grassland, and alkaline areas of vernal pools from 3–197 ft in elevation.	March – June	Absent; no suitable habitat present and protocol-level surveys did not detect the species
big tarplant (*Blepharizonia plumosa*)	-- / -- / 1B.1	Usually clay areas of valley and foothill grassland from 98–1,657 ft in elevation.	July – October	Unlikely to occur; out of elevation range
bristly sedge (*Carex comosa*)	-- / -- / 2B.1	Coastal prairie; lake margins of marshes and swamps; and valley and foothill grassland from 0–2,051 ft in elevation.	May – September	Absent; no suitable habitat present and protocol-level surveys did not detect the species
California alkali grass (*Puccinellia simplex*)	-- / -- / 1B.2	Alkaline or vernally mesic areas and sinks, flats, and lake margins in chenopod scrub, meadows and seeps, valley and foothill grassland, and vernal pools from 7–3,051 ft in elevation.	March – May	Absent; no suitable habitat present and protocol-level surveys did not detect the species
caper-fruited tropidocarpum (*Tropidocarpum capparideum*)	-- / -- / 1B.1	Alkaline hills in valley and foothill grassland from 3–1,493 ft in elevation.	March – April	Unlikely to occur; no suitable habitat present
Delta button-celery (*Eryngium racemosum*)	-- / SE / 1B.1	Vernally mesic clay depressions in riparian scrub from 10–98 ft in elevation.	June – October	Unlikely to occur; no suitable habitat present; historical sighting in project area from 1892 and 1913 collections, occurrence data indicate habitat gone in 1984 (CDFW 2018a)
Delta mudwort (*Limosella australis*)	-- / -- / 2B.1	Freshwater or brackish marshes and swamps, and usually mud banks of riparian scrub from 0–10 ft in elevation.	May – August	Absent; no suitable habitat present and protocol-level surveys did not detect the species
Delta tule pea (*Lathyrus jepsonii* var. *jepsonii*)	-- / -- / 1B.2	Freshwater and brackish marshes and swamps from 0–16 ft in elevation.	May – July	Absent; no suitable habitat present and protocol-level surveys did not detect the species
diamond-petaled California poppy (*Eschscholzia rhombipetala*)	-- / -- / 1B.1	Alkaline or clay areas of valley and foothill grassland from 0–3,199 ft in elevation.	March – April	Unlikely to occur; no suitable habitat present

TABLE 5.4-2 SPECIAL-STATUS SPECIES THAT COULD OCCUR IN THE PROJECT VICINITY

heartscale (*Atriplex cordulata* var. *cordulata*)	-- / -- / 1B.2	Saline, or alkaline areas of chenopod scrub, meadows and seeps, and sandy areas of valley and foothill grassland from 0–1,837 ft in elevation.	April – October	Absent; no suitable habitat present and protocol-level surveys did not detect the species
large-flowered fiddleneck (*Amsinckia grandiflora*)	FE / SE / 1B.1	Cismontane woodland, valley and foothill grassland from 902–1,804 ft in elevation.	April – May	Absent; no suitable habitat present and protocol-level surveys did not detect the species
lesser saltscale (*Atriplex minuscula*)	-- / -- / 1B.1	Alkaline or sandy areas of chenopod scrub, playas, and valley and foothill grassland from 49–656 ft in elevation.	May – October	Absent; no suitable habitat present and protocol-level surveys did not detect the species
Mason's lilaeopsis (*Lilaeopsis masonii*)	-- / SR / 1B.1	Brackish or freshwater marshes and swamps and riparian scrub from 0–33 ft in elevation.	April – November	Absent; no suitable habitat present and protocol-level surveys did not detect the species
palmate-bracted salty bird's-beak (*Chloropyron palmatum*)	FE / SE / 1B.1	Alkaline areas of chenopod scrub and valley and foothill grassland from 16–509 ft in elevation.	May – October	Absent; no suitable habitat present and protocol-level surveys did not detect the species
recurved larkspur (*Delphinium recurvatum*)	-- / -- / 1B.2	Alkaline areas of chenopod scrub, cismontane woodland, and valley and foothill grassland from 10–2,592 ft in elevation.	March – June	Absent; no suitable habitat present and protocol-level surveys did not detect the species
round-leaved filaree (*California macrophylla*)	-- / -- / 1B.2	Clay areas of cismontane woodland, and valley and foothill grassland from 49–3,937 ft in elevation.	March – May	Potential to occur, protocol-level surveys did not detect the species, but potentially suitable habitat exists
saline clover (*Trifolium hydrophilum*)	-- / -- / 1B.2	Marshes and swamps; mesic or alkaline areas of valley and foothill grassland; and vernal pools from 0–984 ft in elevation.	April – June	Absent; no suitable habitat present and protocol-level surveys did not detect the species
San Joaquin spearscale (*Extriplex joaquinana*)	-- / -- / 1B.2	Alkaline areas of chenopod scrub, meadows and seeps, playas, and valley and foothill grassland from 3–2,740 ft in elevation.	April – October	Absent; no suitable habitat present and protocol-level surveys did not detect the species
Sanford's arrowhead (*Sagittaria sanfordii*)	-- / -- / 1B.2	Assorted shallow freshwater marshes and swamps from 0–2,133 ft in elevation.	May – October	Absent; no suitable habitat present and protocol-level surveys did not detect the species
showy golden madia (*Madia radiata*)	-- / -- / 1B.1	Cismontane woodland, valley and foothill grassland from 82–3,986 ft in elevation.	March – May	Absent; no suitable habitat present and protocol-level surveys did not detect the species

TABLE 5.4-2 SPECIAL-STATUS SPECIES THAT COULD OCCUR IN THE PROJECT VICINITY

slough thistle (*Cirsium crassicaule*)	-- / -- / 1B.1	Chenopod scrub, slough areas of marshes and swamps, and riparian scrub from 10–328 ft in elevation.	May – August	Absent; no suitable habitat present and protocol-level surveys did not detect the species
Suisun Marsh aster (*Symphyotrichum lentum*)	-- / -- / 1B.2	Brackish and freshwater marshes and swamps from 0–10 ft in elevation.	May – November	Absent; no suitable habitat present and protocol-level surveys did not detect the species
watershield (*Brasenia schreberi*)	-- / -- / 2B.3	Freshwater marshes and swamps from 98–7,218 ft in elevation.	June – September	Unlikely to occur; no suitable habitat present
woolly rose-mallow (*Hibiscus lasiocarpos* var. *occidentalis*)	-- / -- / 1B.2	Freshwater marshes and swamps, often in riprap on sides of levees from 0–394 ft in elevation.	June – September	Unlikely to occur; no suitable habitat present
Wright's trichocoronis (*Trichocoronis wrightii* var. *wrightii*)	-- / -- / 2B.1	Alkaline areas of meadows and seeps, marshes and swamps, riparian forest, and vernal pools from 16–1,427 ft in elevation.	May – September	Absent; no suitable habitat present and protocol-level surveys did not detect the species; historical sighting adjacent to project area from 1892–1914 collections likely outside the project area (CDFW, 2018a)
Sensitive Natural Communities				
Common Name (Scientific Name)	Status[a]	Habitat Associations	Blooming Period	Likelihood to Occur in Project Area
Coastal and Valley Freshwater Marsh	G3 / S2.1	Dominated by perennial, emergent monocots (including *Typha* spp. and *Schoenoplectus* spp.) up to 15 ft tall, often forming completely closed canopies in low velocity areas permanently flooded by fresh water (rather than brackish, alkaline, or variable). Prolonged saturation permits accumulation of deep, peaty soils.	N/A	Absent; no suitable habitat present
Elderberry Savanna	G2 / S2.1	Dominated by *Sambucus nigra* subsp. *caerulea* along streambanks and in open places in forest[d].	N/A	Absent; no suitable habitat present
Great Valley Cottonwood Riparian Forest	G2 / S2.1	A dense, broadleaved, winter-deciduous riparian forest dominated by *Populus fremontii* and *Salix goodingii*. Understories are dense, with abundant vegetative reproduction of canopy dominants. *Vitis californica* is the most conspicuous liana. Scattered seedlings and saplings of shade-tolerant species such as *Acer negundo* var. *californica* or *Fraxinus latifolia* may be found, but frequent flooding prevents their reaching into the canopy.	N/A	Absent; no suitable habitat present

TABLE 5.4-2 SPECIAL-STATUS SPECIES THAT COULD OCCUR IN THE PROJECT VICINITY

Great Valley Mixed Riparian Forest	G2 / S2.2	Tall, dense, winter-deciduous, broadleaved riparian forest. The tree canopy is usually fairly well closed and moderately to densely stocked with several species including *Acer negundo* var. *californica*, *Juglans hindsii*, *Platanus racemosa*, *Populus fremontii*, *Salix gooddingii*, *Salix laevigata*, and *Salix lucida*. Understories consist of these taxa plus shade-tolerant shrubs like *Cephalanthus occidentalis* and *Fraxinus latifolia*. Several lianas are conspicuous in both tree and shrub canopies.	N/A	Absent; no suitable habitat present
Great Valley Oak Riparian Forest	G1 / S1.1	Medium to tall (rarely to 100 ft) broadleaved, winter-deciduous, closed-canopy riparian forest dominated by *Quercus lobata*. Understories include scattered *Fraxinus latifolia*, *Juglans hindsii*, and *Platanus racemosa* as well as young *Quercus lobata*. Lianas are often conspicuous, quickly occupying wind-throw generated light gaps. They also are more scattered throughout the shady understory.	N/A	Absent; no suitable habitat present
Invertebrates				
Common Name (Scientific Name)	Status[a]	Habitat Associations	Habitat Types	Likelihood to Occur in Project Area
Conservancy fairy shrimp *Branchinecta conservatio*	FE/–	Distinct occurrences in Tehama, Glenn, Butte, Yolo, Solano, Stanislaus, Merced, and Ventura counties	Large, deep vernal pools in annual grasslands	Absent; outside of the species' current distribution and no suitable habitat present
Vernal pool fairy shrimp *Branchinecta lynchi*	FT/–	Central Valley, central and south Coast Ranges from Tehama County to Santa Barbara County; isolated populations also in Riverside County	Vernal pools; also found in sandstone rock outcrop pools	Absent; no suitable habitat present
Vernal pool tadpole shrimp *Lepidurus packardi*	FE/–	Shasta County south to Merced County	Vernal pools and ephemeral stock ponds	Absent; no suitable habitat present
Valley elderberry longhorn beetle *Desmocerus californicus dimorphus*	FT/–	Streamside habitats throughout the Central Valley	Riparian and oak savanna habitats below 915 m (3,000 ft) with host plant *Sambucus* sp. (blue elderberry)	Absent; no suitable habitat present

TABLE 5.4-2 SPECIAL-STATUS SPECIES THAT COULD OCCUR IN THE PROJECT VICINITY

Amphibians

Common Name (Scientific Name)	Status[a]	Habitat Associations	Habitat Types	Likelihood to Occur in Project Area
California tiger salamander *Ambystoma californiense*	FT/ST	Very fragmented; along the coast from Sonoma County to Santa Barbara County, in the Central Valley and Sierra foothills from Sacramento County to Tulare County	Grassland, oak savannah, or edges of woodland that provide subterranean refuge (typically mammal burrows); breeds in nearby temporary ponds, vernal pools, or slow-moving parts of streams	Unlikely to occur. In 1996, larvae found in a seasonal pond south of SR 120 (CDFW, 2018a), approximately 0.9 miles from project; typical local migrations are up to 3,300 feet from subterranean summer refuge habitat to breeding ponds, and movement may be as far as 1.3 miles (Orloff, 2011). Hwy 120 and other roads are barriers to the Vierra site; no other suitable aquatic habitat found within 1 mile using satellite imagery.
California red-legged frog *Rana draytonii*	FT/SSC	Largely restricted to coastal drainages on the central coast from Mendocino County to Baja California; in the Sierra foothills south to Tulare and possibly Kern counties	Breeds in still or slow-moving water with emergent and overhanging vegetation, including wetlands, wet meadows, ponds, lakes, and low-gradient, slow moving stream reaches with permanent pools; uses adjacent uplands for dispersal and summer retreat	Absent; no suitable habitat present
Foothill yellow-legged frog *Rana boylii*	–/SSC	From the Oregon border along the coast to the Transverse Ranges, and south along the western side of the Sierra Nevada Mountains to Kern County; a possible isolated population in Baja California	Shallow tributaries and mainstems of perennial streams and rivers, typically associated with cobble or boulder substrate	Absent; outside of the species' current distribution and no suitable habitat present
Western spadefoot *Spea hammondii*	–/SSC	Near Redding, south throughout the Central Valley and nearby foothills; Coast Ranges south of Monterey Bay; and coastal southern California south of the Transverse Mountains and west of the Peninsular Mountains	Areas with sparse vegetation and/or short grasses in sandy or gravelly soils; primarily in washes, river floodplains,	Unlikely to occur; marginally suitable habitat present

TABLE 5.4-2 SPECIAL-STATUS SPECIES THAT COULD OCCUR IN THE PROJECT VICINITY

			alluvial fans, playas, alkali flats, among grasslands, chaparral, or pine-oak woodlands; breeds in ephemeral rain pools with no predators	
Reptiles				
Common Name (Scientific Name)	Status[a]	Habitat Associations	Habitat Types	Likelihood to Occur in Project Area
Coast horned lizard *Phrynosoma blainvillii*	–/SSC	West of deserts and Cascade-Sierran highlands, as far north as Shasta Reservoir	Open areas with sandy soil and/or patches of loose soil and low/scattered vegetation in scrublands, grasslands, conifer forests, and woodlands; frequently found near ant hills	Unlikely to occur; marginally suitable habitat present
Giant garter snake *Thamnophis gigas*	FT/ST	Central Valley from the vicinity of Burrel in Fresno County north to near Chico in Butte County; has been extirpated from areas south of Fresno	Sloughs, canals, low-gradient streams and freshwater marsh habitats where there is a prey base of small fish and amphibians; also found in irrigation ditches and rice fields; requires grassy banks and emergent vegetation for basking and areas of high ground protected from flooding during winter	Absent; no suitable habitat present
San Joaquin whipsnake *Masticophis flagellum ruddockii*	–/SSC	From the Sacramento Valley (Colusa County) south to San Joaquin Valley (Kern County) and west into the South Coast Ranges; an isolated population in the Sutter Buttes	Open, dry, treeless areas, including grassland and saltbush scrub; uses rodent burrows, shaded vegetation, and surface objects as refuge	Unlikely to occur; marginally suitable habitat present

TABLE 5.4-2 SPECIAL-STATUS SPECIES THAT COULD OCCUR IN THE PROJECT VICINITY

Western pond turtle *Actinemys marmorata*	–/SSC	From the Oregon border along the coast ranges to the Mexican border, and west of the crest of the Cascades and Sierras	Permanent, slow-moving fresh or brackish water with available basking sites and adjacent open habitats or forest for nesting	Absent; no suitable habitat present
Birds				
Common Name (Scientific Name)	Status[a]	Habitat Associations	Habitat Types	Likelihood to Occur in Project Area
Burrowing owl *Athene cunicularia*	–/SSC	Year-round resident throughout much of the state; Central Valley, northeastern plateau, southeastern deserts, and coastal areas; rare along south coast	Level, open, dry, heavily grazed or low- stature grassland or desert vegetation with available burrows	Potential to occur; suitable habitat present
Least Bell's vireo *Vireo bellii pusillus*	FE/SE	Summer resident; breeds in scattered locations around southern California	Nests in dense vegetative cover of riparian areas; often nests in willow or mulefat; forages in dense, stratified canopy	Absent; outside of the species' current distribution and no suitable habitat present
Loggerhead shrike *Lanius ludovicianus*	--/SSC	A semipermanent resident species that occurs in abundance in the Central Valley where shrub habitats are availble.	Scrub, open woodlands, and grasslands	Potential to occur. May nest in brush or shrubs near work areas, with potential nesting habitat identified near the existing Tesla-Stockton Cogen.
Song sparrow ("Modesto" population) *Melospiza melodia*	–/SSC	Year-round resident; north-central portion of the Central Valley	Emergent freshwater marshes, riparian willow thickets, and riparian forests	Absent; no suitable habitat present
Swainson's hawk *Buteo swainsoni*	–/ST	Summer resident; breeds in lower Sacramento and San Joaquin valleys, the Klamath Basin, and Butte Valley; highest nesting densities occur near Davis and Woodland, Yolo County	Nests in oaks or cottonwoods in or near riparian habitats; forages in grasslands, irrigated pastures, and grain fields	Potential to occur; historically present in vicinity (documented in 2003 and 2009 [CDFW 2018a]), but documented nest trees since removed (immediately north of the Vierra Substation expansion site). Suitable nesting trees occur along Christopher Way and immediately adjacent to the substation expansion.

TABLE 5.4-2 SPECIAL-STATUS SPECIES THAT COULD OCCUR IN THE PROJECT VICINITY

Tricolored blackbird *Agelaius tricolor*	–/SSC	Permanent resident, but makes extensive migrations both in breeding season and winter; common locally throughout Central Valley and in coastal areas from Sonoma County south	Feeds in grasslands and agriculture fields; nesting habitat components include open accessible water, a protected nesting substrate (including flooded or thorny vegetation), and a suitable nearby foraging space with adequate insect prey	Unlikely to occur; historically present within half mile of Vierra Substation (documented in 1971-1974; CDFW, 2018a), but suitable habitat is no longer present.
Western yellow-billed cuckoo *Coccyzus americanus*	FT/SE	Breeds in limited portions of the Sacramento River and the South Fork Kern River; small populations may nest in Butte, Yuba, Sutter, San Bernardino, Riverside, Inyo, Los Angeles, and Imperial counties	Summer resident of valley foothill and desert riparian habitats; nests in open woodland with clearings and low, dense, scrubby vegetation	Absent; outside of the species' current distribution and no suitable habitat present
White-tailed kite *Elanus leucurus*	–/SFP	Year-round resident; found in nearly all lowlands of California west of the Sierra Nevada mountains and the southeast deserts	Lowland grasslands and wetlands with open areas; nests in trees near open foraging area	Potential to occur; suitable nest trees present along Christopher Way and eucalyptus trees immediately adjacent to the site
Yellow-headed blackbird *Xanthocephalus xanthocephalus*	–/SSC	Primarily a migrant and summer resident, though small numbers remain in winter; Central Valley, northeastern California, central and southern coasts, and southern deserts	Breeds almost entirely in open marshes with relatively deep water and tall emergent vegetation, such as bulrush (*Schoenoplectus* spp.) or cattails (*Typha* spp.); nests are typically in moderately dense vegetation; forage within wetlands and surrounding grasslands and croplands	Absent; no suitable habitat present
Mammals				
Common Name (Scientific Name)	Status[a]	Habitat Associations	Habitat Types	Likelihood to Occur in Project Area
Riparian (San Joaquin Valley) woodrat	FE/SSC	Single known extant population restricted to Stanislaus River in Caswell Memorial State Park	In riparian areas with willows and dense oak,	Absent; outside of the species' current distribution and no suitable habitat

TABLE 5.4-2 SPECIAL-STATUS SPECIES THAT COULD OCCUR IN THE PROJECT VICINITY

Neotoma fuscipes riparia			evergreen, and/or shrubby overstory	present
Riparian brush rabbit *Sylvilagus bachmani riparius*	FE/SE	Single, known extant population restricted to the Stanislaus River in Caswell Memorial State Park	Brushy understory of valley riparian forests	Absent; no suitable habitat present, occurrences have been reported from the San Joaquin River less than a mile to the west of the project.
Western mastiff bat *Eumops perotis californicus*	–/SSC	Found mostly in southern half of California	Primarily a cliff-dwelling species though may be found in crevices in large boulders and buildings	Absent; outside of the species' current distribution
Townsend's western big-eared bat *Corynorhinus townsendii*	–/SSC	Throughout California, found in all but subalpine and alpine habitats, details of distribution not well known	Most abundant in mesic habitats; also found in oak woodlands, desert, vegetated drainages, caves or cave-like structures (including basal hollows in large trees, mines, tunnels, and buildings)	Absent; no suitable habitat present
Pallid bat *Antrozous pallidus*	–/SSC	Throughout California except for elevations greater than 3,000 m in the Sierra Nevada	Roosts in rock crevices, tree hollows, mines, caves, and a variety of vacant and occupied buildings; feeds in a variety of open terrestrial habitats	Absent; no suitable habitat present
San Joaquin kit fox *Vulpes macrotis mutica*	FE/ST	San Joaquin Valley floor and surrounding foothills of the coastal ranges, Sierra Nevada, and Tehachapi mountains	Annual grasslands or open areas dominated by scattered brush, shrubs, and scrub	Unlikely to occur; marginally suitable habitat present
American badger *Taxidea taxus*	–/SSC	Throughout the state except in the humid coastal forests of Del Norte County and the northwest portion of Humboldt County	Shrubland, open grasslands, fields, and alpine meadows with friable soils	Unlikely to occur; marginally suitable habitat present

TABLE 5.4-2 SPECIAL-STATUS SPECIES THAT COULD OCCUR IN THE PROJECT VICINITY

Status codes:

For special-status plants (Federal/State/CRPR):

- = None

Federal	State
FE = Endangered under ESA	SE = Endangered under CESA
FT = Threatened under the ESA	ST= Threatened under CESA
	SR = Rare under the CNPPA
	SSC= Species of Special Concern

WL= Watch List

CRPR

1B = Plants rare, threatened, or endangered in California and elsewhere

2B = Plants rare, threatened, or endangered in California, but more common elsewhere

0.1 = Seriously threatened in California

0.2 = Fairly threatened in California

0.3 = Not very endangered in California

For rare natural communities (Global rank/State rank):

Global Rank	State Rank
G1 = Critically Imperiled	S1 = Critically Imperiled
G2 = Imperiled	S2 = Imperiled
G3 = Vulnerable	S3 = Very threatened
	S4 = Threatened

Habitat associations for rare natural communities are based on Holland (1986) unless otherwise noted.

Unless otherwise noted, the methodology and environmental information presented in this section are summarized from the Biological Constraints Analysis for the Vierra Loop Project and the Vierra Loop Project Biological Resources Survey Technical Memorandum (Stillwater Sciences, 2017a; 2017b), as well as first-hand observations from the CPUC consultant team during the site visit .

Plants

Twenty-five special-status plant species and five rare natural communities were identified from the database queries as potentially occurring in the substation expansion and power line. **Table 5.4-2** identifies these species, describes the potential for occurrence of each in the project area, and lists the status, blooming period, and associated habitats. Of these plant species, five are unlikely to occur in the project area due to the absence of suitable habitat, and one because it is well outside its known elevation range. Nineteen plant species and all five rare natural communities are considered to be absent in the project area, either because the project area does not support suitable habitat or because protocol-level surveys did not detect the species during the appropriate blooming period.

Round-leaved filaree (*California macrophylla*) was considered to potentially occur in the project area based on the presence of potentially suitable habitat; however, it was determined absent from the substation expansion and power line based upon results of a targeted protocol-level survey performed in 2017. The species may occur as potentially suitable habitat exists. Round-leaved filaree is discussed in the following paragraph.

Round-leaved filaree

Round-leaved filaree is an annual to biennial herb in the Geraniaceae family. It has a CRPR of 1B.2 (plants rare, threatened, or endangered in California and elsewhere; fairly threatened in California). It grows in open sites, grassland, scrub, vertic clay (occasionally on serpentine), and clay areas of cismontane woodland and valley and foothill grassland from 0 to 3,937 feet, and blooms from March to May (Baldwin, et al., 2012; CNPS, 2016). Most populations are small and are threatened by development, urbanization, and habitat alteration (CNPS, 2016). The closet previously documented population of round-leaved filaree is near the town of Tracy, California, nearly 8 miles from the substation expansion and power line (CDFW, 2018a).

In the project area, round-leaved filaree has the potential to occur in the ruderal herbaceous habitat in a 1.6-acre staging area northeast of the intersection of D'Arcy Parkway and South Howland Road. A rare plant survey targeting round-leaved filaree was conducted at this location on May 25, 2017 (Stillwater Sciences, 2017b). No special-status plant species, including round-leaved filaree individuals, were documented during this survey. Subsequent to the filing of the PEA for this project, the CDFW has removed the plant from the CNDDB, stating that it was "considered too common to track as a rare species" (CEC 2020a).

Wildlife Species

Twenty-seven special-status wildlife species were identified from database queries as potentially occurring in the project region[1]. **Table 5.4-2** identifies these species, describes their potential for occurrence in the substation expansion and power line area, and lists the status, distribution, and

1 Project region includes a 7.5 topographic quadrangle search of 9 quadrangles around the project, and a 10-mile radius IPaC search (each quadrangle is 49-70 square miles).

associated habitats. Of these, 24 species are absent or are unlikely to occur in or near the project area because the project area is outside of the species' known ranges or there is no suitable habitat in the project area. The following three species have the potential to occur in the project area and are discussed in the following paragraphs:

- Burrowing owl (*Athene cunicularia*)
- Swainson's hawk (*Buteo swainsoni*)
- White-tailed kite (*Elanus leucurus*)

Burrowing Owl

Burrowing owl, a CDFW Species of Special Concern, is a year-round resident through much of California. Burrowing owl is found primarily in sparse, open grasslands or shrublands characterized by low growing vegetation, but may be found in areas highly altered by human activity, including airports, golf courses, and cemeteries (Haug, et al., 1993). Burrows are the essential component of burrowing owl habitat, and are used for nesting and roosting. Individuals primarily use burrows made by ground squirrels (*Spermophilus beecheyi*), but may also use those excavated by other fossorial (ground-denning) mammals, including badger (*Taxidea taxus*) and coyote (*Canis latrans*) (Gervais, et al., 2008), or may excavate their own (Haug, et al., 1993; Gervais, et al., 2008). Burrowing owls may be found occupying human-made structures, such as levees, culverts, pipes, or debris piles (CBOC, 1993, Gervais, et al., 2008), and have been found on the edges of drains and canals that border agricultural fields (Rosenburg and Haley, 2004). Burrowing owls are monogamous and breed from March through August, with peak activity occurring in April and May, but breeding can begin as early as February and end as late as December (Zeiner, et al,. 1990; Rosenberg and Haley, 2004).

Potential burrowing owl habitat is located along a berm associated with the railroad tracks that parallel South Howland Road and in a small berm located along the northern side of the City of Lathrop's Water Reclamation Plant on Christopher Way. Multiple burrows a minimum of 3.5 inches in diameter and burrow complexes were documented within and around Vierra Substation and the expansion area, as well as adjacent to or along the water treatment plant property on Christopher Way (Stillwater Sciences, 2017b). None of the burrows documented during the survey had any sign of burrowing owl presence or activity (e.g., white-wash, regurgitated pellets, molted feathers, prey remains). However, it is possible that these burrows may become occupied in the future.

Swainson's Hawk

Swainson's hawk, a migratory raptor that is a spring and summer resident in California's Central Valley, is state-listed as threatened. Swainson's hawks nest in trees near large, sparsely vegetated flatlands characterized by valleys, plateaus, broad flood plains, and large open expanses (Bloom, P.H., 1980). Suitable nest trees are often mature and large, and need to provide a stable nesting platform. Although Swainson's hawk is not an obligate riparian species, the availability of nesting trees is closely tied to riparian areas, usually associated with main river channels (Bloom, P.H., 1980; and Estep, 1989). Nesting sites tend to be adjacent or close to suitable foraging grounds, which may include recently harvested alfalfa, wheat, or hay crops; low-growing crops, such as beets or tomatoes; open pasture; non-flooded rice fields; or post-harvest cereal grain crops (Bloom, P.H., 1980; CDFG, 1994). Swainson's hawks forage in open areas with low vegetative cover that provides good visibility of prey, such as voles, ground squirrels, pocket gophers, and deer mice; they avoid foraging in fields with tall crops that grow much higher than native grasses, which makes prey more difficult to find (CDFG, 1994). Migrating Swainson's hawks first arrive in the Central Valley in mid-March through May, and migrate south in September and

October (Zeiner et al., 1990). Breeding occurs from late March to late August, with peak activity from late May through July (Zeiner, et al., 1990). Most clutches are completed by mid-April, with fledging occurring from July to mid-August (Estep, 1989).

There is potential for Swainson's hawk to nest near the project area in trees located west of the substation expansion area along Christopher Way; and south of the project along Vierra Road. The suitability of these trees for nesting may be reduced due to the proximity to residences. There are historical Swainson's hawk sightings in the project region. In 2003, a Swainson's hawk was documented nesting in a large cottonwood tree located just east of South Howland Road (CDFW, 2018a), though the tree has since been removed. Agricultural habitat along the Vierra Substation expansion and power line may also provide foraging habitat.

White-tailed Kite

White-tailed kite is a Fully Protected species under state law. This species is a resident (breeding and wintering) species throughout central and coastal California, up to the western edge of the foothills of the Sierra Nevada. White-tailed kites breed in lowland grasslands, oak woodlands or savannah, and wetlands with open areas. Riparian corridors represent a preferred landscape characteristic for kites in both the breeding and non-breeding seasons (Erichsen, 1995). Nest trees range from single isolated trees to trees within relatively large stands (Dunk, 1995). Preferred foraging sites include open and ungrazed grasslands, agricultural fields, wetlands, and meadows that support large populations of small mammals. White-tailed kites breed between February and October, with peak breeding in May through August (Zeiner, et al., 1990).

There is potential for white-tailed kites to nest in several trees near the project area, particularly those located west of the substation expansion area along Christopher Way (**Figure 5.4-1**), and eucalyptus trees adjacent the substation expansion; however, the suitability of these trees for nesting may be reduced due to the proximity to residences. There is also potential for white-tailed kites to nest in ornamental trees located along Nestle Way; however, this habitat is marginal because the trees are close to the road and subject to noise and disturbance from traffic.

Other Migratory Birds And Nesting Raptors

Non-listed migratory bird species or raptors can establish nests in trees or shrubs in or near the project area, particularly in the trees located south of the substation expansion area. There is also potential nesting habitat in a row of ornamental trees located along Nestle Way, though this habitat is marginal because the trees are in very close proximity to the road and traffic. The nesting season for migratory birds and raptors generally is between February 15 and August 31.

Critical Habitat

The USFWS may designate critical habitat for a species listed as threatened or endangered under the Endangered Species Act. Critical habitat is a designation that indicates areas that have the physical and biological features believed to be essential to the conservation of the species and may require special management considerations or protection. The project area crosses through designated critical habitat for delta smelt (*Hypomesus transpacificus*) and California red-legged frog (*Rana draytonii*); however, both species are absent in the project area due to the lack of suitable aquatic habitat.

Conservation Planning

As stated in the PEA, "PG&E has an HCP [Habitat Conservation Plan] for its operation and maintenance activities in the San Joaquin Valley" (PGE, 2018a). This HCP, PG&E's San Joaquin Valley Operations and Maintenance Habitat Conservation Plan (PG&E O&M HCP), authorizes incidental take of 23 wildlife and 42 plant species for 33 routine operations and maintenance activities for PG&E's electric and gas transmission and distribution systems within nine counties of the San Joaquin Valley, including San Joaquin County (PGE, 2007). The project is included within the boundaries of this PG&E O&M HCP, although the project is not a covered activity, as the HCP does not cover substation expansions that exceed 0.5-acre. However, construction practices and Applicant Proposed Measures (APMs) for this project have been designed to be compatible with PG&E's O&M HCP avoidance and minimization measures, which have been previously approved by the USFWS and endorsed by the CDFW.

The City of Lathrop is a Permittee under a second area HCP, the SJMSCP, which provides compensation for the conservation of open space to non-open space uses that affect the plant, fish and wildlife species covered by the SJMSCP (San Joaquin County, 2000). The SJMSCP is either administered by the cities themselves within San Joaquin County, or by the San Joaquin Council of Governments (SJCOG). Participation in the SJMSCP is voluntary for project applicants except when conditioned to participate by a Permittee. The project is not a covered activity since PG&E is not a permittee/participant in this HCP; however, participation is voluntary, and while PG&E is therefore eligible to participate, PG&E has chosen to not participate. Twelve covered species have designated critical habitat within the Plan Area. The HCP addresses impacts from day-to-day operation and maintenance activities as well as large maintenance improvement projects that require extensive planning and coordination and assumes that any activity could be implemented in a given year.

Regulatory Background

Federal

Endangered Species Act. The Endangered Species Act (ESA) of 1973 (16 U.SC. §1531 et seq.; 50 C.F.R., part 17.1 et seq.), as amended, designates and provides for protection of threatened and endangered plant and animal species, and their critical habitat. Take of federally-listed species as defined in the federal ESA is prohibited without incidental take authorization, where "take" is defined as "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or attempt to engage in any such conduct" (16 U.S.C. §1532(19)). "Harass" is further defined in federal regulations to mean intentional or negligent acts or omissions which create the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavioral patterns. "Harm" is further defined in regulations to mean an act which actually kills or injures wildlife. "Harm" may include significant habitat modification or degradation that actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering (50 C.F.R. §17.3). Take authorization may be obtained through Section 7 consultation (between federal agencies) or approval of a Section 10 HCP. The administering agencies are USFWS and National Marine Fisheries Service.

Migratory Bird Treaty Act. The Migratory Bird Treaty Act (MBTA) of 1918 (16 U.S.C. §§703 - 712) makes it unlawful to take or possess any migratory nongame bird (or any part of such migratory nongame bird including nests with viable eggs).

State

California Endangered Species Act. The California ESA of 1984 (Fish & Game Code, §§ 2050 - 2098) protects California's rare, threatened, and endangered species. The California ESA allows CDFW to issue an incidental take permit for a species listed as candidate, threatened, or endangered only if that take is incidental to otherwise lawful activities and specific criteria are met. These criteria are listed in Title 14 California Code of Regulations Section 783.4 subdivisions (a) and (b). For purposes of the California ESA, "take" means to hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill (Fish & Game Code § 86).

Fully Protected Species. Fish and Game Code Sections 3511, 4700, 5050, and 5515 designate certain species as fully protected and prohibit the take of such species or their habitat unless for scientific purposes (see also 14 Cal. Code Regs. § 670.7). Incidental take of fully protected species may also be authorized in a Natural Community Conservation Plan (NCCP) (Fish & Game Code §2835).

California Species of Special Concern. A "Species of Special Concern" is a species, subspecies, or distinct population of an animal (fish, amphibian, retile, bird, or mammal) native to California that currently satisfies one or more of the following criteria: extirpated from the state or, in the case of birds, extirpated in its primary season or breeding role; listed as federally, but not state, threatened or endangered; meets the state definition of threatened or endangered but has not formally been listed; experiencing, or formerly experienced, serious population declines or range retractions that, if continued or resumed, could qualify it for state threatened or endangered status; has naturally small populations exhibiting high susceptibility to risk from any factor(s), that if realized, could lead to a decline that would qualify it for state threatened or endangered status (CDFW, 2018b)

Nest or Eggs. Fish and Game Code Section 3503 protects California's birds by making it unlawful to take, possess, or needlessly destroy the nest or eggs of any bird.

Migratory Birds. Fish and Game Code Section 3513 protects California's migratory birds by making it unlawful to take or possess any migratory nongame bird as designated in the MBTA or any part of such migratory nongame birds.

Native Plant Protection Act. The Native Plant Protection Act (NPPA) of 1977 (Fish & Game Code Section 1900 et seq.) designates state rare and endangered plants and provides specific protection measures for identified populations. The NPPA prohibits take of endangered or rare native plants, but includes some exceptions for agricultural and nursery operations; emergencies; and, after properly notifying CDFW, for vegetation removal from canals, roads, and other sites; changes in land use; and in certain other situations.

Local

The project is not subject to local discretionary regulations because the CPUC has exclusive jurisdiction over the siting, design, and construction of the project under CPUC General Order No. 131-D. Local ordinance policies and requirements are summarized here for informational purposes.

City of Lathrop Comprehensive General Plan. The City of Lathrop Comprehensive General Plan was adopted in 1991, and amended as recently as November, 2004 (Lathrop, 2004). The new power line and Vierra Substation expansion are within the City of Lathrop. Policies and programs specific to vegetation and wildlife conservation and management are described in Goal 5, Policies 1 through 8, which include

retention of habitat along waterways, conserving Swainson's hawk through the SJMSHCP, and maintaining trees.

San Joaquin County Multi-Species Habitat Conservation and Open Space Plan. The SJMSCP is a multi-species, multi-habitat, multi-purpose open space management program for all of San Joaquin County. The Lathrop City Council adopted ordinance number 01-0194 establishing the SJMSCP on November 6, 2001 (Lathrop, 2016) and signed a Joint Powers Agreement with the other city, county, state, and federal agencies participating in the SJMSCP. The SJMSCP is a 50-year Plan (2001 – 2051) that provides compensation for the conversion of open space to non-open space uses which affect the plant, fish, and wildlife species covered by the SJMSCP. The SJMSCP also includes some compensation to offset the impacts of open space conversions on non-wildlife related resources such as recreation, agriculture, scenic values, and other beneficial open space.

5.4.2 Applicant Proposed Measures

PG&E proposes, as part of the project, to implement the following APMs to avoid or reduce anticipated potential impacts to Biological Resources.

APM BIO-1: Avoid impacts on special-status plants and their habitat. Pre-construction surveys for special-status plant species in areas of suitable habitat will be conducted during the appropriate blooming period by a qualified biologist prior to the start of construction activities. A report documenting the survey results will be provided to the CPUC prior to construction. If any special-status plant species are found, the following actions will be implemented:

- Special-status plants within and immediately adjacent to work areas and access routes will be marked by a qualified biologist and avoided to the extent feasible.
- If impacts to special-status plants cannot be avoided, the impacts will be enumerated and described. PG&E will notify the landowner of the presence and location of the special-status plants and inform them of their right to contact CDFW to arrange for the plants to be salvaged. PG&E will proceed with construction activities unless notification is received from the landowner or CDFW within 48 hours indicating that the plants will be salvaged.

APM BIO-2: Avoid impacts on nesting birds. If work is scheduled during the nesting season (February 1 through August 31), nest detection surveys will correspond with a standard buffer for individual species in accordance with the species-specific buffers set forth in Appendix D of the PEA and will occur within 15 days prior to the start of work activities at designated construction areas, staging areas, and landing zones to determine nesting status by a qualified wildlife biologist. Nest surveys will be accomplished by ground surveys and will support phased construction, with surveys scheduled to be repeated if construction lapses in a work area for 15 days between March and July. Access for ground surveys will be subject to property owner permission.

If active nests containing eggs or young are found, the biologist will establish a species-specific nest buffer, as defined in Appendix D of the PEA. Where feasible, standard buffers will apply, although the biologist may increase or decrease the standard buffers in accordance with the factors set forth in Appendix D. Nesting pair acclimation to disturbance in areas with regularly occurring human activities will be considered when establishing nest buffers. The established buffers will remain in effect until the young have fledged or the nest is no longer active as confirmed by the biologist. Active nests will be periodically monitored until the biologist has determined that the young have fledged or once construction ends. Per the discretion of the biologist, vegetation removal by hand may be allowed

within nest buffers or in areas of potential nesting activity. Inactive nests may be removed in accordance with PG&E's approved avian permits. The biologist will have authority to order the cessation of nearby project activities if nesting pairs exhibit signs of disturbance.

All references in this APM to qualified wildlife biologists refer to qualified biologists with a bachelor's degree or above in a biological science field and demonstrated field expertise in ornithology, in particular, nesting behavior.

APM BIO-3: Burrowing owl. Within 30 days of beginning ground-disturbing activities, a preconstruction survey for burrowing owl will be conducted by a qualified biologist in the vicinity of Vierra Substation and the railroad tracks and any other suitable habitat within 500 feet of the project area. If no burrowing owls are detected, no further measures are required. If burrowing owls are detected, no construction activities will occur within 250 feet of occupied burrows during the nesting season or within 160 feet of occupied burrows during the non-nesting season. For purposes of this measure, the nesting season is February 1st to August 31st. Additionally, burrowing owls will be monitored by a qualified biologist during construction to assess the sensitivity of the burrowing owls to the construction activities. The size of the avoidance buffer may be increased or decreased as determined by the monitoring biologist based on the planned construction activities and the sensitivity of the burrowing owls. If impacts on an active burrow cannot be avoided, passive relocation may be considered. Relocation will be conducted during the non-nesting season and only after a site-specific plan has been developed and implemented.

APM BIO-4: Voluntary Compensatory Mitigation for Permanent Impacts to Burrowing Owl, Swainson's Hawk and White-tailed Kite Foraging Habitat. Prior to construction, PG&E shall mitigate for permanent impacts to agricultural lands that are potential foraging habitat for Burrowing Owl, Swainson's Hawk and White-tailed Kite through PG&E's San Joaquin Valley O&M Habitat Conservation Plan in the total amount of 2.63 acres. Confirmation of the completion of this obligation must be provided to the CPUC prior to the commencement of ground-disturbing activities in agricultural land.

5.4.3 Environmental Impacts and Mitigation Measures

a. Would the project have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?

Construction

LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED.

Special-Status Plants

Direct Impacts. Reconnaissance field surveys were conducted in December, 2016, and focused rare plant surveys were conducted during the blooming season (May 2017) for the 25 special-status plant species that have a potential to occur in the area around the new power line and Vierra Substation expansion. This included two federally- and state-listed plant species, large-flowered fiddleneck and palmate-bracted salty birds-beak; the state-listed Delta button-celery; the California Native Protection Act rare Mason's lilaeopsis; and 18 additional species listed as CRPR 1B.1 or 1B.2 (see **Table 5.4-2**). Surveyors conducted focused rare plant surveys in suitable habitat and found no

special-status plant species within the Survey Area. Round-leaved filaree was considered to potentially occur in the project area based on the presence of potentially suitable habitat located at a staging area northeast of D'Arcy Parkway and South Howland Road. However, it was determined to be absent from the new power line and Vierra Substation expansion area based on results of targeted protocol-level surveys performed in 2017. All known locations of round-leaved filaree in the area around the new power line and Vierra Substation expansion, such as those mapped by the CNDDB, are located outside any areas that would be impacted by project activities.

Round-leaved filaree was removed from the CNDDB in 2018 as it was considered too common in the area to map (CEC 2020a). Direct, permanent impacts to the species would be 2.63 acres. The last CNDDB-reported location was over 7 miles away (CDFW, 2018a), this plant is common in the area according to CDFW, and it was not detected during protocol surveys. Based on the results of focused rare plant surveys, round-leaved filaree and all other special-status plant species are considered absent from project work areas; however, due to the ability to re-populate an area and the age of the surveys (2017), plants may appear before construction. Therefore, the project may have direct impacts on special-status plants if measures are not taken to avoid impacts.

As part of the project, PG&E proposed to implement APM BIO-1, which would require general protection measures to avoid impacts to special-status plants and their habitat. This would entail preconstruction surveys, marking of any special-status plants, and avoidance if possible. This was considered insufficient, as it did not include measures such as worker environmental training. The following two M**itigation Measures** (**MM**) would supersede APM BIO-1: **MM 5.4-1** (Worker Environmental Awareness Program), and **MM 5.4-2** (preconstruction surveys and plant salvage opportunity), the project would have no direct impacts on special-status plants. Salvage entails collection of seeds, parts such as bulbs or corms, or entire plants, at CDFW's discretion.

Indirect Impacts. Construction activities have the potential to result in indirect impacts to potential habitat capable of supporting special-status plant species. There is the potential for colonization of the area by several special-status species, such as alkali milk-vetch, round-leaved filaree, or San Joaquin spearscale. Although the potential for colonization is marginal, owing to lack of habitat and no special-status plants being recorded in the near vicinity of the project site, colonization may still occur. Indirect impacts to potential special-status plant habitat include degradation of water quality from erosion and sedimentation as well as habitat degradation from introduction of noxious weeds and invasive plants and compaction of soils. Invasive plants have the potential to displace native plants, including special-status species, by competing directly with native species for moisture, sunlight, nutrients, and space. This would be a significant impact.

As part of the project, PG&E proposed to implement APM BIO-1, which would require general protection measures to avoid impacts to special-status plants and their habitat. This entails preconstruction surveys, marking of any special-status plants, and avoidance if possible.

APM BIO-1 would not reduce indirect impacts to special-status plant species to a less than significant level because it does not include a robust worker environmental awareness program (WEAP) that would ensure workers have been fully trained to avoid indirect impacts to special-status plants. **MM 5.4-1**, which would supersede APM BIO-1, would include requirements for a WEAP, in addition to other worker diligence and site best management practices. **MM 5.4-1** includes providing a brochure with photographs to workers who complete the training, documenting who has completed the training, and providing training for situations where it is necessary to contact a

qualified biologist (e.g., should any sensitive biological resources or invasive plants be found during construction).

Further, APM BIO-1 would not reduce indirect impacts to special-status plant species to a less than significant level because it does not provide specific training for workers on which invasive weeds are known to occur in the project area. **MM 5.4-2**, which would also supersede APM BIO-1, would provide additional requirements for the WEAP, including a focus on avoiding impacts on special-status plants, including adding information regarding specific invasive weeds that are known to occur in the vicinity and flagging known populations of noxious weeds and invasive plants in the work area prior to commencing work. In addition, **MM 5.4-2** also requires the applicant to contact CDFW in the event that rare plants are identified to arrange for the salvage of rare plants by CDFW, consistent with requirements of the California Native Plant Protection Act.

Indirect impacts to special-status plant species from construction of the project would be avoided or minimized with implementation of measures described in **MM 5.4-1** (which would supersede APM BIO-1), and **MM 5.4-2** (which would also supersede APM BIO-1). With implementation of **MM 5.4-1** and **MM 5.4-2**, indirect impacts to special-status plants would be less than significant.

Special-Status Wildlife

Reconnaissance field surveys conducted in December 2016 did not identify special-status wildlife species on the project site. However, three special-status bird species (burrowing owl, Swainson's hawk, and white -tailed kite) were determined by PG&E and CPUC consultant staff to potentially be present or likely to occur in the substation expansion and power line area, and could potentially forage or occur within or immediately adjacent to the project (**Table 5.4-2**). Without mitigation, these species have the potential to be significantly affected by the project and are discussed in greater detail below.

Birds- Burrowing Owl

Direct Impacts. Burrowing owl may occur in lands mapped as agricultural, which occur in the area of the Vierra Substation expansion, or along berms, such as those located along Christopher Way (Stillwater Sciences, 2017a). PG&E has committed to performing surveys for burrowing owl according to the CDFW survey protocol, with additional emphasis according to CPUC consultant staff's locational specifications (CDFW, 2012; PGE, 2018c). Staff has requested surveys be conducted along the alternative transmission line corridors F (Vierra Rd.) and J (Christopher Way) as depicted in Stillwater Sciences Technical Memorandum (Stillwater Sciences, 2017a). The surveys are designed to detect both breeding and nonbreeding burrowing owl occupation. Direct impacts from construction include loss of habitat and the potential for crushing of nests and eggs by construction equipment and loss of individual birds. Without mitigation, these would be significant impacts.

The project would affect 10.64 acres of burrowing owl habitat, including the temporary loss of approximately 8.01 acres and permanent loss of 2.63 acres of agricultural habitat. The loss of foraging habitat for a special-status species is considered significant, therefore, potential impacts to burrowing owl habitat should be mitigated (SJCOG, 2000). Habitat mitigation is necessary regardless of results of protocol survey (i.e., occupied or not), as determined by the SJCOG (CEC, 2019c), CDFW (2012), as well as the PG&E O&M HCP (PG&E, 2007).

PG&E recommends APM BIO-2, nesting bird preconstruction surveys and concomitant placement of nesting buffer zones if nests are found, as well as APM BIO-3, which outlines preconstruction

surveys specifically for burrowing owl, and potentially passive relocation should a burrow not be completely avoided. **MM 5.4-1** would provide worker environmental training and aid workers in the identification and necessity of avoiding burrowing owls. While APM BIO-2 is adequate for general avian preconstruction nesting surveys, APM BIO-3 would not adequately reduce impacts to burrowing owl to less than significant levels, in part because it does not reference the correct agency guidance for the species (CDFW, 2012), such as use of passive exclusion devices, scoping and /or excavation (CDFW, 2012).

Without mitigation, the potential impacts of the project on burrowing owl habitat would be significant. Therefore, **MM 5.4-3** would supersede APM BIO-3. Although this project is not a covered activity under the PG&E O&M HCP (PG&E, 2007), APM BIO-4 would incorporate the compensatory mechanisms for habitat mitigation from this HCP to provide for compensatory mitigation to further reduce the project's potential impacts to burrowing owls from permanent habitat loss. In concert, **MM 5.4-3** and APM BIO-4 mitigate impacts to habitat suitable for burrowing owl, Swainson's hawk, and white-tailed kite that would otherwise be considered significant due to these birds being special-status species (CEC, 2019a; 2019c).

Indirect Impacts. Indirect impacts to the foraging and/or nesting activities of burrowing owl could occur as result of additional noise and the activity of workers and use of equipment during project activities, including use of helicopters. Disturbance from project activities has the potential to cause owls to flush and would make them more susceptible to predation or limit access to available burrows that would otherwise conceal them from predators. This would be a significant impact. Nighttime construction is not anticipated, except for certain construction procedures that cannot be interrupted because of safety considerations or to take advantage of line clearances during off-peak hours. If nighttime lighting is needed to be used during construction activities, the lighting would be temporary and would be directed down and toward construction areas and activities. PG&E would implement APM AES-1, which would minimize the visibility of lighting from off-site locations wherever feasible.

Indirect impacts to burrowing owl also include attraction of predators to the site by unsecured food waste and trash. Predation on the species would be a significant impact. PG&E did not recommend measures related to litter and trash management, nor that all trash containers be animal-proof. Animal proof trash containers would prevent attracting predators of protected species to the project area by reducing access to food waste and trash. Mitigation Measure 5.4-1 would include additional requirements for litter and trash management, including that trash containers be animal proof.

Noise from the project would also create an indirect impact. **MM 5.4-3** specifies that all work shall be limited to a 250-foot buffer from both wintering and summering (breeding) burrowing owl burrows, thereby limiting disturbance. As measured in 2019, average ambient noise levels in the project area range from 48 to 63 dBA L_{eq} during the day (Section 5.13, *Noise*). Construction noise at 250 feet from the source is estimated to range from 34 to 66 dBA L_{eq}. These temporary noise effects are considered minimal and would not result in significant impacts after implementation of mitigation (**MM 5.4-3**).

Birds- Swainson's Hawk and White-Tailed Kite

Direct Impacts. The CDFW considers whether or not a project would adversely affect suitable foraging habitat within a 10-mile radius of an active Swainson's hawk nest (used during one or more

of the last five years). The 10-mile radius standard is the flight distance between active nest sites and suitable foraging habitats as documented in telemetry studies by Estep (1989) and Babcock (1995) (CDFG, 1994). Suitable forage habitat exists onsite, and nesting occurred near the site until the tree was removed; other suitable trees remain. Impacts (**Table 5.4-1**) include the temporary loss of approximately 8.01 acres of agricultural habitat, and the permanent loss of 2.63 acres of agricultural habitat.

PG&E has incorporated measures into the project PEA to protect the Swainson's hawk. Staff also has evaluated APM BIO-4 and agrees that the implementation of this measure would reduce impacts to less than significant levels. As proposed, this measure would instruct PG&E to pay a per-acre fee to compensate for loss of foraging habitat for this species. Implementation of **MM 5.4-3** would limit impacts to nesting hawks by limiting impacts to their nesting habitat (trees).

Similarly, the project would impact white-tailed kites through the removal of 10.64 acres (8.01 temporarily and 2.63 permanently) of foraging (agricultural) habitat for the white-tailed kite at the Vierra Substation expansion. These impacts are considered significant. PG&E has incorporated measure APM BIO-4 into the project to mitigate the permanent impacts to white-tailed kite's habitat. Staff independently evaluated and recommends implementation of APM BIO-4 to reduce these potentially significant impacts to less than significant levels. This measure would direct PG&E to pay fees pursuant to the PG&E O&M HCP, on a per acre basis, to compensate for the permanent loss of white-tailed kite foraging habitat. With the implementation of this mitigation measure, the project's impacts to special-status raptors would be less than significant, and the project would be consistent with established local conservation plans.

Further, staff also recommends implementation of **MM 5.4-1**, which would provide worker environmental training and aid workers in the identification and necessity of avoidance of sensitive species, as well as dictates a number of other best management practices such as general site cleanliness and maintenance. APM BIO-2 is adequate for general avian preconstruction nesting surveys.

Indirect Impacts. Indirect impacts to the foraging activities of both species could occur as result of additional noise and the activity of workers and use of equipment during project activities, including use of helicopters. Disturbance from project activities has the potential to cause birds, including special status Swainson's hawk and white-tailed kite, to flush and may adversely impact normal behaviors such as resting or seeking shelter. These would be potentially significant impacts. Nighttime construction is not anticipated, except for certain construction procedures that cannot be interrupted because of safety considerations or to take advantage of line clearances during off-peak hours. If nighttime lighting is needed to be used during construction activities, the lighting would be temporary and would be directed downward and toward construction sites. APM AES-1 would minimize the visibility of lighting from off-site locations wherever feasible.

MM 5.4-1 would include additional requirements for the WEAP and also require that trash containers be animal proof. Therefore, indirect impacts to Swainson's hawk and white-tailed kite would be less than significant with implementation of **MM 5.4-1**, which would supersede APM BIO-1.

The project is proposed close to various land uses, primarily industrial, commercial, agricultural, and residential. The transmission line route travels parallel to public roadway corridors, including Vierra Road, D'Arcy Parkway, Christopher Way, and Nestle Way. Contributors to the noise environment

primarily consist of continuous sounds of traffic along highways and city roads, airplane noise**,** agricultural activities, sounds emanating from residents nearby, and naturally occurring sounds (e.g., wind). The existing substation contains two 3-phase 45-megavolt ampere (MVA) distribution transformers, which are the primary sound sources associated with the operation of the power lines and substation, and contribute a constant low-level humming noise (noise associated with this size of transformer is typically on the order of 60 dBA at the source) (PGE, 2018a).

No new noise sources would be installed in the expanded substation as part of the project; therefore, the project would not operate mechanical devices that would cause the noise level at the property line to exceed the ambient base noise level by more than 5 decibels as specified in the City of Lathrop Municipal Code. Transformers are the primary source of noise associated with substations, and no transformers are proposed for installation as part of the project (Section 5.13, *Noise*).

MM 5.4-1: General Avoidance of Biological Resource Impacts. (Supersedes APM BIO-1). Pacific Gas and Electric Company (PG&E) will implement field protocols and avoidance and minimization measures to reduce impacts sensitive natural communities. This mitigation measure consists of the following components:

- Worker Environmental Awareness Program (WEAP). PG&E will conduct environmental training for all construction and on-site personnel prior to the beginning of site work. The WEAP training will be presented by a California Public Utilities Commission (CPUC)-approved, qualified biologist. All construction crew members and contractors who attend the training will sign a form indicating that they attended the training and understood the information. Follow-up training will be conducted as needed; new workers will attend WEAP training prior to beginning at the work site.

  Training will include a discussion of the avoidance and minimization measures that are being implemented to protect biological resources, as well as the terms and conditions of permits that apply to the project. Training will include information on the United States and California Endangered Species Acts and the consequences of noncompliance with these acts. Under this program, workers will be informed about the presence, life history, and habitat requirements of all listed and special-status species with at least a moderate potential to occur in the vicinity based on Table 5.4-2 of this Initial Study/Mitigated Negative Declaration, with a focus on those species that could be affected within the project area. Training will also include information on state and federal laws protecting nesting birds, and other biological resources, as applicable and appropriate to the project. Additionally, personnel will be trained for situations where it is necessary to contact a qualified biologist (e.g., should any sensitive biological resources such as an active nest be found during construction). If sensitive resources are found, the qualified biologist will provide guidelines for the personnel to avoid impacts on them.

  All WEAP participants will receive a brochure that outlines all this information including contact information for the appropriate environmental personnel. A record of all trained personnel will be kept on site, and a sticker indicating training completion will be worn on all worker hard hats. A copy of the training and brochure will be provided to CPUC prior to the start of construction for project files.

- Litter and trash management. All food scraps, wrappers, food containers, cans, bottles, and other trash from the project area will be deposited in closed animal-proof trash containers

and removed from the project site daily. Open fires (such as barbecues) are prohibited at work sites.

- Parking and vehicle speed limit. Vehicles and equipment will be parked on pavement, existing roads, and previously disturbed or developed areas or work areas. Off-road parking will only be permitted in previously identified and designated work areas. Vehicle speeds on unpaved roads will not exceed 15 miles per hour.
- Access route and work area limitations. Vehicles will be confined to established roadways and existing access roads, pre-approved temporary access routes, existing boardwalks, and designated matted work areas. Access routes and construction work areas will be limited to the minimum necessary to safely construct the project.
- Maintenance and refueling. All equipment will be maintained to minimize the potential for leaks of automotive fluids such as fuels, solvents, or oils.
- Pets and firearms. No pets, firearms, hunting or fishing will be permitted at the project site.
- Cover pipes and excavations. Minimize potential for special-status species to seek refuge or shelter in pipes and excavations. Inspect pipes, of diameter wide enough to be entered by a special-status species that could inhabit the area where pipes are stored, for wildlife species prior to moving pipes and culverts. 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 will search open trenches or steep-walled holes every morning prior to initiating daily activities to ensure wildlife are not trapped. If any trapped wildlife are found, a qualified biologist will be notified and will relocate the species to adjacent habitat or the species will be allowed to naturally disperse, as determined by a biologist. If a special-status species are identified within the work area, California Department of Fish and Wildlife shall be notified of the detection.

MM 5.4-2: Avoid and Minimize Impacts on Special-status Plant Species. (Supersedes APM BIO-1). Pacific Gas and Electric Company (PG&E) will implement the following measures to minimize impacts on habitat potentially suitable for special-status plant species:

Pre-construction surveys for special-status plant species in areas of suitable habitat will be conducted during the appropriate blooming period by a qualified biologist prior to the start of construction If special-status plant species are found, a report documenting the survey results will be provided to the California Public Utilities Commission (CPUC) prior to construction and the following actions will be implemented:

- Special-status plants within and immediately adjacent to work areas and access routes will be marked by a qualified biologist and avoided to the extent feasible.
- If impacts to special-status plants cannot first be avoided, the impacts will be enumerated and described. PG&E will notify the landowner of the presence and location of the special-status plants and contact California Department of Fish and Wildlife (CDFW) to arrange for the plants to be salvaged. CDFW must be notified at least 10 days prior to ground disturbance to allow for salvage of rare or endangered plants. Following the 10-day notification period, PG&E may proceed with construction activities unless notification is received from the landowner or CDFW within 48 hours indicating that the plants will be salvaged.

- As part of the Worker Environmental Awareness Program, include information on the identification of noxious weeds and invasive plants, the importance of noxious-weed and invasive plant control, and measures to minimize their spread. Training will include the following best management practices (BMPs) to avoid or minimize the spread of invasive plants and noxious weeds: (1) avoid working in invasive plant or noxious weed infested areas or prioritize activities so that infested areas are worked in last; (2) keep records of road maintenance activities including location and source of grading material; (3) maintain gravel and soil spoil piles free of invasive plants or noxious weeds; use areas known to be weed-free for staging and laydown areas; (4) minimize soil disturbance to the extent possible; (5) ensure materials used for erosion control will be certified weed free (i.e., straw wattles, gravel, fill material, etc.); when restoring a site after disturbance, use a native seed mix; (6) drive on and park on established roads as much as possible; (7) off-road equipment that is not local to the project area will arrive onsite clean and free of soil and plant parts; and (8) use clean clothing, footwear, and gear before moving from an infested area to a non-infested area.
- Prior to commencement of activities located on or adjacent to non-paved surfaces, a biologist will flag known populations of noxious weeds and invasive plants in the work areas.
- To minimize introduction and spread of noxious weeds and invasive plants, PG&E will avoid moving weed-infested gravel, rock, and other fill materials to relatively weed-free locations. PG&E will use certified weed-free straw and mulch for erosion-control projects. PG&E will maintain stockpiled, uninfested material in a weed-free condition.
- PG&E will minimize soil disturbance and the removal of vegetation during construction and other ground-disturbing activities to the extent practicable. Vehicles and equipment should remain on established roads or access routes as much as is practicable.
- PG&E will stage in areas not infested with weeds or treat for weed removal prior to using an infested area.
- PG&E will conduct post-construction monitoring of any disturbed soils in the spring following completion of construction for any invasive species that inadvertently have been introduced by the project in an area where they did not previously grow. PG&E shall coordinate with the CPUC to determine appropriate means of invasive species eradication (such as hand-pulling or chemical herbicide application).

MM 5.4-3: Burrowing Owl and Swainson's Hawk Mitigation Measures. (Supersedes APM BIO-3).

Burrowing Owl

Surveys for burrowing owl will be conducted by a qualified biologist in the vicinity of Vierra Substation expansion and the railroad tracks, the alignment south of Christopher Way, and any other suitable habitat within 500 feet of the project area. Surveys will be conducted according to California Department of Fish and Wildlife (CDFW) (2012) (or newer guidance, if available). Burrowing owl site clearance and mitigation shall follow the following approach:

Breeding Season (February 1 through August 31)

- Pre-construction surveys for burrowing owls shall be performed at least 14 days prior and again 24 hours prior to initial ground disturbance activities following the methodology in the

CDFW (2012) Staff Report on Burrowing Owl Mitigation (Staff Report). If burrowing owls are present, a detailed survey report shall be prepared by the applicant and submitted to CDFW for review. The report shall include survey methods and timing, and maps, among other information based on the reporting elements presented in the Staff Report. The required reporting information is described in the Staff Report (CDFW, 2012; see page 30).

- Any occupied burrows shall not be disturbed and shall be provided with a 250 foot protective buffer until and unless a qualified biologist approved by the CPUC verifies through non-invasive means that either: (1) the birds have not begun egg laying, or (2) juveniles from the occupied burrows are foraging independently and are capable of independent survival.
- Once a qualified biologist determines the fledglings are capable of independent survival, they may only be evicted after a Burrowing Owl Exclusion Plan (BOEP) is developed by a qualified biologist and approved by the CDFW. The BOEP shall provide for passive exclusion by a permitted individual, and any other appropriate measures such as collapsing of nearby unoccupied burrows, providing artificial burrows onsite or in a different location, and monitoring to determine the success of the actions taken. If compensatory mitigation has been provided through the PG&E O&M HCP in accordance with APM BIO-4, the burrow may then be destroyed following implementation of any CDFW 2012-appropriate measures as well as concurrence from CDFW.
- Pre-construction surveys following destruction of burrows and prior to initial construction activities are required 24 hours prior to construction to ensure owls do not re-colonize the project area.
- If project activities are delayed or suspended for more than 15 days during the breeding season, surveys will be repeated. Depending upon the condition of the project site (e.g., if burrows are absent, or if small mammal burrows are present with owl sign), surveys may require only a single habitat assessment review, or may require a repeat of the full survey protocol.

Non-breeding Season (September 1 through January 31)

- Pre-construction surveys following the CDFW (2012) Staff Report shall be performed prior (at least 14 days prior and again 24 hours prior) to initial ground disturbance activities. If burrowing owls are present, a detailed survey report shall be prepared by the applicant and submitted to CDFW for review following the methodology described for breeding season surveys. Burrowing owls may only be evicted after a BOEP is developed and approved by the CDFW, and compensatory mitigation has been provided under the PG&E O&M HCP in accordance with APM BIO-4.
- Pre-construction surveys following destruction of burrows and prior to initial construction activities are required (24 hours prior) to ensure owls do not re-colonize the project area. If owls are found within 165 feet of the project area, it is recommended that visual screens or other measures are implemented to limit disturbance of the owls without evicting them from the occupied burrows. A post-survey report shall be provided to CDFW, as described in the Burrowing Owl Staff Report (CDFW, 2012). The CPUC should also receive a copy of the report.
- If no burrowing owls are detected, no further measures are required. If burrowing owls are detected, no construction activities will occur within 250 feet of occupied burrows during

the nesting season or within 160 feet of occupied burrows during the non-nesting season. For purposes of this measure, the nesting season is February 1st to August 31st. Additionally, burrowing owls shall be monitored by a qualified biologist during construction to assess the sensitivity of the burrowing owls to the construction activities. The size of the avoidance buffer may be increased or decreased as determined by the monitoring biologist based on the planned construction activities and the sensitivity of the burrowing owls.

- If a burrowing owl is observed at the construction site at any time during construction, then exclusion fencing will be used to establish a safe buffer area until the animal can be passively relocated out of the construction area or other appropriate buffer distance is established consistent with CDFW guidance. Construction sites in areas that previously contained an occupied burrow should remain active and disturbed to discourage burrowing owl recolonization of the construction area.

Swainson's Hawk

- If work activities are performed during the Swainson's hawk nesting period (March 1 to July 30), pre-construction surveys for Swainson's hawks shall be performed following the current methodology adopted by CDFW, in consultation with the appropriate CDFW staff.
- Construction activities shall remain a distance of 0.25-mile from any active nest tree. This distance may be reduced with concurrence from CDFW based on site conditions or other factors that affect visibility of the nest from work areas, such as buildings or trees.
- If PG&E elects to remove a nest tree, the nest trees may be removed between September 1 and February 1, when the nests are unoccupied. Replacement trees shall be required near the same location, consistent with safety considerations near power lines, with specimen size depending on the size of the tree removed. Trees up to 6-inch caliper (at 3-foot height) shall be replaced with minimum 24-inch box specimens. Trees between 6-12-inch caliper shall be replaced with minimum 36-inch box specimens and trees greater than 12-inch caliper shall be replaced with 48-inch box specimens.

Mitigation Measures: Implement **MMs 5.4-1**, **5.4-2**, and **5.4-3** .

Significance after Mitigation: Less than Significant.

Operation and Maintenance

LESS THAN SIGNIFICANT IMPACT. Operation and maintenance activities for the new power line and expanded Vierra Substation (such as inspections of the poles and as-needed repairs) would be unchanged from current activities and would not require ground disturbance in or near the native habitat or agricultural fields. Operation and maintenance activities are expected to be infrequent, benign and less disruptive compared to the current activities in the surrounding industrial park and result in the same level of human presence and disturbance as typical nearby road and utility maintenance activities. These activities would have less than significant impact on special-status species.

Mitigation Measures: None recommended.

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b. Would the project have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?

Construction, Operation and Maintenance

NO IMPACT. No riparian habitat or sensitive natural communities are present in the project area. No impacts on riparian habitat or other sensitive natural communities would occur during construction, operation, or maintenance.

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c. Would the project have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?

Construction, Operation and Maintenance

NO IMPACT. No removal, filling, or other hydrologic alteration of wetlands would occur because no wetlands are present in the project area. No impact on wetlands would occur during construction, operation, or maintenance.

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d. Would the project interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of wildlife nursery sites?

Construction, Operation and Maintenance

NO IMPACT. The project area is highly developed and few opportunities for wildlife movement are present. The project alignment follows existing distribution lines along existing roads, and would not further disrupt or block any wildlife movement during construction, operation, or maintenance. Vierra Substation would be expanded into an existing agricultural area. Therefore, project construction would neither interfere substantially with the movement of any native resident wildlife species, nor impede the use of any wildlife nursery sites. The project does not include any work within water, and therefore, would not interfere with the movement of migratory fish. No impact would occur.

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e. Would the project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?

Construction, Operation and Maintenance

LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED. PG&E's project design is consistent with the San Joaquin County General Plan's Natural and Cultural Resources Element policies for protecting biological resources (San Joaquin County, 2016). Further, the proposed project is consistent with the Resource Management Element policies of the City of Lathrop General Plan (Lathrop, 2004).

With the inclusion of **MM 5.4-1**, **5.4-2**, and **5.4-3**, and APM BIO-4, the project would avoid and mitigate potential biological impacts, and would be consistent with local plans and policies protecting biological recourses. Thus, the construction, operation, or maintenance of the project would result in less than significant impacts to biological resources.

Mitigation Measures: Implement **MMs 5.4-1**, **5.4-2**, and **5.4-3**

Significance after Mitigation: Less than Significant.

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f. Would the project conflict with the provisions of an adopted Habitat Conservation Plan, Natural Communities Conservation Plan, or other approved local, regional, or state habitat conservation plan?

Construction, Operation and Maintenance

LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED. Potentially suitable foraging and nesting habitat for Swainson's hawk, burrowing owl, and white-tailed kite exists on and immediately adjacent the site. PG&E's proposed measure (APM BIO-4) would reduce permanent impacts (conversion of habitat) to less than significant because it would incorporate appropriate habitat mitigation for these species, as specified by the City of Lathrop General Plan Policy 3 (Lathrop, 2004). Although the project could have obtained mitigation coverage through the SJMSCP, PG&E proposed – and staff accepted – an alternative plan for compensatory mitigation to be followed in accordance with the PG&E O&M HCP. Therefore, in concert with **MM 5.4-3**, the project would mitigate any potential impacts to below the level of significance. This measure (**MM 5.4-3**) prescribes pre-construction surveys and the use of construction buffers, among other protective measures to avoid and/or reduce impacts. Although the project is also within the plan boundaries of the PG&E O&M HCP, the project is not a covered activity as the HCP does not cover substation expansions that exceed 0.5-acre in size (PGE, 2007). However, mitigation has been adapted to follow the outlined procedures of this plan (e.g., mitigation ratio per APM BIO-4), and therefore, impacts would be avoided or fully mitigated below the level of significance. The project does not cross through any other HCP, Natural Communities Conservation Plan, or other approved local, regional, or state habitat conservation plan. Less than significant impacts would occur through construction, maintenance, or operation, with mitigation incorporated.

Mitigation Measures: Implement **MM 5.4-3**.

Significance after Mitigation: Less than Significant.

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5.5 Cultural and Tribal Cultural Resources

This section describes the environmental and regulatory setting of the project with respect to cultural and tribal cultural resources and discusses cultural and tribal cultural resources impacts associated with construction and operation of the project.

Analysis is limited to project components that could impact cultural and tribal cultural resources. These project components include the new power line, Vierra Substation expansion, and modifications at some of the remote substations (Howland Road, Kasson, Manteca, and Tracy). The proposed work at other remote facilities including the Ripon Cogen and Tesla substations and Mount Oso and Highland Peak microwave stations involves modifications within existing control rooms in substations or on existing structures where there would be no ground disturbance and negligible modifications to the environmental setting, and therefore would have no potential to impact cultural or tribal cultural resources.

CULTURAL RESOURCES Would the project:	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less than Significant Impact	No Impact
a. Cause a substantial adverse change in the significance of a historical resource pursuant to §15064.5?	☐	☒	☐	☐
b. Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	☐	☒	☐	☐
c. Disturb any human remains, including those interred outside of dedicated cemeteries?	☐	☒	☐	☐

TRIBAL CULTURAL RESOURCES Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less than Significant Impact	No Impact
a. Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or	☐	☐	☐	☒
b. A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.	☐	☒	☐	☐

Environmental checklist established by California Environmental Quality Act Guidelines, Appendix G.

5.5.1 Setting

Prehistoric archaeological resources are those materials relating to prehistoric human occupation and use of a particular environment. These resources may include sites and deposits, structures, artifacts, rock art, trails, and other traces of Native American activity. In California, the prehistoric period began over 12,000 years ago and extended through the year 1769, when Europeans first settled in California.

Ethnographic resources are those materials important to the heritage of a particular ethnic or cultural group, such as Native Americans, or immigrants from Africa, Europe, or Asia. They may include traditional resource collecting areas, ceremonial sites, topographic features, value-imbued landscapes, cemeteries, shrines, or neighborhoods and structures. Ethnographic resources can also be variations of natural resources and standard cultural resource types. They are places assigned cultural significance by traditional users, such as subsistence and ceremonial locales and sites, structures, objects, and rural and urban landscapes. The decision to call resources "ethnographic" depends on whether associated peoples perceive them as traditionally meaningful to their identity as a group and the survival of their lifeways.

Tribal cultural resources are a category of historical resources introduced into the California Environmental Quality Act (CEQA) by Assembly Bill (AB) 52 (Stats. 2014). Tribal cultural resources are resources that are any of the following: sites, features, places, cultural landscapes, sacred places, or objects that are included in or determined eligible to the California Register of Historical Resources (CRHR) or are included on a local register of historical resources as defined in Public Resources Code, section 5020.1(k). Tribal cultural resources can be prehistoric, ethnographic, or historic.

Historic-period resources are those materials, archaeological and of the built environment, usually but not necessarily associated with Euro-American exploration and settlement of an area and the beginning of a written historical record. They may include archaeological deposits, buildings, structures, sites, trail and road corridors, artifacts, or other evidence of historic human activity. Under federal and state requirements, historic-period resources must be 50 years or older to be considered of potential historic importance. A resource less than 50 years of age may be historically important only if the resource is of exceptional importance. The Office of Historic Preservation endorses recording and evaluating resources over 45 years of age to accommodate a five-year lag in the planning process (OHP, 1995).

The information presented in this section was compiled from the proponents environmental assessment (PEA), including confidential cultural resources appendices to the PEA, proponent's responses to data deficiency and data requests, and independent research (Chandler and Kay, 2017; Izzi and Osterlye, 2019; PGE, 2018a; 2018b; 2018c; 2018d). The information contained in the PEA is not reproduced at length in this analysis. Rather, it is summarized and analyzed for cultural resources impacts.

Methods

Records Searches and Historic Research

A record search was completed on April 19 and May 19, 2016 by staff of the Central California Information Center (CCIC) of the California Historical Resources Information System for the project. The CCIC is the State of California's official repository of cultural resource records, survey reports, and historic information concerning cultural resources for seven counties, including San Joaquin County where the new power line, Vierra Substation expansion, and the Howland Road, Kasson, Manteca, and Tracy remote substation modification sites are located. A record search of four remote substation modification sites was conducted December 10, 2018, by staff of the CCIC and Northwest Information Center (NWIC); another official repository of cultural resource records and studies for 18 counties. Another record search of the remote Howland Road Substation was completed on April 10, 2019 using PG&E's MapGuide Database cultural layer which includes a subscription to the CCIC.

In addition to the CCIC and NWIC's maps of known cultural resources and related cultural resources surveys, the California Public Utilities Commission (CPUC) examined historic maps of the project sites and vicinity to identify potential cultural resources (Benson, 1877; Hardy, 1864; Turner, 1870; USGS, 1915;

1952; 1968; 1972; Wallace, 1869). These sources depict the project area from as early as the 1860s through the 1970s. Other historic maps and aerial images in the PEA Phase I Environmental Site Assessment were also consulted (ERM, 2018a).

California Native American Tribal Consultation

To obtain a list of California Native American tribes (tribes) affiliated with the project area and to ascertain if there were any sacred sites recorded in the project vicinity, the applicant contacted the Native American Heritage Commission (NAHC) twice prior to submitting the PEA. The first contact occurred on July 6, 2016 and the NAHC responded with a group of six tribes and a negative search result of the Sacred Lands File. Due to changes in the project description, the applicant contacted the NAHC in August 2017. The second response differed from the previous one by indicating the presence of a Native American cultural resource sacred site within or near the project area and an additional tribe was listed.

In an effort to conduct an independent analysis of the project, the CPUC's consultant contacted the NAHC on August 29, 2018 and the NAHC responded by providing a list of six tribes and indicated that the search of the Sacred Lands File was negative. Initial consultation letters were sent to the six tribes on this list on October 11, 2018 (See *Appendix C*). *Appendix C* provides pertinent documentation related to tribal consultation.

The receipt of more details and a clarification of the modifications proposed at the remote substations, necessitated the CPUC's consultant contacting the NAHC for an expanded list of tribes and a search of the Sacred Lands File. The NAHC replied on November 28, 2018 that the Sacred Lands File was negative for all of the proposed remote substation modification locations. The contact lists received for these locations included an additional 10 tribes. Consultation letters were sent out January 9, 2019 (*Appendix C*).

Responses were received from the California Valley Miwok Tribe (Sheep Ranch Rancheria of Me-Wuk Indians of California), the Ione Band of Miwok Tribe, the Northern Valley Yokuts Tribe, the Tule River Tribe, the Tuolumne Band of Me-Wuk Indians, the United Auburn Indian Community of the Auburn Rancheria, and the Wilton Rancheria. A summary of other outreach efforts and the results of those efforts is included in Table 1 in *Appendix C*.

A face-to-face meeting was held on March 21, 2019, attended by the CPUC consultant team, PG&E, the California Valley Miwok Tribe (Sheep Ranch Rancheria of Me-Wuk Indians), and Wilton Rancheria. The meeting began with a detailed description of the project and known resources near the project site. Concern regarding a burial in close proximity to the Kasson Substation was expressed by both tribes. More detailed information regarding previous ground disturbance at the proposed pole location was requested. Both tribes expressed that the North Valley Yokuts Tribe is most closely affiliated with the project area but that if the North Valley Yokuts Tribe was unable to participate more fully, either of the two tribes would increase their participation. Concern for inadvertent discoveries of buried cultural resources was expressed by both groups as well as the need for monitoring of all ground disturbing activities. The importance of Mount Diablo as a sacred site for many Miwok and North Valley Yokuts was also expressed. Extended phase 1 archaeological testing was proposed for the Kasson Substation pending a future site visit and further information regarding previous ground disturbance.

Soon after the face-to-face meeting, PG&E submitted a project change, bringing the modifications at the Howland Road Substation back into the project footprint and expanding the scope of work proposed at the substation (PGE, 2019c). This necessitated the CPUC's consultant contacting the NAHC on March 28, 2019 for a list of tribes affiliated with the Howland Road Substation area. NAHC responded on April 12,

2019 with two tribe names, which were included on prior NAHC lists. Another consultation letter was sent to the four tribes that have shown continued interest in the project plus the NAHC tribe from the April 12th NAHC list.

A site visit was held with representatives of the Northern Valley Yokuts and the Wilton Rancheria on May 21, 2019. Attendees also included the CPUC, consultants to the CPUC, and representatives of PG&E. The group met at the Vierra Substation expansion area and discussed the project details and walked over the field where the proposed expansion would occur. Representatives of both tribes expressed an understanding that the area is sensitive for human remains and other cultural resources, prehistoric and historic. Both tribes indicated that full-time monitoring of ground-disturbance by both archaeologists and tribal monitors in this area would help alleviate their concerns for potential impacts. The potential for shovel-test probes was also brought up by PG&E, but the Northern Valley Yokuts indicated that even with negative shovel-test results, monitoring would still be necessary due to the highly sensitive nature of buried resources at this location. Despite these objections, requiring mechanical coring tests as a mitigation measure would adequately assess the need for cultural resources monitoring at the Vierra Substation, new power line, and Kasson Substation and ease the cost burden on the applicant amid a recent bankruptcy proceeding. The group also visited the Howland Road and Kasson substations. Both tribes recommended monitoring of ground-disturbance at both of these substations, as well as the substations that were not visited, Manteca and Tracy.

Archaeological Survey

A Secretary of the Interior-qualified archaeologist from Paleo Solutions surveyed accessible portions of the new power line right-of-way and Vierra Substation expansion area, including staging areas, on foot. Pedestrian survey of some areas was hampered by development, paving, landscaping, or active construction. These unsurveyed areas include most of the area west of D'Arcy Parkway, the area north of Christopher Way and Nestle Way, some areas south of Christopher Way, and a strip of land at the western end of the Simplot Access and Staging area, adjacent to the railroad bed. The accessible portions were surveyed by walking parallel transects spaced 10 to 15 meters apart (Chandler and Kay, 2017).

Due to the developed nature of the remote substation modification sites, no archaeological survey of these sites was conducted.

Architectural Survey

The architectural survey of the new power line and Vierra Substation expansion area was completed in conjunction with the archaeological survey above (Chandler and Kay, 2017). Architectural surveys and evaluations were conducted at the Kasson, Manteca, and Tracy substations (PGE, 2019b). The survey area was limited to the substation properties. No architectural survey was conducted at the Howland Road Substation as it does not meet the 45-year or greater age threshold for historical resources (OHP, 1995).

Results

Records Searches and Historic Research

A record search conducted at the CCIC identified seven previous cultural resource survey reports, which detailed surveys intersecting the proposed power line and Vierra Substation expansion area (Caruso and MacDougall, 1994; Dolan, 2004; EDAW Inc., 2002; 2005; Gross, 2002a; 2002b; 2003). Identified cultural resources in the power line and Vierra substation expansion area are discussed later in this section.

A record search conducted at the CCIC and the NWIC identified eight previous cultural resource survey reports which detailed surveys intersecting the Howland Road, Kasson, Manteca, and Tracy substations (Baker and Smith, 1989; Basin Research Associates, Inc., 2000; Billat, 2001; Cardno Entrix, 2014; Hawkins, 1983; Jensen, 2004; Siskin, et al., 2009; and Windmiller and Napoli, 2002). Identified cultural resources in these four remote substation modification areas are discussed later in this section.

Buried Archaeological Sensitivity

The potential for buried archaeological sites located within the project power line area and Vierra Substation expansion area was assessed by the cultural resources firm Far Western Anthropological Research Group, Inc. This assessment considered the age and distribution of surface geology combined with the proximity to historic-era water sources. Generally, this analysis suggests that the places most sensitive for buried archaeological resources occur where more recent geologic deposits are located within 150 meters of a water source. The analysis suggests that the eastern three quarters of the power line and Vierra Substation have a low sensitivity for buried resources, and the western quarter has a moderate sensitivity for encountering buried resources (Chandler and Kay, 2017).

Prior to intense agricultural development of the project area, the land encompassing the project power line area and Vierra Substation expansion area was primarily swamp and overflow from the San Joaquin River (Hardy, 1864). During this time, the river consistently flooded in this area during the spring as snow melt increased water flow (Thompson, 1980). Native American settlements in the Northern San Joaquin Valley were usually located near rivers on low mounds to avoid this seasonal flooding, and were prevalent throughout the region, especially along the San Joaquin River near Mossdale Landing (Thompson, 1980). In fact, Latta (Latta, 1999) writes that "every high place in the Delta Area was crowned with a Yokuts village". Thus, the area in close proximity to the river and on elevated ground would have a high potential for encountering buried archaeological resources, and this is reinforced by the buried resource analysis conducted by Far Western Anthropological Research Group.

After settlement of the region by Euro-Americans in the 19th century, most of the land encompassing the project area was converted to agricultural use. Many of the low mounds mentioned above were plowed over for planting crops and many valuable archaeological resources were lost. There are numerous accounts of farmers encountering prehistoric materials in their fields, and a large village site was discovered about a mile southeast of the proposed Vierra substation expansion area near the Mossdale Landing Bridge. Historic General Land Office maps (Hardy, 1865) indicate a historic farm house about a mile north of the proposed new power line and Vierra Substation expansion area as early as 1865. Buried historic artifacts from this or other nearby farming settlements are possible but unlikely due to the far distance away from the proposed new power line and Vierra Substation expansion area.

The potential for buried archaeological sites located within the remote substation modification areas was also assessed by Far Western Anthropological Research Group, Inc. This assessment considered the age and distribution of surface geology combined with the proximity to historic-era water sources. The model indicates a low to lowest potential for subsurface prehistoric resource at all the locations of proposed ground disturbance at the remote substation modification areas (Izzi, 2019; Izzi and Osterlye, 2019). However, including other variables, such as previously recorded archaeological sites, could have increased the reliability of the model. For example, the model indicates a low potential for encountering buried cultural resources at the Kasson Substation, however located within less than 0.25 mile of the substation, buried human remains were discovered in 1983.

Archaeological Survey

The pedestrian survey conducted for the new power line and Vierra Substation expansion did not identify any new archaeological sites.

Due to the developed nature of the remote substation modification sites, no archaeological surveys were conducted for these project components.

Architectural History Survey

One built environment resource was identified in the architectural survey of the new power line and Vierra Substation expansion area. Named P-39-000002/CA-SJO-00025H, it is a segment of the former Southern Pacific Railroad. Examination of the resource during the survey confirmed that the segment of the railroad has a modern rock ballast foundation and rails that appear modern. As with additional segments of this railroad evaluated by others (Behrend, 2012), the segment bisecting the project area is not considered eligible for listing on the National Register of Historic Places (NRHP) or CRHR (PGE, 2018a). Surveys conducted at Kasson, Manteca and Tracy substations were limited to the substation properties. Each of the substations were recorded and evaluated as not eligible for listing on the NRHP and the CRHR (PGE, 2019b). Howland Road Substation was not subjected to an architectural survey as it does not meet the 45 year or older age threshold for historical resources (OHP, 1995).

Prehistory

Human populations have occupied the Southern San Joaquin Valley for at least 10,000 years. However, little is known about the prehistory of the region in comparison to other parts of California. This is the result, in part, of natural processes that have buried or eroded many sites. Agricultural development and levee construction has also played a part in this destruction. No single chronological framework exists for the whole San Joaquin Valley. Many of the proposed chronologies are poorly defined and based on few, if any, radiocarbon dates. A basic cultural-historic outline for the Southern San Joaquin Valley was established in the early part of the last century (Frederickson and Grossman, 1977; Gifford and Schenk, 1926; Wedel, 1941). However, these early attempts were based on surface finds, limited test excavations, and small sample sizes rather than large-scale data recovery projects or regional surveys. These early studies focused on artifact and burial recovery, while ignoring dietary remains and technological features making modern reanalysis difficult if not impossible. More recent studies in the area are characterized by reworking old data, which is problematic given the biases described above. Overall, the region has received little attention from archaeologists.

Regional Chronological Sequence

The most recent synthesis of the archaeology and culture-historic sequence of the Southern San Joaquin Valley comes from Jones and Klar's review of California archaeology (Jones and Klar, 2007). Chapters in this volume from Jones and Klar's review, authored by Erlandson, et al., 2007 and Rosenthal, et al., 2007; propose a variation on the chronological sequence originally established by Bennyhoff and Fredrickson in publications by Hughes, 1994; and Moratto, 1984. In this original sequence, the prehistory of the San Joaquin Valley was divided into three periods: Paleo-Indian (Early), Archaic (Middle), and Emergent (Late). The following sequence is based on this general structure but is elaborated using recent radio carbon dates (Rosenthal, et al., 2007).

Paleo-Indian (11,550 to 8550 cal B.C.)

The Paleo-Indian period begins with the first human occupation of California. Sites from this time period are characterized by "lanceolate bifaces, usually with an edge-ground concave base, that exhibit a large central flake scar running from the basal end up the middle of at least one face toward the tip" (Rondeau, et al., 2007). These projectile points have a wide geographic spread and are referred to by many names including, Folsom Points, Clovis Points, or Paleo-Indian Points. At the regional level the people who made them are also referred to as Folsom and Clovis, and in California have been referred to as the "Fluted Point Tradition" (Moratto, 1984).

Paleo-Indian finds are rare and mostly consist of isolated artifacts without clear stratigraphic associations, but are understood to represent the earliest occupants of the North America. The lack of information has made this period difficult to understand. Originally the first immigrants were thought to have avoided an ice-covered Pacific coast. However recent research has demonstrated that the California coast was largely deglaciated by approximately 16,000 years ago and supported a diverse and productive array of resources. Dates from newly excavated sites on islands off Alta and Baja California confirm that coastal sites are roughly contemporary with Clovis and Folsom sites in the interior of California. On the coast, Paleo-Indians were diverse hunters and gatherers with sea-worthy boats capable of hunting sea mammals and fishing. Shellfish and other shore resources were also utilized. Paleo-Indian sites in the interior primarily date to around 10,000 years ago and are located near lakes and marshes. In contrast the economy of the interior emphasized seed collection and the use of milling stones. *Ollivella* shell beads have also been found, indicating trade connections between the interior and the coast (Erlandson, et al., 2007).

The earliest accepted evidence of human occupation of the San Joaquin Valley occurs south of the project area and consists of basally thinned and fluted projectile points found at scattered surface locations at Tracy Lake, Woolfsen mound, and Tulare Lake basin. The Witt site (CA-Kin-32) on a Late Pleistocene remnant shoreline of Tulare Lake is the best known. Present at this site are concave base points, and three uranium series (230^{th}) dates from human bone ranging from 11,000 to 15,000 years ago. The bones of extinct fauna have also been found on this shoreline, but not in clear association with artifacts (Erlandson, et al., 2007; Rondeau, et al., 2007).

Lower Archaic (8550 to 5550 cal BC)

The Paleo-Indian Period was followed by the Lower Archaic. The Lower Archaic is also referred to as the "Western Pluvial Lakes Tradition" in interior desert California and the "Paleo-Coastal Tradition" along the coast. This time period is characterized by widespread erosion which created a clear stratigraphic geological boundary between the Late Pleistocene and Holocene epochs. It is primarily represented by isolated finds of distinctive stemmed projectile points and other flaked stone tools such as stone crescents. Compared to other time periods, obsidian as a tool stone source is relatively rare. The common occurrence of large heavily worked projectile points has led to the interpretation that hunting artiodactyls (i.e., hoofed mammals) was the focus of Lower Archaic economies. Interestingly, this is not supported by faunal remains. Nevertheless, milling tools are mostly absent from San Joaquin Valley floor assemblages, but are present in mountain foothills contexts. The relationship between Valley floor and foothills sites is unclear but may have been seasonal expressions of the same adaptation (Moratto, 1984).

Only one Lower Archaic deposit, CA-Ker-116 on the shore of Buena Vista Lake, is identified in the San Joaquin Valley. Artifacts from this site include chipped stone crescents and stemmed projectile points. In addition, two samples of freshwater mussel shell were radiocarbon dated to approximately 9000 years

old. Isolated artifacts thought to date from this time period have also been found in the area. Stemmed projectile points were found near Tulare Lake, and *Tivela* disk beads approximately 8000 years old were found at the Elk Hills site CA-Ker-3168 (Rosenthal, et al., 2007).

Middle Archaic (5550 to 550 cal BC)

The Middle Archaic is marked by a dramatic increase in temperature and aridity which resulted in the shrinking and complete disappearance of regional lakes. The rising ocean waters pushed inland creating a much larger delta. In general, this time period is associated with a shift to mortar and pestle technology, more intensive subsistence practices, greater residential stability, increasing importance of fishing, basketry, simple pottery and clay objects, and establishment of extensive exchange networks for obsidian and for *Olivella* shell beads. During this time there were two distinct settlement-subsistence patterns in the San Joaquin Valley: the valley floor pattern and the foothills pattern. Archaeological sites associated with the foothills pattern are common, especially in buried contexts. These sites are characterized by flaked and ground stone tools (used in food procurement and processing of acorns and pine nuts), and more uncommonly, tabular pendants, incised slate, and perforated stone plummets. Middle Archaic projectile points include notched, stemmed, thick-leaf, and narrow concave base darts. Common features found are rock filled cooking pits and graves capped with cairns of rocks and milling equipment. Middle Archaic sites on the valley floor are rare, probably due to natural geomorphic changes. One of the few named components from this period is the Windmiller Pattern, which occurs mainly in the Sacramento area. These sites have evidence of year-round occupation and a distinct pattern of burial treatment which includes western orientation of ventrally or dorsally extended remains (Rosenthal, et al., 2007).

Upper Archaic (550 cal BC to AD 1100)

The Upper Archaic was cooler and wetter than the Middle Archaic. The increased rainfall gradually filled the lakes and renewed alluvial fan and floodplain deposition. The archaeological record of the Upper Archaic is better represented and understood than any of the previous time periods. Archaeological evidence suggests that this period was characterized by the development of distinct sociopolitical entities, marked by contrasting burial postures and artifact styles. Subsistence practices within the San Joaquin Valley emphasized a heavy reliance on acorns; at the Valley edge acorns were supplemented with pinenuts. Specialized craft production became more common and expanded to include production of bone tools, shell beads, obsidian tools, and ground stone. Upper Archaic sites in the Sacramento Delta have been referred to as the Middle Horizon and the Berkeley Pattern. These sites are characterized by large mounded villages, flexed burials and a long-term residential pattern which may have replaced the earlier Windmiller Pattern (Rosenthal, et al., 2007).

Very little is known about Upper Archaic of the San Joaquin Valley. However, Hartzell reports year-round villages at CA-Ker-116 and CA-Ker-39 on Buena Vista Lake (Hartzell, 1992). Some of the Upper Archaic features at these sites include intact house floors and extensive dietary debris that indicate exploitation of both terrestrial and aquatic environments.

Emergent (cal AD 1100 to Historic)

The Upper Archaic was followed by the Emergent period which is characterized by the onset of cultural patterns similar to those existing at time of European contact. During this time, large populous mound villages were established along river channels and sloughs. These communities invested in the construction of fish weirs and became increasingly dependent on fishing, small seeds, and plant harvesting over time. The local production of shell beads also became common, indicating the adoption of beads as a monetized system of exchange. Emergent period grave offerings are characterized by shell beads, shell

ornaments, and "killed" ground stone tools. Between AD 1100 and 1300 the bow and arrow replaced the atlatl. Archaeological sites from this period are more likely to have well preserved features, especially in the case of residential structures. In the Sacramento Delta this period is associated with the Augustine Pattern and in western California with the Pacheco Complex, but in general there are few named Emergent components or phases. Archaeological sites from the Emergent period can be divided into upper and lower phases. The lower phase is distinguished by the use of banjo *Haliotis* ornaments, incised bird bone whistles and tubes, flanged soapstone pipes, rectangular *Ollivella* sequin beads, serrated projectile points, and cremations for high status individuals only. The upper phase is characterized by the use of small corner-notched and desert series arrow points, *Ollivella* lipped and clam disk beads, drill beads, magnetite cylinders, hopper mortars, and the widespread use of cremation as a burial technique.

Ethnography

The new power line, Vierra Substation expansion, and Howland Road, Kasson, Manteca, and Tracy substation modification areas are located within the vast traditional territory claimed by the California Native American group known as Yokuts. Anthropologists use this term to refer to a large and diverse group who formerly inhabited the San Joaquin Valley and Sierra Nevada foothills of central California. These groups spoke dialects of the Penutian language.

The Yokuts are divided into three groups based on geographical location. The Northern Valley Yokuts are identified with a 40- to 60-mile-wide area straddling the San Joaquin River, south of the Mokelumne River, east of the Diablo Range, and north of the sharp bend that the San Joaquin River takes to the northeast. This subgroup is the most closely associated Native American group to the proposed power line corridor, and the Vierra, Howland Road, Kasson, Manteca, and Tracy substations. More specifically, it was the Apelumne Northern Yokuts who lived in the areas around the present-day towns of Escalon, French Camp, Lathrop, and Manteca. Very little information is available concerning this group. The only anecdote Yokuts ethnographer Frank Latta found about them was that they were employed by Charles M. Webber on his ranch near Stockton and are also credited with killing the first settler of Stockton, Thomas Lindsay (Latta, 1999). The closest known named ethnographic village to the proposed power line corridor, Vierra Substation, and the four remote substation modification sites was *Wana*, near Stockton. Archaeological investigations near the project site have found other villages closer than *Wana* but no names are known for those sites (Latta, 1999).

The Foothill Yokuts are associated with the western slopes of the Sierra Nevada from the Fresno River southward to the Kern River. The Southern Valley Yokuts territory was centered near the basins of Tulare, Buena Vista, and Kern lakes, their connecting sloughs, and the lower portions of Kings, Kaweah, Tule, and Kern rivers (Wallace, 1978).

The smallest political unit was a group averaging 350 persons, living in a single village or in several settlements among which one was the largest and recognized as dominant. In contrast to the typical California cultural grouping known as the tribelet, Kroeber considered the Yokuts to be organized into "true tribes," in that each had "a name, a dialect, and a territory." Kroeber estimated that as many as 50 Yokuts tribes may have originally existed (Kroeber, 1976). Each tribe inhabited an area averaging "perhaps 300 square miles," or about the distance one could walk in any direction in half a day from the center of the territory. A chief headed each village and had considerable, if only local, authority. This authority usually was inherited through the male line of the most prestigious totemic lineage, that of the Eagle. The chief scheduled ceremonies, mediated disputes, handed down death sentences for transgressors, authorized trading expeditions, played host to visitors, and was expected to give charity to the indigent.

Neighboring groups were generally on friendly terms, but small wars and feuds occasionally occurred (Wallace, 1978).

As mentioned, Yokuts generally placed their settlements on top of low mounds near major watercourses and constructed two types of permanent residences. The first was an oval, single family dwelling with wooden framing covered by tule mats. The second type was a long, step-roofed communal residence that housed at least 10 families. Other structures included granaries and a communally owned sweathouse (Wallace, 1978). Individuals lived most of the year in their villages, but, starting in the spring and for most of the summer, migrated to various parts of their territory to gather various wild plant foods, shifting locations as crops became mature (Wallace, 1978).

The waterways provided a ready means of travel, as well as an abundant supply of animal and plant foods and materials. Tules, which could grow as tall as 10 to 12 feet, dominated the region, with sage, greasewood, and bunchgrass found in the drier areas, but the entire territory lacked the oaks that were so central to the diet of many California Native Americans (Wallace, 1978). Tule reeds were the raw material for many necessities, including containers, shelters, and rafts. The Yokuts had ample fish and tule reeds to trade for the resources they needed, such as wood for structures, digging sticks, and bows, stone for arrowheads and tools, and acorns (Wallace, 1978).

The marshes and sloughs reliably provided lake trout, chub, perch, and suckers, with salmon and sturgeon sometimes also available. The Yokuts hunted waterfowl, such as geese and ducks, and would take an occasional elk when one came to the lakes to drink, but they rarely ventured into the open country to hunt the antelope, elk, and deer that ranged there. The marshes also provided turtles, shellfish, seeds, and tule roots.

The Yokuts used asphaltum for various items of their material culture (Wallace, 1978). Basketry tools, such as awls, were made from bone (Wallace, 1978). Flaked stone implements included projectile points, bifacial and unifacial tools, and edge-modified pieces. Ground stone tools consisted of mortars, pestles, handstones, and millingstones.

Mount Diablo is located about 30 miles northwest of the new power line and Vierra Substation. It is a sacred mountain for many California Native American tribes in the region, and figures into the creation stories for many groups. References to Mount Diablo in the ethnohistoric literature include those from the Plains Miwok, Southern Sierra Miwok, Northern Sierra Miwok, Central Sierra Miwok, Southern Maidu (Nisenan), and East Bay Ohlone (Ortiz, 1989).

The etymology of the name “Mount Diablo” is somewhat convoluted. Some California settlers understood that the name derived from the Native Americans believing the mountain contained evil spirits or that the mountain was worshipped as a god. The phrase “Monte del Diablo” was originally applied to an indigenous village in a willow thicket, about 7 miles north of the mountain (Ortiz, 1989). American settlers later applied the name to the mountain (Ortiz, 1989).

Regional History

In order to inform an understanding of the significance of cultural resources in the vicinity of the project, a review of the major historical timeline markers for the project area provides context. This subsection summarizes three historic periods and several trends for the project area and the San Joaquin Valley.

- Spanish/Mission Period

- Mexican Period
- American Period
  - Transportation
  - Agricultural and Commercial Development

The information presented in this section was compiled from the PEA, including confidential appendices to the PEA (PGE, 2018a; Chandler and Kay, 2017; ERM, 2018a; 2018b), and independent research. This section focuses on the history most directly related to the project area and its immediate vicinity during the American Period.

Spanish/Mission Period (1769 to 1821)

The Spanish Period was characterized by several developments: the establishment of Spanish Colonial military outposts (presidios), pueblos, and 21 missions throughout Alta California. These missions were largely built along the California coast, with a few located in inland valleys, such as San Fernando Rey de España, in what is now known as the San Fernando Valley. The missions were generally located along an overland route known as El Camino Real. In addition to the missions, Spanish settlements included pueblos, presidios and ranchos. There were no missions established in the project component areas, the closest was Mission San Jose in Fremont. Despite the distance from the project component areas to the Mission San Jose, Native Americans in the San Joaquin Valley delta region were subject to the effects of colonization early and often. The indigenous groups were exposed to diseases to which they had little immunity, were forced into the mission system as "neophytes", and were persecuted for practicing their traditional religion. The Spanish Government awarded land grants to soldiers and others, and thus began the tradition of large land grants used for agriculture and livestock.

Mexican Period (1821 to 1848)

Following Mexican independence from Spain in 1821, Mexican Governor Pio Pico granted lands to Mexican settlers, including the former lands of the missions, whose connection to the government was lost in the Decree of Secularization in 1834. Mexican Land Grants and Ranchos established in the Lathrop, Manteca, and Tracy area included Rancho Campo de los Franceses, Rancho Pescadero, and Rancho Thompson.

Some of the Native Americans who survived the initial colonization of California assimilated as best they could with their new neighbors, others fled farther into the interior of California. Those who remained near more populated areas often held jobs on ranches as laborers or cared for children.

American Period (1848 to Present)

In the west, the American Period began in 1848 with the Treaty of Guadalupe Hildago. The treaty ended the Mexican–American War (1846 to 1848) (PGE, 2018a). California became the thirty-first state in the union in 1850. Several Native American tribes during this period made treaties with the United States (U.S.), but the treaties were never ratified by the U.S. Senate, including Yokuts' treaties, further alienating Native American groups. Moreover, abhorrent actions of gold miners, settlers, and militia members, including raping and murdering Native Americans for sport, contributed to the genocide of the indigenous people. By the turn of the century, many Native Americans were forced into boarding schools and their reservations were broken up by the General Land Allotment Act.

Transportation systems were built to service the expanding agricultural and manufacturing production and provide passenger service. Settlement in the project component areas began in the 1860s when the Western Pacific Railroad (WP) was constructed from San Francisco through Lathrop, connecting to Stockton and Sacramento (PGE, 2018a). Following is a discussion of those developments in the built environment that shaped the modern history and landscape of the project component areas.

Transportation

Railroads. As noted above, the WP was constructed through the Lathrop area in the 1860s. The Southern Pacific Railroad (SP) constructed the San Joaquin Mainline to connect to the agricultural communities of Modesto, Merced, Fresno and Visalia. The SP reached Bakersfield in 1874. The original SP drawbridge crossing the San Joaquin River at Mossdale Landing in Lathrop was constructed in 1869 and completed the first transcontinental railroad. The first train crossed the bridge on September 8, 1869. The original bridge was replaced in 1895 and again in 1942. The current bridge is a steel drawbridge with a vertical lift of the center section to allow for river traffic to pass underneath (Dolan and Tomes, 2002). It is presently used by the Union Pacific Railroad. The bridge is a listed California Historical Landmark, Number 780-7.

The drawbridges (both railroad and automobile) crossing the San Joaquin River at Mossdale Landing are remnants of the days when river traffic was essential for the transportation of goods and services to and from the Central Valley (Wohlgemuth and Mears, 1994).

Roads and Highways. The introduction of the automobile brought significant changes to the U.S., which accelerated when Henry Ford introduced the hugely popular and inexpensive Model T Ford in 1908. Sales took off, and within a few years many Americans were plotting day-long and farther drives across the nation's patchwork-quilt of roads, many of which were unpaved. The first cross-country route, The Lincoln Highway, was once known as "Main Street across America."

The Lincoln Highway opened in 1913 and invigorated many smaller and midsized towns, bringing road improvements, roadside attractions, hotels, motels and restaurants, billboards and enhanced traffic to cities on the route. The highway started in New York City's Times Square, and wended its way westward 3,389 miles to San Francisco's Lincoln Park. The highway was the longest road in America, and was the first U.S. memorial to President Lincoln, preceding the Lincoln Memorial in Washington, D.C. Lincoln Highway was cobbled together from existing highways and byways. In California, the original route came through Sacramento, then turned south, heading through Woodbridge, Stockton, Lathrop, French Camp, Tracy and over the Altamont Pass to San Francisco. Several realignments would later fine-tune the route, made primarily to eliminate dangerous railroad crossings (Viall, 2017). Lincoln Highway markers are located near the Vierra Substation along South Manthey Road in Lathrop.

Agricultural and Commercial Development

The greater Lathrop-Stockton area was affected by the Gold Rush as Stockton became a center of trade and commerce. Agriculture and the raising of stock animals increased and Stockton became a fixed settlement. Travelers to the mines came by boat or overland trails such as the San Jose Trail to Sutter's Fort, which crossed the San Joaquin River. Following the Gold Rush, reclamation efforts occurred in the area, making it more suitable for farming (Caltrans, 2010).

The parcels adjacent to the existing Vierra Substation were developed as agricultural land utilized for row crops and at one time had two clusters of residential buildings and related farm structures. According to topographic maps in 1914, and 1915 and aerial photographs taken in 1937 and 1940, one cluster was located northwest of the substation site while the other was located east of the site. A title search

completed by EDR for ERM-West, Inc. (ERM, 2018a), shows the properties being owned by William Morton, who sold the property to Southern Pacific Company on November 7, 1946. Southern Pacific Company sold the property to Occidental Agricultural Products, Inc. on February 25, 1959. Little change in land use occurred after this time.

According to topographic maps in 1976, 1987, 1994, and 1996 and aerial photographs taken in 1982 and 1993, the nearby buildings were demolished and no agricultural activity occurred during this period. Occidental Agricultural Products, Inc. sold the property to J.R. Simplot, the current owner of the subject property parcels, on December 30, 1982.

During this time the surrounding properties saw changes to land use ranging from demolition of buildings to the development of land for additional agricultural and commercial/industrial use. The area south of the Vierra Substation property along Vierra and Yosemite roads remained largely unchanged with the exception of the construction of additional structures and residential homes. The PG&E Vierra Substation was constructed on the Simplot land in 1998 (Finch, 1998; PGE, 2018d). Across South Howland Road to the west, along the proposed power line route, the water storage reservoir that is now part of the Veolia Water North America facility can be seen on historical topographic maps as early as 1962 (ERM, 2018a). It is owned by the City of Lathrop and is used as a spray field for wastewater treatment (PGE, 2018a).

The Howland Road Substation is located approximately 0.75 mile northwest of the Vierra Substation at 16700 Howland Road in Lathrop, California. The substation is located within an industrial complex of buildings, identified as J. R. Simplot Company facilities. Howland Road Substation was constructed in approximately 1977 (PGE, 2019d).

Manteca and Tracy substations are located near to the central city grid area of each city. The Kasson Substation is located in a rural agricultural area. The Manteca Substation location is the oldest of the three historic-era substations that are part of this project. The Manteca Substation was originally developed circa 1913 by the Sierra and San Francisco Power Company to provide primary distribution to the San Joaquin Valley. It was part of a 138-mile transmission line that extended from the Stanislaus Powerhouse in the foothills of the Sierra Nevada to the Bay Shore Substation near San Francisco. Little of the original substation structures remain today. The Tracy Substation was originally constructed in 1930. In 1973, PG&E increased electrical capacity to serve the region's growing population. These upgrades eliminated most of the original structures and the substation now represents the common modern substation archetype. Kasson Substation is the most recent of the three substations. Kasson was constructed in 1965 on rural land located between Manteca and Tracy. Post-war growth in many economic sectors required PG&E to expand its network. Kasson is a common representative of substations and electrical facilities of this time, and is currently undergoing further upgrades (PGE, 2019b). All three substations serve as distribution stations to local residents and businesses, situated relatively close to the load centers they serve.

Specific Cultural or Tribal Cultural Resources in the Project Area

One specific cultural resource (the San Joaquin Mainline of the Southern Pacific Railroad) is located in the new power line and Vierra Substation expansion area and is discussed below under the heading "Resources Ineligible for Listing on the CRHR". No tribal cultural resources were identified in the new power line and Vierra Substation expansion area.

One built environment resource, the Tesla Salado Manteca Line, intersects the Manteca Substation. This resource is discussed under the heading "Resources Ineligible for Listing on the CRHR". No tribal cultural resources were identified at the remote substation modification sites.

The project areas, including the remote substation modification areas, do not contain any known CEQA-defined "unique" archaeological resources (see definition in the *Regulatory Setting*).

The record search conducted for the remote substation modification sites identified 10 cultural resources, including a burial, within 0.25-mile of these locations.

Resources Ineligible for Listing on the CRHR

The PEA identified one built environment cultural resource over 50 years old within the power line portion of the project area. The following built environment resource was evaluated as not eligible for listing on the CRHR by others (Behrend, 2012; Hatoff, et al., 1995):

- P-39-000002/CA-SJO-000250H: The San Joaquin Mainline of the Southern Pacific Railroad

Data Response Set No. 3 (PGE, 2018d) identified one resource that intersects the Manteca Substation (Tesla Salado Manteca Line). The resource was evaluated and found to not be eligible for listing because it did "not appear to meet the criteria for listing in the NRHP or the CRHR because of a lack of overall significance under any of the criteria for listing and a lack of integrity" (Allen, et al., 2017):

- Tesla Salado Manteca Line

The record search for Data Response Set No. 3 (PGE, 2018d) also identified an additional 10 cultural resources within 0.25 mile of the four remote substation modification areas. The resource of highest interest is a report of human remains near the Kasson Substation. Limited information is available, however it is known that the remains were a flexed[1] Native American burial reported to the Information Center by Commander Temple, the former coroner for San Joaquin and Stanislaus counties in 1983. The remains were found in a garden area of the Deuel Vocational Institution and were reburied nearby in an area that was believed to free of further ground disturbance (Baker and Smith, 1989).

Data Response Set No. 3, Part C, provided evaluations of three historic-era substations that are part of the project. Kasson, Manteca, and Tracy substations are recommended ineligible for listing on the CRHR and are not considered to be historical resources for the purposes of CEQA (CEQA Guidelines Section 15064.5 (a), PGE, 2019b).

Data Response Set No. 4, CR-1, provided the year of construction for the Howland Road Substation. Constructed circa 1977, the Howland Road Substation does not meet the threshold of 45 years or older to require evaluation as a potential historical resource for the purposes of CEQA (CEQA Guidelines Section 15064.5(a); OHP, 1995; PG&E, 2019d). Therefore, no evaluation was provided.

[1] The Northern Valley Yokuts are the tribe most closely associated with the project area and the primary tribe consulted for the project and should be given the right of first refusal for offering input on the plan and monitoring the work.

Resources Eligible for Listing on the CRHR

No cultural or tribal cultural resources eligible for the CRHR were identified in the proposed power line corridor, the Vierra Substation expansion area, or any of the remote substation modification areas.

Regulatory Background

Federal

No federal regulations related to cultural and tribal cultural resources apply to the project.

State

California Environmental Quality Act and California Register of Historical Resources. CEQA and the CEQA Guidelines define significant cultural resources under three regulatory constructs: historical resources, unique archaeological resources, and tribal cultural resources. A "historical resource" is defined as a "resource listed in, or determined to be eligible by the State Historical Resources Commission, for listing in the California Register of Historical Resources," or a resource listed in a local register of historical resources or identified as significant in a historical resource survey meeting the requirements of Section 5024.1(g) of the Public Resources Code, or "any object, building, structure, site, area, place, record, or manuscript which a lead agency determines to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California . . . , provided the agency's determination is supported by substantial evidence in light of the whole record." (CEQA Guidelines Section 15064.5(a)).

Historical resources that are automatically listed in the CRHR include California historical resources listed in or formally determined eligible for the NRHP and California Registered Historical Landmarks from No. 770 onward (Pub. Res. Code Section 5024.1(d)).

Under CEQA, a resource is generally considered to be historically significant if it meets the criteria for listing in the CRHR. In addition to being at least 50 years old, a resource must meet at least one (and may meet more than one) of the following four criteria (Pub. Res. Code Section 5024.1):

- Criterion 1, is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;
- Criterion 2, is associated with the lives of persons important in our past;
- Criterion 3, embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or
- Criterion 4, has yielded, or may be likely to yield, information important to prehistory or history.

In addition, historical resources must possess integrity of location, design, setting, materials, workmanship, feeling, and association (14 Cal. Code Regs. Section 4852(c)).

Even if a resource is not listed or determined eligible for listing in the CRHR, CEQA allows the lead agency to make a determination as to whether the resource is a historical resource as defined in Public Resources Code Sections 5020.1(j) and 5024.1.

An archaeological artifact, object, or site can meet CEQA's definition of a unique archaeological resource, even if it does not qualify as historical resources (CEQA Guidelines Section 15064.5(c)(3)). An archaeological artifact, object, or site is considered unique archaeological resources if it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria:

1. Contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information.

2. Has a special and particular quality such as being the oldest of its type or the best available example of its type.

3. Is directly associated with a scientifically recognized important prehistoric or historic event or person. (Pub. Res. Code Section 21083.2(g)).

To determine whether a project may have a significant effect on the cultural resources environment, a lead agency analyzes the project's potential to cause a substantial adverse change in the significance of historical or unique archaeological resources. The magnitude of an impact depends on:

- The resource affected;
- The nature of the resource's historical significance;
- How the resource's historical significance is manifested physically and perceptually;
- Appraisals of those aspects of the resource's integrity that figure importantly in the manifestation of the resource's historical significance; and
- How much the impact will change those integrity appraisals.

The CEQA Guidelines define a substantial adverse change as "physical demolition, destruction, relocation or alteration of the resource or its immediate surroundings such that the significance of an historical resource would be materially impaired" (CEQA Guidelines Section 15064.5(b)).

Assembly Bill 52. AB 52 amended CEQA to define California Native American tribes, lead agency responsibilities to consult with California Native American tribes, and tribal cultural resources. A "California Native American tribe" is a "Native American tribe located in California that is on the contact list maintained by the NAHC for the purposes of Chapter 905 of the Statutes of 2004" (Pub. Res. Code Section 21073). Lead agencies implementing CEQA are responsible for conducting tribal consultation with California Native American tribes about tribal cultural resources within specific time frames, observant of tribal confidentiality, and if tribal cultural resources could be impacted by project implementation are to exhaust the consultation to points of agreement or termination. The CPUC received a request for AB 52 consultation from one of the NAHC-identified tribes for the proposed project, the United Auburn Indian Community, therefore AB 52-specific consultation letters and procedures were followed with respect to outreach for this tribe. However, the United Auburn Indian Community withdrew from consultation on March 20, 2019, the Wilton Rancheria asserted AB 52 status with the CPUC, but did not provide documentation confirming such status, and are not on the CPUC AB 52 tribal consultation list.

Tribal cultural resources are either of the following:

1. Sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe that are either of the following:

a. Included or determined to be eligible for inclusion in the CRHR.

b. Included in a local register of historical resources as defined in the Public Resources Code Section 5020.1(k).

2. A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in the Public Resources Code Section 5024.1(c). In applying the aforesaid criteria, the lead agency shall consider the significance of the resource to a California Native American tribe (Pub. Res. Code Section 21074(a)).

A cultural landscape that meets the criteria of Public Resources Code Section 21074(a) is a tribal cultural resource to the extent that the landscape is geographically defined in terms of its size and scope (Pub. Res. Code Section 21074(b)). Historical resources, unique archaeological resources, and non-unique archaeological resources, as defined at Public Resources Code Sections 21084.1, 21083.2 (g), and 21083.2(h) may also be a tribal cultural resource if they conform to the criteria of Public Resources Code Section 21074(a).

AB 52 also amended CEQA to state that a project with an impact that may cause a substantial adverse change in the significance of a tribal cultural resource is a project that may have a significant effect on the environment (Pub. Res. Code Section 21084.2).

Human Remain Discoveries under the Public Resources Code and Health and Safety Code. Public Resources Code Section 5097.98 states that if Native American remains are identified within a project area, the lead agency must work with appropriate Native Americans as identified by the NAHC and develop a plan for the treatment or disposition of, with appropriate dignity, the human remains and any items associated with Native American burials. These procedures are also addressed in CEQA Guidelines Section 15064.5(d).

Health and Safety Code Section 7050.5 prohibits disinterring, disturbing, or removing human remains from a location other than a dedicated cemetery until the county coroner has determined that the remains are not subject to Government Code Section 27491 or related provisions. If the coroner determines that the remains are not subject to his or her authority and believes the remains to be Native American, the NAHC must be contacted within 24 hours.

Local

This portion of the cultural resources and tribal cultural resource setting identifies local laws, ordinances, plans, and policies bearing on cultural resources in the project area. There are no applicable local registers of historic resources as defined in Public Resources Code Section 5020.1(k) that could be used to identify CEQA-defined “historical resources”. The project is not subject to local discretionary regulations because the CPUC has exclusive jurisdiction over the siting, design and construction of the project under CPUC General Order No. 131-D. However, local laws, ordinances, plans, and policies were reviewed and that review concluded the project would be generally in conformance with local requirements as proposed.

The following local plans, policies, and ordinances are related to the Vierra Substation expansion area and associated power line, and Howland Road Substation.

City of Lathrop. The City of Lathrop has goals and policies for the protection of cultural resources in its general plan and zoning ordinance. General plan protections are found in Part V, Resource Management Element, as excerpted below (Lathrop, 2004).

"As described in the EIR (Part III - Environmental Setting), there are several known areas of cultural resources within the Lathrop planning area, and a potential for uncovering similar resources during the process of land development. Maps of known cultural resources have been provided to the Lathrop City Planning Department, to be used in avoiding adverse impacts on such resources.

Archaeological and Cultural Resource Policies:

1. Existing known archaeological and cultural resources are to be protected, beginning with the filing of an application for development in the immediate vicinity of such resources. The City shall follow the procedures set forth in Appendix K of CEQA Guidelines. Confidentiality shall be maintained between the City and developer to avoid vandalism or desecration of such resources. Alternatives for development design intended to protect cultural resources shall be reviewed by a Native American having competence in understanding and interpreting the importance of the resources and of the most desirable methods to assure their preservation.

2. The potential loss of as yet unknown archaeological and cultural resources shall be avoided by close monitoring of the development process. The close proximity of properties intended for development to natural watercourses or to known archaeological or cultural resources shall be taken as a signal by the City and developer of a potential for unearthing unknown resources. In such cases, the City shall instruct the developers, construction foremen and City inspectors of the potential for damage to artifacts and sites, and provide written instructions requiring a halt to all excavation work in the event of any find until the significance of the find can be evaluated by competent archaeological and Native American specialists. The costs of such protection work shall be the responsibility of the developer" (Lathrop, 2004).

The Lathrop General Plan EIR provided the background for the general plan policies above and found that implementation of mitigation measures will reduce all impacts to acceptable levels (Grunwald, 1991).

The following local plans, policies, codes, and ordinances are related to the remote Kasson, Manteca, and Tracy substation modification areas.

City of Manteca

General Plan. The City of Manteca's General Plan 2023 was adopted in 2003, and amended in 2010 and 2011. The treatment of cultural resources is addressed in the Resource Conservation Element. The general plan provides policies to protect archaeological and architectural resources. Implementation procedures include requiring records searches and surveys prior to development and monitoring if appropriate during construction (Manteca, 2011).

City of Tracy

General Plan. The City of Tracy General Plan addresses treatment of cultural resources in the Community Character Element. Objective CC-3.1, Identify and Preserve Cultural and Historic Resources, invokes several policies to carry out that objective. Policies P-1 through P-3 address preservation of historic structures. Policies P-4 through P-6 address the treatment of unknown archaeological and Native American artifacts encountered during construction (Tracy, 2011). The City of Tracy has surveyed and

identified 51 historic buildings and structures. Most of the identified resources are clustered in the central city area (Tracy, 2005). The City of Tracy has also adopted the State Historical Building Code into its municipal code (Tracy, 1999).

San Joaquin County

General Plan. San Joaquin County addresses Cultural Resources in Chapter 3.4 of the General Plan (San Joaquin County, 2016). The chapter references existing national and state historical resources, landmarks, and points of interest in the county. To support General Plan Goal NCR-6, which is to protect San Joaquin County's valuable architectural, historical, archeological, and cultural resources, General Plan Policies NCR-6.1 through NCR 6.9 identify ways to protect, preserve, and enhance the valuable cultural and historic resources that are vital to the character of the County.

Alameda and Contra Costa Counties

Project-related construction and operation activities in Alameda and Contra Costa counties would require no ground disturbance and would be limited to installation of a dish on an existing tower at a microwave station and updates to automation equipment at a substation control room; therefore, the general plan polices of these counties relative to cultural resources are not applicable to the project.

5.5.2 Applicant Proposed Measures

PG&E proposes, as part of the project, to implement the following Applicant Proposed Measures (APMs) to avoid or reduce anticipated impacts to cultural and tribal cultural resources.

APM CUL-1: Worker Education Training. The following procedures will be implemented prior to commencement of any project-related construction activities:

- All PG&E, contractor, and subcontractor project personnel will receive training regarding:
    - appropriate work practices necessary to effectively implement the APMs and to comply with the applicable environmental laws and regulations;
    - the potential for exposing subsurface cultural resources and paleontological resources; and
    - how to recognize possible buried cultural and paleontological resources.
- This training will include a presentation of:
    - procedures to be followed upon discovery or suspected discovery of historic or archaeological materials, including Native American remains and their treatment;
    - procedures to be followed upon discovery or suspected discovery of paleontological resources; and
    - actions that may be taken in the case of violation of applicable laws.

APM CUL-2: Inadvertent Discovery of Previously Unidentified Cultural Resources. The following procedure will be employed if a previously undocumented cultural resource is encountered during construction:

- All work within 100 feet (30 meters) of the find will be halted or redirected by the construction foreman and protective barriers or flagging will be installed along with signage identifying the area as

an "environmentally sensitive area." Entry into the area will be limited to PG&E-approved/qualified cultural resources specialists, PG&E, and other authorized personnel.

- PG&E and the CPUC will be notified immediately.
- A qualified archaeologist will document the resource and coordinate with PG&E, the landowner, and the CPUC on the appropriate steps for evaluation and preservation of the find. The level of effort will be based on the size and nature of the resource, as determined by the archeologist and approved by the CPUC.
    - No work will occur within the environmentally sensitive area until clearance has been granted by the archaeologist or PG&E and the CPUC. Environmentally sensitive area flagging and signage will only be removed when authorized by PG&E or the archaeologist and the CPUC.

APM CUL-3: Discovery of Human Remains*.* The following procedures will be implemented in the event of the discovery of human remains, in compliance with California law, including, but not limited to, the following provisions: CEQA Guidelines Section 15064.5(e); PRC Sections 5097.94, 5097.98, and 5097.99; and California Health and Safety Code Section 7050.5:

- Work in the immediate area of the find will be halted and the PG&E archaeologist and County Coroner and the CPUC will be notified immediately. Work will remain suspended until the Coroner can assess the remains. In the event the remains are determined to be prehistoric in origin, the Coroner will notify the NAHC, which will then identify a Most Likely Descendent (MLD). The MLD will consult with PG&E's archaeologist within 48 hours of notification to determine further treatment of the remains.

APM CUL-4: Undiscovered Potential Tribal Cultural Resources. The following procedure will be employed (after stopping work and following the procedure for determining eligibility in APM CUL-2) if a resource is encountered and determined by the project's qualified archaeologist to be potentially eligible for the CRHR or a local register of historic resources and is associated with a California Native American Tribe(s) with a traditional and cultural affiliation with the geographic area of the proposed project:

- The project's qualified archaeologist will notify the CPUC for appropriate action. PG&E will assist the CPUC if needed to identify the lead contact person for the California Native American Tribe(s) potentially associated with the cultural resource and with a traditional and cultural affiliation with the geographic area of the proposed project. The CPUC will contact the lead contact person to set up a meeting with PG&E and the CPUC.
- The project's qualified archaeologist will participate with the CPUC in discussions with the California Native American Tribe(s) to determine whether the resource is a "tribal cultural resource" as defined by PRC section 21074, and the tribe(s)' preferred method of mitigation, if the resource is determined to be a TCR.

If no agreement can be reached for mitigation after discussions with the California Native American Tribe(s) or it is determined that the tribe(s)' preferred mitigation is not feasible, PG&E will consult with the CPUC and implement one of the example mitigation measures listed in PRC section 21084.3(b), or other feasible mitigation.

5.5.3 Environmental Impacts and Mitigation Measures

CEQA Checklist Questions for Cultural Resources

a. Would the project cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?

Construction

Archaeological Resources

LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED. Records searches, literature reviews, and field surveys did not identify archaeological resources in the power line, Vierra Substation expansion, or remote substation modification footprints that could qualify as historical resources under CEQA. The prehistoric archaeological sensitivity assessments presented in the PEA and Data Response Set No. 3, assign a low to moderate probability for these types of resources to be buried in the project footprint. If construction activities were to damage, destroy, relocate, or alter a previously undiscovered resource, the impact would be significant.

PG&E has proposed measures that would avoid inadvertent discoveries of buried archaeological resources that could occur during construction. APM CUL-1 trains construction personnel to recognize exclusion boundaries and potential cultural resources, which improves personnel's ability to avoid damaging historical resources. APM CUL-2 establishes clear procedures and responsible personnel to handle inadvertent discoveries of cultural resources during construction. This APM would halt ground disturbing activities within 100 feet of the resource. Construction would not recommence until the resource has been evaluated by a qualified archaeologist and the resource is properly treated. APM CUL-4 establishes procedures for identifying potential tribal cultural resources and consultation with affected Native American tribes for appropriate treatment of such resources. These measures rely on construction personnel to identify cultural resources during construction, which may be adequate in areas of low to moderate sensitivity. However, consultation with local Native American tribes indicates a higher sensitivity to buried resources than the sensitivity assessment suggests, demonstrating a need for additional information obtained from mechanical cores to assess the significance of any buried and presently unknown cultural or tribal cultural resources that could be discovered by construction activities.

Should inadvertent discoveries of buried archaeological resources occur during construction, implementation of APM CUL-1, APM CUL-2, and APM CUL-4, would not reduce impacts to a level that is less than significant because the resources can be easily damaged during construction. Implementation of **Mitigation Measure (MM) 5.5-1** would ensure that impacts to such resources would be less than significant. **MM 5.5-1** requires pre-construction extended Phase I archaeological testing in select locations to assess the locations of potential buried cultural or tribal cultural resources, and a Phase II evaluation if any deposits are uncovered. The impact to archaeological resources that could qualify as historical resources under CEQA would therefore be less than significant with implementation of these APMs and this mitigation measure. The remote microwave station updates would require no ground disturbance and would be limited to installation of dishes on existing towers at microwave stations; therefore, records searches, literature reviews, and field surveys were not conducted for those sites and no associated impacts to archaeological resources would occur.

MM 5.5-1: Cultural Resources Testing. PG&E shall conduct pre-construction extended Phase I archaeological testing, and Phase II evaluation if a deposit is uncovered, in locations identified in a testing plan submitted to CPUC's representative for review and approval. The specific workplan for this enhanced identification effort will be developed with input from the appropriate Native American tribal groups,[2] will be invited to monitor the mechanical coring and participate in laboratory identification efforts.

If cultural or tribal cultural resources are not identified in the course of this testing, no archaeological or Native American monitoring will be required during construction. However, APMs CUL-1 – CUL-4, including worker training and inadvertent discovery procedures, will remain in place.

The testing plan will conform to the standards described in *Guidelines for Archaeological Research Designs* (OHP 1991) and will contain thresholds that will explain what requirements are necessary to move the Phase I identification effort (XPI) into a Phase II evaluation effort (Phase II). The testing plan will also contain a research design and will outline generalized methods to complete the Phase II evaluation. The purpose of the testing plan is to identify cultural and tribal cultural resources prior to construction of the expanded Vierra Substation, new power line, and Kasson Substation modifications. The plan shall be prepared by an archaeologist that meets the Secretary of the Interior's professional standards for archaeologists (see *Archaeology and Historic Preservation: Secretary of the Interior Standards and Guidelines*, 36 C.F.R. 61). The plan must include the following:

- A statement of the problem(s) and research goals,
- A statement of methods to achieve Phase I testing and laboratory identification and, if necessary, Phase II evaluation,
- A statement regarding how the results will be reported,
- Maps depicting project boundaries and locations of mechanical coring for each project area being tested,
- A schedule for implementation of the testing plan, including the laboratory identification,
- The preparer's resume and the resume of other key staff who are expected to implement the testing plan, and
- Thresholds for elevating the Phase I XPI testing and identification into a Phase II evaluation effort.

Archaeological testing of the new transmission line will include each of the proposed pole locations. Those locations will be subject to archaeological testing by mechanical coring to the maximum depth of the final design plans. Coring will be completed using a hydraulic coring rig (Geoprobe) to recover continuous core samples of subsurface deposits. In each of the 20 proposed new pole locations, testing shall include one hydraulic core that is approximately 4 inches in diameter and up to 40 feet below ground surface (the testing depth to be dictated by the maximum depth of project components) to determine the presence or absence of cultural or

[2] The Northern Valley Yokuts are the tribe most closely associated with the project area and the primary tribe consulted for the project, and should be given the right of first refusal for offering input on the plan and participation in the testing activities.

tribal cultural resources. Each core will be collected and processed in a laboratory. Generally, selected samples including soils and any identified archaeological strata (e.g., layer containing cultural materials) will be wet-screened through 1/16-inch mesh or flotation processed to determine if archaeological materials are present or absent. If cultural materials are identified, a Phase II evaluation will be undertaken based on the collected material and the research design.

The proposed Vierra Substation expansion footprint will also be subject to subsurface identification efforts by mechanical coring. Within the project footprint in this location, a mechanical core will be excavated every 25-30 meters to the maximum depth of project impacts in the specific locations within those boundaries.

Additionally, testing will be conducted at Kasson Substation by mechanical coring. Up to three cores to the maximum depth of project impacts will be collected at Kasson Substation. In all instances, if cultural or tribal cultural resources are identified in the course of laboratory testing, the Phase II evaluation plan and associated research design that was created and approved by the CPUC's representative in coordination with interested archaeological and/or Native American contacts as appropriate to the resources will be followed. The Phase II evaluation plan will help the CPUC representative determine whether any discovered resources qualify as historical resources, unique archaeological resources or tribal cultural resources pursuant to Pub. Res. Code, § 5024.1 and Title 14, Cal. Code Regs., § 4852. The results of these efforts will be reported in a subsequent evaluation and summary report provided to the CPUC for concurrence on the eligibility determination and, if necessary, mitigation measures will also be outlined. Best practices suggest mitigation should focus on avoidance of the resource, if possible, to prevent any impacts to the resource. If the resource is eligible under CRHR criterion 4 and it cannot be avoided, CEQA best practices suggest implementing a robust data recovery program, to the extent consistent with safety concerns, developed in consultation with the CPUC and landowner. If any cultural resources discovered during the course of testing are found to be historical resources, unique archaeological resources or tribal cultural resources, the CPUC will require construction ground disturbance in the specific location of that project component to be monitored by a qualified archaeologist and Native American monitor.

Mitigation Measure: Implement **MM 5.5-1**.

Significance after Mitigation: Less than Significant.

Architectural Historical Resources

NO IMPACT. Construction of the project facilities would not impact any architectural historical resources as there are no CRHR-eligible architectural historical resources within the project boundaries.

Operation and Maintenance

NO IMPACT. Operation and maintenance activities for the new power line, substation expansion area, remote substation modification areas, and remote microwave station upgrades would not change from current practices. There would be no further excavation during project operation and maintenance. Therefore, there would be no impact to historical or tribal cultural resources.

b. Would the project cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?

Construction

LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED. Records searches, literature reviews, and field surveys did not identify archaeological resources in the new power line, Vierra Substation expansion, or remote substation modification footprints that could qualify as unique archaeological resources under CEQA. The prehistoric sensitivity assessments presented in the PEA and Data Response Set No. 3, assign a low to moderate probability for these types of resources to be buried in the project footprints. If construction activities were to damage, destroy, relocate, or alter a previously undiscovered archaeological resource, the impact would be significant. Consultation with Native American tribes indicates a higher sensitivity for buried archaeological resources than the sensitivity assessment suggests, demonstrating a need for additional information obtained from mechanical cores to assess the significance of any buried and presently unknown cultural or tribal cultural resources that could be discovered by construction activities.

Should inadvertent discoveries of buried archaeological resources occur during construction, implementation of APM CUL-1, APM CUL-2, and APM CUL-4, would not reduce impacts to a level that is less than significant because the resources can be easily damaged during construction. Implementation of **MM 5.5-1** would ensure that impacts to such resources would be less than significant. The impact to archaeological resources that could qualify as unique archaeological resources under CEQA would be less than significant with implementation of these APMs and **MM 5.5-1**. The remote microwave station updates would require no ground disturbance and would be limited to installation of dishes on existing towers at microwave stations; therefore, records searches, literature reviews, and field surveys were not conducted for those sites and no associated impacts to unique archaeological resources would occur.

Mitigation Measure: Implement **MM 5.5-1**.

Significance after Mitigation: Less than Significant.

Operations and Maintenance

NO IMPACT. Operation and maintenance activities for the new power line, substation expansion and remote substation modification sites would not change from current practices. There would be no further excavation during project operation and maintenance. Therefore, no impact to unique archaeological resources would occur.

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c. Would the project disturb any human remains, including those interred outside of formal cemeteries?

Construction

LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED. Based on archaeological survey, records searches, and buried sensitivity analyses, human burials are not anticipated to occur within the new power line, Vierra Substation expansion, or remote substation modification project footprints. However, the possibility of discovering human remains during ground-disturbing activity cannot be entirely

discounted. Accordingly, PG&E has proposed measures to require workers to be aware of the potential for human remains, stop working within 100 feet of an inadvertent discovery of human remains, and protect the remains until the appropriate authorities are notified and proper treatment of the remains are determined and carried out. These measures would comply with state laws governing the discovery of human remains by relying on construction personnel to identify human remains during construction, which may be adequate in areas of low to moderate sensitivity. However, consultation with Native American tribes indicates a higher sensitivity to buried human remains than the sensitivity assessment suggests, demonstrating a need for additional information obtained from mechanical cores to assess the significance of any buried and presently unknown cultural or tribal cultural resources that could be discovered by construction activities.

Should inadvertent discoveries of human remains occur during construction, implementation of APMs CUL-1, CUL-2, CUL-3, and CUL-4 would not reduce impacts to a level that is less than significant because human remains can be easily damaged during construction. Implementation of **MM 5.5-1** would ensure that potential impacts would be less-than-significant because damage to any human remains could be prevented by identifying any potential buried deposits prior to construction. **MM 5.5-1** requires pre-construction extended Phase I archaeological testing in select locations to assess the locations of potential buried cultural or tribal cultural resources, and a Phase II evaluation if any deposits are uncovered. The impact to any human remains during construction would be less than significant with implementation of these APMs and MM. The remote microwave station updates would require no ground disturbance and would be limited to installation of dishes on existing towers at microwave stations; therefore, records searches, literature reviews, and field surveys were not conducted for those sites and no associated impacts related to disturbing human remains would occur.

Mitigation Measure: Implement **MM 5.5-1**.

Significance after Mitigation: Less than Significant.

Operation and Maintenance

NO IMPACT. Operation and maintenance activities for the new power line, Vierra Substation expansion, and remote substation modification areas would not change from current practices. There would be no further excavation during project operation and maintenance. Therefore, no impact to human remains would occur.

CEQA Checklist Questions for Tribal Cultural Resources

Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code Section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:

a. Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code Section 5020.1(k)?

Construction, Operation, and Maintenance

NO IMPACT. Records searches, literature reviews, and field surveys did not identify listed or eligible tribal cultural resources in the power line, substation expansion, or remote substation modification project footprints.

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b. Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code Section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is a resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1 In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.

Construction, Operation, and Maintenance

LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED. Records searches, literature reviews, and field surveys did not identify lead agency-determined eligible tribal cultural resources in the new power line, Vierra Substation expansion, or remote substation modification project footprints. Additionally, the prehistoric archaeological sensitivity assessments presented in the PEA and Data Response Set No. 3, assign a low to moderate probability for these types of resources to be buried in the project footprints. If construction activities were to damage, destroy, relocate, or alter a previously undiscovered resource, the impact would be significant without mitigation. Consultation with Native American tribes indicates a higher sensitivity to buried resources than the sensitivity assessment suggests, demonstrating a need for additional information obtained from mechanical cores to assess the significance of any buried and presently unknown cultural or tribal cultural resources that could be discovered by construction activities.

Implementation of APMs CUL-1, CUL-2, CUL-3, and CUL-4 would not reduce impacts to a level that is less than significant because tribal cultural resources can be easily damaged during construction. Implementation of **MM 5.5-1** would ensure that potential impacts would be less-than-significant because damage to any tribal cultural resources could be identified prior to construction. **MM 5.5-1** requires pre-construction extended Phase I archaeological testing in select locations to assess the locations of potential buried cultural or tribal cultural resources, and a Phase II evaluation if any deposits are uncovered. The impact to lead agency-determined eligible tribal cultural resources would be less than significant with implementation of the APMs and mitigation measure. The remote microwave station updates would require no ground disturbance and would be limited to installation of dishes on existing towers at microwave stations; therefore, no associated impacts to lead agency-determined eligible tribal cultural resources would occur.

Mitigation Measure: Implement **MM 5.5-1**.

Significance after Mitigation: Less than Significant.

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5.6 Energy

This section describes the environmental and regulatory setting and discusses impacts associated with the construction and operation of the project with respect to energy. Analysis of impacts applies to all project components that would result in the consumption of energy or would conflict with or obstruct a state or local plan for renewable energy or energy efficiency.

ENERGY Would the project:	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less than Significant Impact	No Impact
a. Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?	☐	☐	☒	☐
b. Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	☐	☐	☐	☒

Environmental criteria established by California Environmental Quality Act Guidelines, Appendix G.

5.6.1 Setting

Electric Utility Operations

Pacific Gas and Electric Company (PG&E) is an investor-owned utility company that provides electricity and natural gas supplies and services throughout a 70,000 square-mile service area that extends from Eureka in the north, to Bakersfield in the south, and from the Pacific Ocean in the west to the Sierra Nevada mountains in the east. The project site is located within PG&E's service area. PG&E provides "bundled" services (i.e., electricity transmission and distribution services) to most of the six million customers in its service territory, including residential, commercial, industrial, and agricultural consumers. Customers also can obtain electricity from alternative providers such as municipalities or Customer Choice Aggregators (CCAs), as well as from distributed-generation resources, such as rooftop solar installations.

In recent years, PG&E has improved its electric transmission and distribution systems to accommodate the integration of new renewable energy resources, distributed generation resources, and energy storage facilities, and to help create a platform for the development of new Smart Grid technologies (PGE, 2019a).

In 2018, PG&E generated and/or procured a total of 48,832 gigawatt hours (GWh) of electricity.[1] Of this total, PG&E owns approximately 7,686 megawatts (MW) of generating capacity, itemized below (see **Table 5.6-1**). The remaining electrical power is purchased from other sources in and outside of California.

[1] This amount excludes electricity provided to direct access customers and CCAs who procure their own supplies of electricity.

TABLE 5.6-1 PG&E-OWNED ELECTRICITY GENERATING SOURCES (2018)

Source	Generating Capacity (Megawatts MW)
Nuclear (Diablo Canyon-2 reactors)	2,240
Hydroelectric	3,891
Fossil Fuel-Fired	1,400
Fuel Cell	3
Solar Photovoltaic (13 units-12 in Fresno County, 1 in Kings County)	152
Total	7,686

Source: PGE, 2019a

Electricity Consumption

Table 5.6-2 shows electricity consumption by sector in the PG&E service area based on the latest available data from the California Energy Commission (CEC). As shown in the table, PG&E delivered approximately 80 billion kilowatt-hours (kWh) in 2018.

TABLE 5.6-2 ELECTRICITY CONSUMPTION ON PG&E SERVICE AREA (2018)

Agricultural and Water Pump	Commercial Building	Commercial Other	Industry	Mining and Construction	Residential	Streetlight	Total Usage
All Usage Expressed in Millions of kWh (GWh)							
5,735	29,650	4,195	10,345	1,567	27,965	319	79,776

Source: CEC, 2019a

In San Joaquin County, approximately 5.6 billion kWh of electricity was consumed in 2018, with approximately 1.8 billion kWh consumed by residential uses and 3.8 billion kWh by non-residential uses (CEC, 2019a).

Gasoline, Diesel, and Jet Fuel

Supply

California is nearly self-sufficient with regard to the gasoline and diesel fuel supply, obtaining nearly all of the supply to meet local demand from California refineries. Crude oil is refined to produce a wide array of petroleum products, including gasoline, diesel, and jet fuels. In addition, storage tank capacities at pipeline terminals in California are optimized to accommodate the largest weekly delivery of refined product (gasoline, diesel, or jet fuel) that is expected throughout the year (CEC, 2014). Refineries in California often operate at or near maximum capacity because of the high demand for petroleum products. When unplanned refinery outages occur, replacement supplies must be brought in by marine tanker from refineries in the state of Washington or on the U.S. Gulf Coast. California requires that all motorists use, at a minimum, a specific blend of motor gasoline called CaRFG (California Reformulated Gasoline) as part of an overall program to reduce emissions from motor vehicles. Refineries in several other countries can also supply CaRFG. However, locating and transporting replacement motor gasoline that conforms to California's strict fuel specifications from overseas can take several weeks (EIA, 2018). As a result, unplanned outages often result in a reduction in supply that causes prices to increase, sometimes dramatically. The severity and duration of these price spikes depend on how quickly the refinery issue can be resolved and how soon supply from alternative sources can reach the affected market (EIA, 2015).

Most petroleum supply disruptions or shortage events are resolved by the energy industry before they become significant (NASEO, 2018). An extended refinery outage occurred in February 2015 due to a fire

and explosion at ExxonMobil's Torrance, California, refinery that resulted in price spikes due to long lead times and higher prices of imported supplies. Other periods of price spikes have occurred in California, most notably in 2008, 2009, and 2012, that were similar in duration and magnitude to the 2015 supply disruption, and resulted in price increases that persisted for an average of 8 weeks and took an average of 2 weeks to be passed through to retail prices (EIA, 2015). However, there are instances where the severity and scope of disasters require additional actions by government to help facilitate and coordinate response and recovery efforts (NASEO, 2018).

Consumption and Distribution

Gasoline is the most used transportation fuel in California, with 97 percent of all gasoline being consumed by light-duty cars, pickup trucks, and sport utility vehicles (CEC, 2019b). Diesel fuel is the second largest transportation fuel used in California, representing 17 percent of total fuel sales. Nearly all heavy duty-trucks, delivery vehicles, buses, trains, ships, boats and barges, farm equipment, construction equipment, and heavy duty military vehicles and equipment have diesel engines. Diesel is the fuel of choice because it has 12 percent more energy per gallon than gasoline and has fuel properties that prolong engine life making it ideal for heavy duty vehicle applications (CEC, 2019c). In 2018, taxable gasoline sales (including aviation gasoline) in California accounted for approximately 15.5 billion gallons of gasoline, and taxable diesel fuel sales accounted for approximately 3.1 billion gallons of diesel fuel, and taxable jet fuel sales accounted for approximately 165 million gallons of jet fuel (CDTFA, 2019).

Regulatory Background

Federal

National Energy Conservation Policy Act. The National Energy Conservation Policy Act (NECPA, 42 USC §8201 et seq.) serves as the underlying authority for federal energy management goals and requirements and is the foundation of most federal energy requirements. NECPA established energy-efficiency standards for consumer projects and includes a residential program for low-income weatherization assistance, grants, and loan guarantees for energy conservation in schools and hospitals, and energy-efficiency standards for new construction. Furthermore, the NEPCA established fuel economy standards for on-road motor vehicles in the United States. The National Highway Traffic and Safety Administration (NHTSA), which is part of the U.S. Department of Transportation (USDOT), is responsible for establishing additional vehicle standards and revising existing standards under the NEPCA. The USDOT is authorized to assess penalties for noncompliance. In the course of more than 30 years, this regulatory program has resulted in improved fuel economy throughout the United States' vehicle fleet (NHTSA, 2014; 2018).

National Energy Policy Act of 2005. The National Energy Policy Act of 2005 (42 USC §13201 et seq.) sets equipment energy efficiency standards and seeks to reduce reliance on nonrenewable energy resources and provide incentives to reduce current demand on these resources. For example, the act establishes programs in order to improve the reliability and efficiency of distributed energy resources and systems by integrating advanced energy technologies with grid connectivity.

Energy and Independence Security Act of 2007 and Corporate Average Fuel Economy Standards. The Energy and Independence Security Act of 2007 (42 USC §17001) sets federal energy management requirements in several areas, including energy reduction goals for federal buildings, facility management and benchmarking, performance and standards for new buildings and major renovations, high-performance buildings, energy savings performance contracts, metering, energy-efficient product procurement, and reduction in petroleum use, including by setting automobile efficiency standards, and

increase in alternative fuel use. This act also amends portions of the National Energy Policy Conservation Act, as described above.

State

Warren-Alquist Act. The 1975 Warren-Alquist Act (Pub. Res. Code §25000 et seq.) established the California Energy Resources Conservation and Development Commission, now known as the CEC. The Act established a state policy to reduce wasteful, uneconomical, and unnecessary uses of energy by employing a range of measures. The Act also was the driving force behind the creation of CEQA Guidelines Appendix F, Energy Conservation.

State of California Integrated Energy Policy. Public Resources Code Section 25301(a) requires the CEC to develop an Integrated Energy Policy Report (IEPR) at least every 2 years for electricity, natural gas, and transportation fuels. The current IEPR (2018 edition) calls for the State to assist in the transformation of the transportation system to improve air quality, reduce congestion, and increase the efficient use of fuel supplies with the least environmental and energy costs. An overarching goal of the resulting IEPR is to achieve the statewide greenhouse gas reduction targets, while improving overall energy efficiency. For example, the CEC's 2018 IEPR Update includes increasing grid flexibility as a key component and maintaining the reliability of the electricity system while integrating larger amounts of variable wind and solar generation (CEC, 2018a).

Senate Bill 100 - The 100 Percent Clean Energy Act of 2018. This bill made it the policy of the state that eligible renewable energy resources and zero-carbon resources supply 100 percent of total retail sales of electricity in California by December 31, 2045.

California Advanced Clean Cars Program/Zero Emission Vehicle Program. In January 2012, the California Air Resources Board (CARB) approved a new emissions-control program for vehicle model years 2017 through 2025. The program combines the control of smog, soot, and greenhouse gas with requirements for greater numbers of zero-emission vehicles into a single package of standards called Advanced Clean Cars. The components of the Advanced Clean Cars Program include the Low-Emission Vehicle (LEV) regulations that reduce criteria pollutants and greenhouse gas emissions from light- and medium-duty vehicles, and the Zero-Emission Vehicle (ZEV) regulation, which requires manufacturers to produce an increasing number of pure ZEVs (meaning battery electric and fuel cell electric vehicles), with provisions to also produce plug-in hybrid electric vehicles (PHEV) in the 2018 through 2025 model years. In March 2017, CARB voted unanimously to continue with the vehicle greenhouse gas emission standards and the ZEV program for cars and light trucks sold in California past 2025 (CARB, 2017).

CARB Heavy Duty Regulations. CARB's Truck and Bus Regulation also requires diesel trucks that operate in California to be upgraded to reduce emissions. Newer heavier trucks must meet particulate matter (PM) filter requirements beginning in 2012. Lighter and older heavier trucks must be replaced starting in 2015. By 2023 nearly all trucks would have 2010 model year engines or equivalent (CARB, 2019).

In 2004, CARB adopted a fourth tier of increasingly stringent advanced after treatment for new off-road compression-ignition engines, including those found in construction equipment. These "Tier 4" standards were phased-in across product lines from 2008 through 2015 and reduced exhaust emission levels by up to 95 percent compared to previous control strategies. In 2007, CARB first approved the Off-Road Regulation that requires off-road fleets to reduce their emissions by retiring, replacing, or repowering older engines (CARB, 2016).

Local

The California Public Utilities Commission (CPUC) has sole and exclusive state jurisdiction over the siting and design of the project. Pursuant to CPUC General Order 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." Regardless, there are no local ordinance policies or requirements related to energy that would be directly applicable to the project.

5.6.2 Applicant Proposed Measures

PG&E does not propose to implement any Applicant Proposed Measures (APMs) for energy as part of the project.

5.6.3 Environmental Impact and Mitigation Measures

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

The project would not involve the use of natural gas and its use of any electricity would be minor, related to temporary service at construction staging areas, and indirect electricity use associated with water treatment and transport during construction, as well as for occasional maintenance activities during operations; therefore, the analysis below relates to transportation-related fuel consumption.

Construction

LESS THAN SIGNIFICANT IMPACT. The analysis in this section utilizes the greenhouse gas emissions estimates identified in *Appendix B*, *Air Quality and Greenhouse Gas Emissions Calculations*, to estimate gasoline, diesel, and jet fuel consumption volumes for construction-related equipment and vehicles. The quantities of fuel use were calculated using Appendix B and are summarized below.

Construction would result in fuel consumption from the use of construction tools and equipment, haul and vendor truck trips, helicopter use, and vehicle trips generated from workers traveling to and from the project sites. Construction is expected to consume a total of approximately 51,325 gallons of diesel fuel from construction equipment and vendor/haul truck trips, approximately 6,065 gallons of gasoline from construction worker vehicle trips, and approximately 204 gallons of jet fuel from helicopter activities. For reference, approximately 336 million gallons of gasoline and 117 million gallons of diesel were sold in San Joaquin County in 2018 (CEC, 2018b). Construction activities and corresponding fuel energy consumption would be temporary and localized, as the use of diesel fuel for heavy-duty equipment would not be a typical condition of the project during operation.

Construction would not result in the permanent increased use of non-renewable energy resources. As described in Section 4, *Project Description*, and Section 5.14, *Population and Housing*, the proposed project would locate staging areas in or near the project components, ensuring efficient fuel use compared to the use of remote regional PG&E properties for materials staging; would have access to a large local construction labor supply, such that commuter vehicle use would be more efficient compared to use of construction labor from outside the local area; and would use local landfills for disposal of construction debris, minimizing the hauling distance and related fuel use to dispose of waste. These construction practices would ensure the efficient use of energy and avoid unnecessary energy consumption that could impact the environment.

Construction activities would not reduce or interrupt existing electrical or natural gas services due to insufficient supply, nor would they interrupt existing local PG&E service. Project-specific construction-related energy demands would not have a significant adverse effect on energy resources or the environment. Although not necessary to reduce a significant energy conservation related impact, implementation of APM GHG-1 as described in Section 5.8, *Greenhouse Gas Emissions*, would further ensure that fuel energy consumed during construction would not be wasted through unnecessary idling or through the operation of poorly maintained equipment. Therefore, construction of the project would not result in significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources.

Mitigation Measures: None recommended.

Operation and Maintenance

LESS THAN SIGNIFICANT IMPACT. The operation and maintenance activities for the expanded Vierra Substation, remote substations, and telecommunication towers would not result in material change in long-term energy consumption from vehicles or equipment. The operation and maintenance activities for the new power line would result in energy consumption due to annual inspection and maintenance from vehicles and helicopters. Energy may also be required in the form of electricity from the PG&E grid for occasional maintenance activities. However, due to the limited and infrequent use of vehicles and helicopters, and the current ongoing inspections of nearby lines, operation and maintenance of the new power line would result in a negligible increase in energy consumption, compared to existing conditions. The amount and form of energy required for operation and maintenance activities would not be inefficient, wasteful, or unnecessary. Impacts from operation and maintenance of the project on energy consumption and the environment would be less than significant.

Mitigation Measures: None recommended.

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b. Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?

Construction, Operation and Maintenance

NO IMPACT. Transmission facilities can generally be classified into two groups, network transmission facilities, like the Vierra Reinforcement Project, and generator tie lines that connect specific generators to the transmission network. Network transmission facilities are required to move electricity around the system to reliably and economically serve electric loads throughout California. The project would help PG&E reliably serve loads in the Lathrop, Manteca, and Stockton areas of San Joaquin County. As a network transmission facility, the project would provide new pathways for electricity serving loads in the Stockton area. New pathways would likely improve the efficiency of the transmission network by reducing flows on existing facilities and thus reducing transmission line losses.

Also, through the implementation of laws like Senate Bill 100 that gradually increase the renewable energy requirements and decrease the carbon emissions from the electricity system, the project would see similar increases in flows of electricity generated from renewable and carbon free resources. As discussed above, the CEC's 2018 IEPR Update includes a goal to maintain the reliability of the electricity system while integrating larger amounts of variable wind and solar generation. Since

the project would address reliability issues, it would not conflict with the renewable energy goals of California's current IEPR.

In terms of energy usage from heavy-duty vehicles used during construction, the United States Environmental Protection Agency (U.S. EPA) and NHTSA established a comprehensive Heavy-Duty National Program that would reduce greenhouse gas emissions and increase fuel efficiency for on-road heavy-duty vehicles beginning with model year 2014 (U.S. EPA, 2011). CARB's Truck and Bus Regulation also requires diesel trucks that operate in California to be upgraded to reduce emissions, such that by 2023 nearly all trucks would have 2010 model year engines or equivalent (CARB, 2019). Vehicles used during project construction would already incorporate these standards; therefore, the project would not impede the efficient use of fuel for heavy-duty vehicles. Off-road equipment during construction would be subject to off-road equipment regulations such as Tier 4 standards or the Off-Road Regulation implemented by CARB, and would therefore not impede the implementation of CARB's energy efficiency programs. Additionally, the use of diesel fuel for heavy-duty vehicles and off-road equipment would not be a typical condition of the project during operation; therefore, the project would not conflict with the implementation of fuel efficiency plans.

In terms of light-duty vehicle energy usage, as described above, the required manufacturers of light-duty vehicles to meet an estimated combined passenger car and light truck average fuel economy level of 34.1 miles per gallon (mpg) by model year 2016. In the course of more than 30 years, the NECPA regulatory program has resulted in improved fuel economy throughout the United States' vehicle fleet, and has also protected against inefficient, wasteful, and unnecessary use of energy. Regardless of the uncertainty for fleet-wide emissions past 2021, the projected fleet-wide mpg for light-duty vehicles is expected to reach 41.7 mpg by 2020 (U.S. EPA, 2012). Additionally, CARB's Advanced Clean Cars Program will continue to improve fuel efficiency and reduce gasoline use through an increase of ZEVs and PHEVs. Vehicles used by project construction and maintenance workers would already incorporate these standards and programs; therefore, the project would not impede the efficient use of fuel for light-duty vehicles.

Since the project has relatively low energy demand, would address reliability issues, and would comply with fuel and energy efficiency regulations, it would not conflict with or obstruct a State or local plan for renewable energy or energy efficiency, and therefore no impact would occur.

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5.7 Geology and Soils

This section describes the environmental and regulatory setting and discusses impacts associated with the construction and operation of the project with respect to geology and soils.

Analysis of impacts related to geology and soils was limited to project components where ground disturbance would occur and construction and operation of new facilities could cause potential substantial adverse effects due to geologic conditions or result in impacts to paleontological resources and other unique geologic features. These project components include the new power line, Vierra Substation expansion, and remote substation modifications at Howland Road, Kasson, Manteca, and Tracy substations. The proposed work at other remote facilities: The Tesla and Ripon Cogen substations and the Mount Oso and Highland Peak microwave stations, involves modifications to existing structures where there would be no ground disturbance or change in geologic conditions. These components of the project would not impact geologic resources (PGE, 2018a; 2018b). Therefore, these components of the project would have no impact related to geology and soils, and are not discussed further in this section.

GEOLOGY AND SOILS Would the project:	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less than Significant Impact	No Impact
a. Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i. Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	☐	☐	☐	☒
ii. Strong seismic ground shaking?	☐	☐	☒	☐
iii. Seismic-related ground failure, including liquefaction?	☐	☐	☒	☐
iv. Landslides?	☐	☐	☐	☒
b. Result in substantial soil erosion or the loss of topsoil?	☐	☐	☒	☐
c. Be located on geologic units or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?	☐	☐	☒	☐
d. Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?	☐	☐	☒	☐
e. Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of waste water?	☐	☐	☐	☒
f. Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☐	☒	☐

Environmental criteria established by California Environmental Quality Act Guidelines, Appendix G.

Analysis in this report is based partly on a 2016 preliminary geotechnical investigation performed by Kleinfelder for the proposed expansion to the Vierra Substation. At the time of the preliminary investigation, the proposed expansion area was not accessible, and so the findings in this report are based on an investigation performed, the same year, at the south entrance of the existing substation. The preliminary conclusions and recommendations presented in the 2016 report are based on existing subsurface data from the investigation performed at the south entrance. The California Building Code (CBC) (CBC, 2016a) requires that a final geotechnical report be written and would include the results and

recommendations of the preliminary geotechnical report, and add further detail if needed to address the final project design. See *Regulatory Setting* for more details.

5.7.1 Setting

Analysis of existing data included reviews of publicly available literature, maps, air photos, and documents presented with the application. An online database search was performed to identify previously reported paleontological resources near the proposed new power line and Vierra Substation expansion sites, and the remote Howland Road, Kasson, Manteca, and Tracy substation modification sites. The geologic map review of the project area included maps published by the California Geologic Survey (CGS), Helley and Harwood, Jennings and Bryant, the United Stated Geologic Survey (USGS), and mapping at a scale of 1:250,000 by Wagner and others (CGS, 2018; Helley and Harwood, 1985; Jennings and Bryant, 2010; USGS, 2006; 2008; 2017b; Wagner, et. al., 2005). The literature reviewed included published and unpublished scientific papers. A paleontological record search of the University of California Museum of Paleontology (UCMP), Berkeley online paleontological database was conducted for the disturbed project areas, including a 10-mile buffer zone surrounding the substation sites (UCMP, 2016).

Regional Geologic Setting

The new power line alignment, Vierra Substation expansion site, and Howland Road Substation are located in the City of Lathrop, in the central portion of the Central Valley region near the southern geographic center of San Joaquin County, California. The Kasson, Manteca, and Tracy substations are also in San Joaquin County. San Joaquin County is situated in the center of the Great Valley geomorphic province (**Figure 5.7-1**).

The Great Valley geomorphic province is generally composed of a very mildly sloping alluvial plain that is approximately 40 to 60 miles wide and extends north-northwest and south-southeast about 450 miles through the geographic center of California. The Great Valley was created by the uplift of the Coast Ranges to the west and the Sierra Nevada mountain range to the east. Prior to the creation of these mountain ranges, the Great Valley was dominated by marine depositions beginning more than 144 million years ago. More recent shallow sediments have been deposited throughout the Great Valley, and in some areas, the total thickness of sediments in the Great Valley have exceeded 30,000 feet in depth. The valley is characterized as an asymmetrical trough with shallow dipping deposits from the Sierra Nevada Mountains to the east, and steeply dipping deposits from the Coast Range to the west (San Joaquin County, 2014a).

The alluvium deposits located east of the San Joaquin River originate from eroded silica-based volcanic and granitic materials from the Sierra Nevada Mountain Range, while the deposits west of the San Joaquin River are composed of sediments from eroded marine sedimentary deposits from the Coast Ranges (Harden, 2004). Over the millennia, these sediments have accumulated and down-warped the valley surface to the extent that gas and oil exploration drillers have measured 30,000 feet of sediment below the surface.

Figure 5.7-1
Geomorphic Provinces

Source: CGS, 2002

The topography of the area surrounding the project slopes very mildly towards the San Joaquin River. Elevations range from +30 feet (North American Vertical Datum of 1988)[3] immediately to the east of the project area, and slope gently to +10 feet at the east bank of the San Joaquin River, west of the project area.

Local Geology

Figure 5.7-2 depicts the surficial geology in the vicinity of the proposed new power line alignment, Vierra Substation expansion site, and Howland Road, Kasson, Manteca, and Tracy substations.

According to geologic mapping, the project area east of the Tesla-Stockton Cogen Junction 115 kV Power Line, including the Vierra Substation expansion site, and Howland Road and Manteca substations, is underlain by Quaternary (Pleistocene) Modesto Formation alluvium (Qm) (Witter, et. al., 2006; Lettis, 1981; Wagner, D.L. et. al., 2005). The project area to the west of the Tesla-Stockton Cogen Junction 115 kV Power Line, including the western portion of the new power line alignment to be connected to the Vierra Substation expansion, is underlain by (Holocene) Dos Palos Alluvium (Qdp). The area underlying Kasson and Tracy substations consists of Quaternary Alluvial Fan deposits (Qf) (see **Figure 5.7-2**).

The Dos Palos Alluvium makes up about 20 percent of the surface sediments throughout the area of the proposed Vierra Substation expansion site, the Howland Road, Kasson, Manteca, and Tracy substations, and the new power line alignment, while the Modesto Formation and Alluvial Fan Deposits make up about 80 percent of the surface sediments (**Figure 5.7-2**). **Figure 5.7-3** provides a more generalized surface geology and fault map that includes the locations of Howland Road, Kasson, Manteca, and Tracy substations.

Geotechnical drilling conducted by PG&E at Vierra Substation in 1997 was performed to a maximum depth of 28.5 feet below the ground surface (bgs). Loose to medium dense sands were generally encountered throughout the borings, with occasional thin silt and clay layers. The sands contained generally silty fines throughout. At depths greater than 15 feet bgs the fines content increased, and in places was predominate (PGE, 1997).

Geologic Units and Paleontological Sensitivity

Paleontological Sensitivity

The potential for paleontological resources to occur in the project area was evaluated using the federal Potential Fossil Yield Classification (PFYC) system developed by the United States Bureau of Land Management (BLM, 2016). Because of its demonstrated usefulness as a resource management tool, the PFYC has been used for many years for projects across the country, regardless of land ownership. It is a predictive resource management tool that classifies geologic units on their likelihood to contain paleontological resources on a scale of 1 (very low potential) to 5 (very high potential) or unknown. This system is intended to aid in predicting, assessing, and mitigating impacts to paleontological resources. The PFYC ranking system is summarized in **Table 5.7-1.**

[3] The North American Vertical Datum of 1988 is the vertical control datum established in 1991 by the minimum-constraint adjustment of the Canadian-Mexican-United States leveling observations.

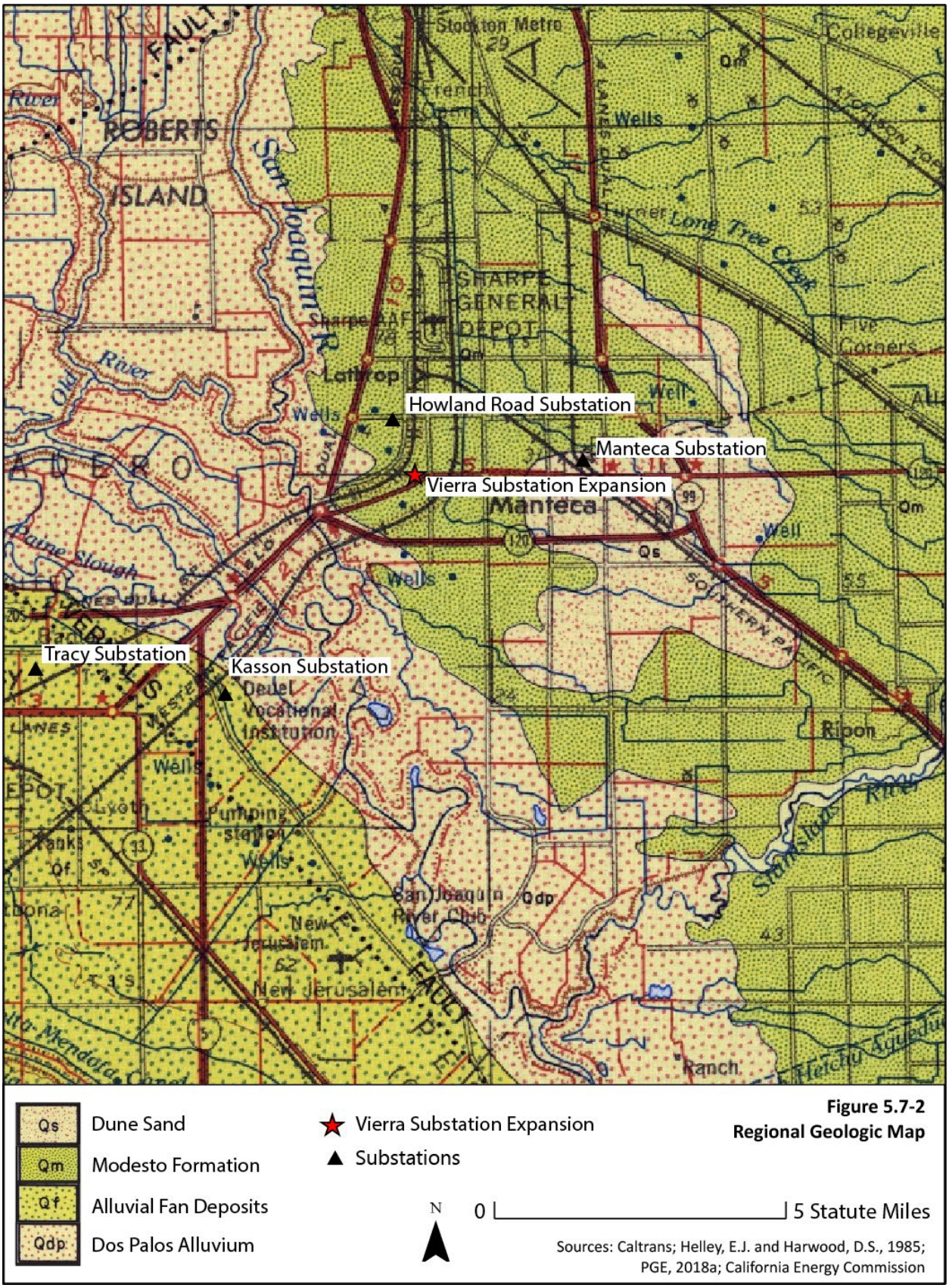

Figure 5.7-2
Regional Geologic Map

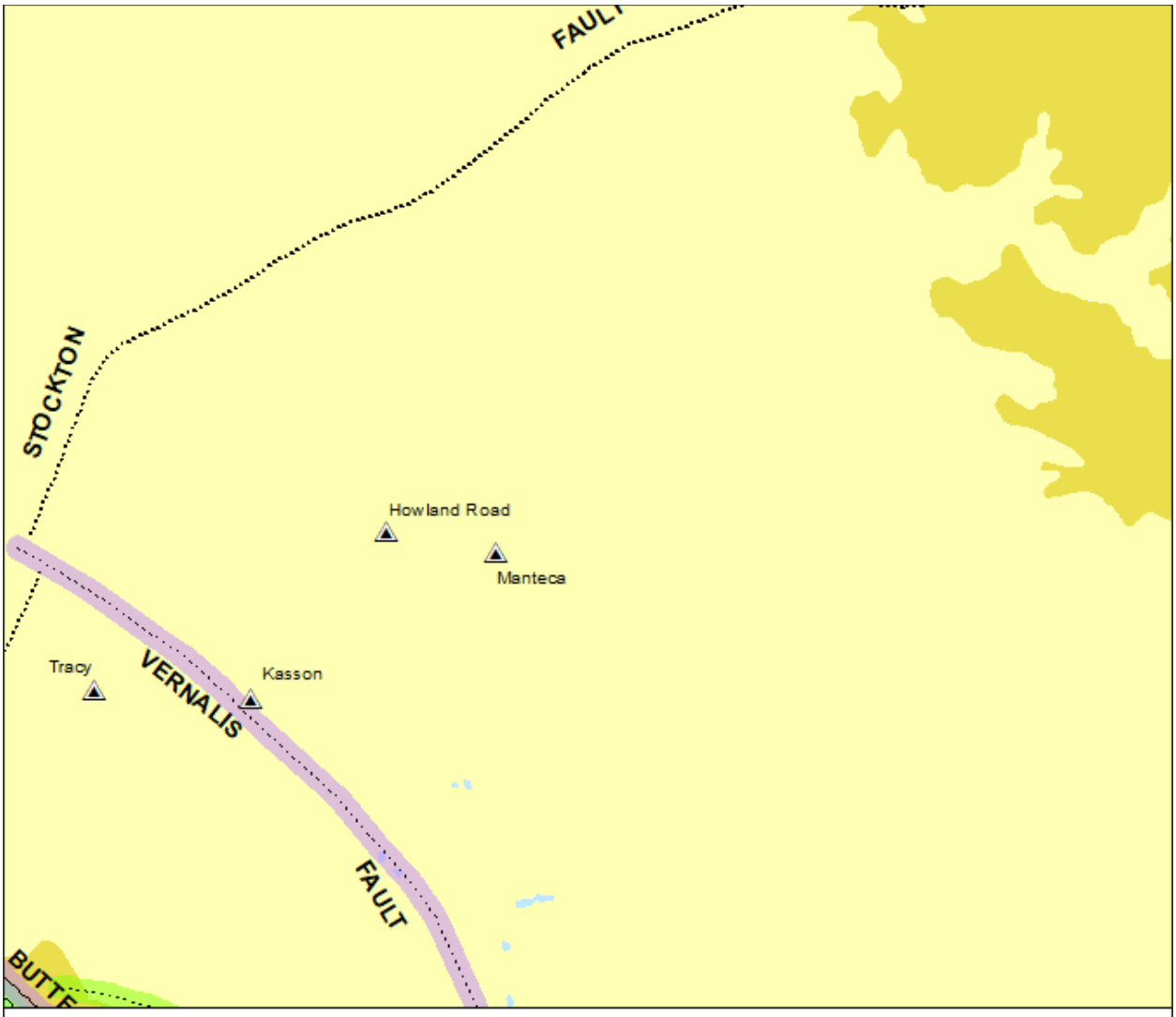

Figure 5.7-3
Regional Fault Map

TABLE 5.7-1 POTENTIAL FOSSIL YIELD CLASSIFICATION

BLM PFYC Designation	Assignment Criteria Guidelines and Management Summary
1 - Very Low Potential	Geologic units are not likely to contain recognizable paleontological resources.
	Units are igneous or metamorphic, excluding air-fall and reworked volcanic ash units.
	Units are Precambrian in age.
	Management concern is usually negligible, and impact mitigation is unnecessary except in rare or isolated circumstances.
2 - Low	Geologic units are not likely to contain paleontological resources.
	Field surveys have verified that significant paleontological resources are not present or are very rare.
	Units are generally younger than 10,000 years before present.
	Recent Aeolian deposits.
	Sediments exhibit significant physical and chemical changes (i.e., diagenetic alteration) that make fossil preservation unlikely.
	Management concern is generally low, and impact mitigation is usually unnecessary except in occasional or isolated circumstances.
3 - Moderate Potential	Sedimentary geologic units where fossil content varies in significance, abundance, and predictable occurrence.
	Marine in origin with sporadic known occurrences of paleontological resources.
	Paleontological resources may occur intermittently, but these occurrences are widely scattered.
	The potential for authorized land use to impact a significant paleontological resource is known to be low-to-moderate.
	Management concerns are moderate. Management options could include record searches, pre-disturbance surveys, monitoring, mitigation, or avoidance. Opportunities may exist for hobby collecting. Surface-disturbing activities may require sufficient assessment to determine whether significant paleontological resources occur in the area of a proposed action and whether the action could affect the paleontological resources.
4 - High Potential	Geologic units that are known to contain a high occurrence of paleontological resources.
	Significant paleontological resources have been documented but may vary in occurrence and predictability.
	Surface-disturbing activities may adversely affect paleontological resources.
	Rare or uncommon fossils, including nonvertebrate (such as soft body preservation) or unusual plant fossils, may be present.
	Illegal collecting activities may impact some areas.
	Management concern is moderate to high depending on the proposed action. A field survey by a qualified paleontologist is often needed to assess local conditions. On-site monitoring or spot- checking may be necessary during land disturbing activities. Avoidance of known paleontological resources may be necessary.
5 - Very High Potential	Highly fossiliferous geologic units that consistently and predictably produce significant paleontological resources.
	Significant paleontological resources have been documented and occur consistently.
	Paleontological resources are highly susceptible to adverse impacts from surface disturbing activities.
	Unit is frequently the focus of illegal collecting activities.
	Management concern is high to very high. A field survey by a qualified paleontologist is almost always needed and on-site monitoring may be necessary during land use activities. Avoidance or resource preservation through controlled access, designation of areas of avoidance, or special management designations should be considered.
U - Unknown	Geologic units that cannot receive an informed PFYC assignment.
	Geological units may exhibit features or preservation conditions that suggest significant paleontological resources could be present, but little information about the actual paleontological resources of the unit or area is known.
	Geologic units represented on a map are based on lithologic character or basis of origin, but have not been studied in detail.
	Scientific literature does not exist or does not reveal the nature of paleontological resources.

TABLE 5.7-1 POTENTIAL FOSSIL YIELD CLASSIFICATION	
BLM PFYC Designation	Assignment Criteria Guidelines and Management Summary
	Reports of paleontological resources are anecdotal or have not been verified.
	Area or geologic unit is poorly or under-studied.
	BLM staff has not yet been able to assess the nature of the geologic unit.
	Until a provisional assignment is made, geologic units with unknown potential have medium to high management concerns. Field surveys are normally necessary, especially prior to authorizing a ground-disturbing activity.

Source: Summarized and modified from BLM, 2016

Quaternary Dos Palos Alluvium (Qdp)

Quaternary Dos Palos Alluvium underlies the western portion of the proposed new power line alignment that would be used to be connect to the Vierra Substation expansion (See **Figure 5.7-2**). Dos Palos Alluvium is the informal name given to the Holocene-aged, non-deformed, generally non-weathered, unconsolidated deposits of arkosic gravel, sand, silt, and clay covering the flood basin of the lower San Joaquin River. The Dos Palos Alluvium consists primarily of moderately to well sorted, moderately to well-bedded, unconsolidated sand and silt with lesser amounts of gravel, clayey silt, and clay. The arkosic composition indicates derivation from the plutonic rocks of the Sierra Nevada. The alluvium is generally unweathered, poorly drained, and ranges in color from yellow green to blue green (Lettis, 1982). The review of the online UCMP database showed no recorded fossils from these sediments in the vicinity of the western portion of the proposed new power line alignment. Fossils are generally unknown from younger Quaternary alluvial deposits, such as the Dos Palos Alluvium, due to their young age and are assigned PFYC 2 (low potential).

Quaternary Alluvial Fan Deposits (Qf)

Project component sites that are underlain by Alluvial Fan Deposits include Kasson and Tracy substations (See **Figure 5.7-2**). This unit consists of distinct alluvial fans and aeolian deposits. Gravel, sand, and silt form clearly recognizable alluvial fans and terraces. This unit displays a thicker, more distinct weathering profile than observed in the Modesto Formation, and typically there is a change in hue from yellowish-tan to dark-reddish-tan at depth (Helley and Harwood, 1985).

The review of the online UCMP database showed no recorded fossils from sediments in the vicinity of either Kasson or Tracy substations. The small number of fossils could be due either to the absence of fossils or to a lack of substantial development and/or paleontological investigations in the area. Therefore, if fossils are recovered, they could be scientifically significant because of the information that they could provide on the Pleistocene paleo environment in the northern portion of the San Joaquin Valley. Based on the known fossil localities from Pleistocene deposits in the vicinity, and information about the lithology of the overlying Modesto Formation (with its fine-grained beds, and terraces that exhibit conditions in which significant fossils could be preserved), the Quaternary Alluvial Fan deposits are assigned a rating of PFYC 3 (moderate potential).

Modesto Formation (Qm)

Project components underlain by the Modesto Formation include: the eastern portion of the proposed new power line alignment, Vierra Substation expansion, and Howland Road and Manteca substations (**Figure 5.7-2**). This formation makes up the youngest unit of the Pleistocene alluvium in the Modesto River valley area. This unit consists of distinct alluvial terraces and some alluvial fans and channel ridges. It consists of tan to light grey gravely sand, silt, and clay, except where derived from the Tuscan Formation,

which is distinctly red and black. The Modesto Formation is divided into two members. The upper member forms terraces and alluvial fans. The soil at the top of the member has highly visible A/C horizon profiles but lacks a distinct argillic B horizon that can only be found in the lower member (Helley and Harwood, 1985).

The review of the online UCMP database showed 14 Pleistocene-aged vertebrate fossil localities exist within the Modesto Formation in San Joaquin County. However, these localities did not have exact geographic locations associated with them so the proximity to the Vierra Substation expansion site and Manteca Substation are unknown. The cataloged specimens include bison (Bison sp.), mammoth (Mammuthus columbi, Mammuthus sp.), camel (Camelops hesternus), sloth (Megalonyx jeffersoni), horse (Equus, Equidae), mastodon (Mammut), artiodactyl (Artiodactyla), carnivore (Carnivora), elephant (Proboscidea), and rodent (Thomomys sp., Rodentia) (UCMP, 2016). The limited number of recorded fossils from these sediments in the project vicinity could be due either to the absence of fossils or to a lack of substantial development and/or paleontological investigations in the area. Therefore, if fossils are recovered, they could be scientifically significant because of the information that they could provide on the Pleistocene paleoenvironment in the northern portion of the San Joaquin Valley. Based on the known fossil localities from Pleistocene deposits in the vicinity, and information about the lithology of the Modesto Formation (with its fine-grained beds, and terraces that exhibit conditions in which significant fossils could be preserved), the Modesto Formation is assigned a rating of PFYC 3 (moderate potential).

Soils

Nine soil units, summarized in **Table 5.7-2**, lie within the vicinity of the proposed new power line alignment, Vierra Substation expansion site, and the remote Howland Road, Kasson, Manteca, and Tracy substations. The soils in the immediate vicinity of the proposed new power line alignment, Vierra Substation expansion site, and Howland Road Substation are depicted in **Figure 5.7-4**. Three soil units are included in **Table 5.7-2** for soil types at the Kasson (map unit 118), Manteca (map unit 143), and Tracy (map units 118 and 122) substations.

Soil units along the proposed new 115 kV power line alignment from Vierra Substation to Nestle Way are the Delhi loamy sand (142), Delhi Urban land complex (143), Timor loamy sand (254), Tinnin loamy coarse sand (255), and Veritas fine sandy loam (266) (see **Figure 5.7-4**). All five soil units are composed of sand or silty sand. The presence of expansive soils is not anticipated at any of these project component sites due to the abundance of sand in the upper layer of soil. The soil at the Howland Road Substation is classified as Urban Land (260). The existing facilities have been present for several decades and no report of foundation stability issues has been identified. Capay clay (118) at Kasson and Tracy substations and the Capay Urban land complex (122) at Tracy Substation have high shrink-swell potential (McElhiney, 1992; Welch, 1981).

TABLE 5.7-2 SOIL TYPES WITHIN THE AREAS OF PROJECT COMPONENTS

Map Unit	Project Component	Soil Type	Percent Slope	Wind Erosion Group	Drainage	USCS	Linear Extensibility	Description
118	K; T	Capay clay	0 to 1 %	4	Moderately well drained	CH	High	interfan basins
122	T	Capay-Urban land complex	0 %	4	Moderately well drained	CH	High	urban development
142	V	Delhi loamy sand	0 to 2 %	2	Somewhat excessively drained	SM	Very low	alluvial fans, dunes / Summit, floodplains, sand sheets
143	M	Delhi-Urban land complex	0 to 2 %	2	Somewhat excessively drained	SM	Very low	alluvial fans, dunes / Summit, floodplains, sand sheets and urban lands
254	PL	Timor loamy sand	0 to 2 %	2	Moderately well drained	SM	Very low	fan skirts
255	PL	Tinnin loamy coarse sand	0 to 2 %	2	Well drained	SM	Very low	alluvial fans
260	H	Urban Land	Not rated	Not rated	Not rated	Not rated	Not rated	Urban lands
266	PL	Veritas fine sandy loam	0 to 2 %	3	Moderately well drained	SC-SM	Very low	fan skirts
284	PL	Water						

Project Component: V – Vierra Substation expansion; H = Howland Substation, K = Kasson Substation, M = Manteca substation, T = Tracy Substation, PL – power line and poles connecting Vierra Substation expansion
Source: NRCS, 2011

Soil Expansion

Expansive soils are soils that possess a "shrink-swell" characteristic, also referred to as linear extensibility. Shrink-swell is the cyclic change in volume (expansion and contraction) that occurs in fine-grained clay sediments from the process of wetting and drying; the volume change is reported as a percent change for the whole soil. Changes in soil moisture can result from rainfall, landscape irrigation, utility leakage, roof drainage, and/or perched groundwater. Expansive soils are typically very fine-grained and have a high to very high percentage of clay. Structural damage may occur incrementally over a long period of time, usually as a result of inadequate soil and foundation engineering or the placement of structures directly on expansive soils. Linear extensibility is used to determine the shrink-swell potential of soils. If the linear extensibility is more than three percent, shrinking and swelling may cause damage to building, roads, and other structures (NRCS, 2017).

The Natural Resources Conservation Service (NRCS) Web Soil Survey provides data assessing linear extensibility; the Web Soil Survey indicates low to moderate linear expansion rating for the soil underlying the Vierra Substation and the Howland Road and Manteca substations (NRCS, 2018a). The soils underlying the Tracy and Kasson substations have a high to very high linear extensibility rating (NRCS, 2018b). The 2016 preliminary geotechnical investigation provides specific requirements for the non-expansive engineered fill to be used at the site.

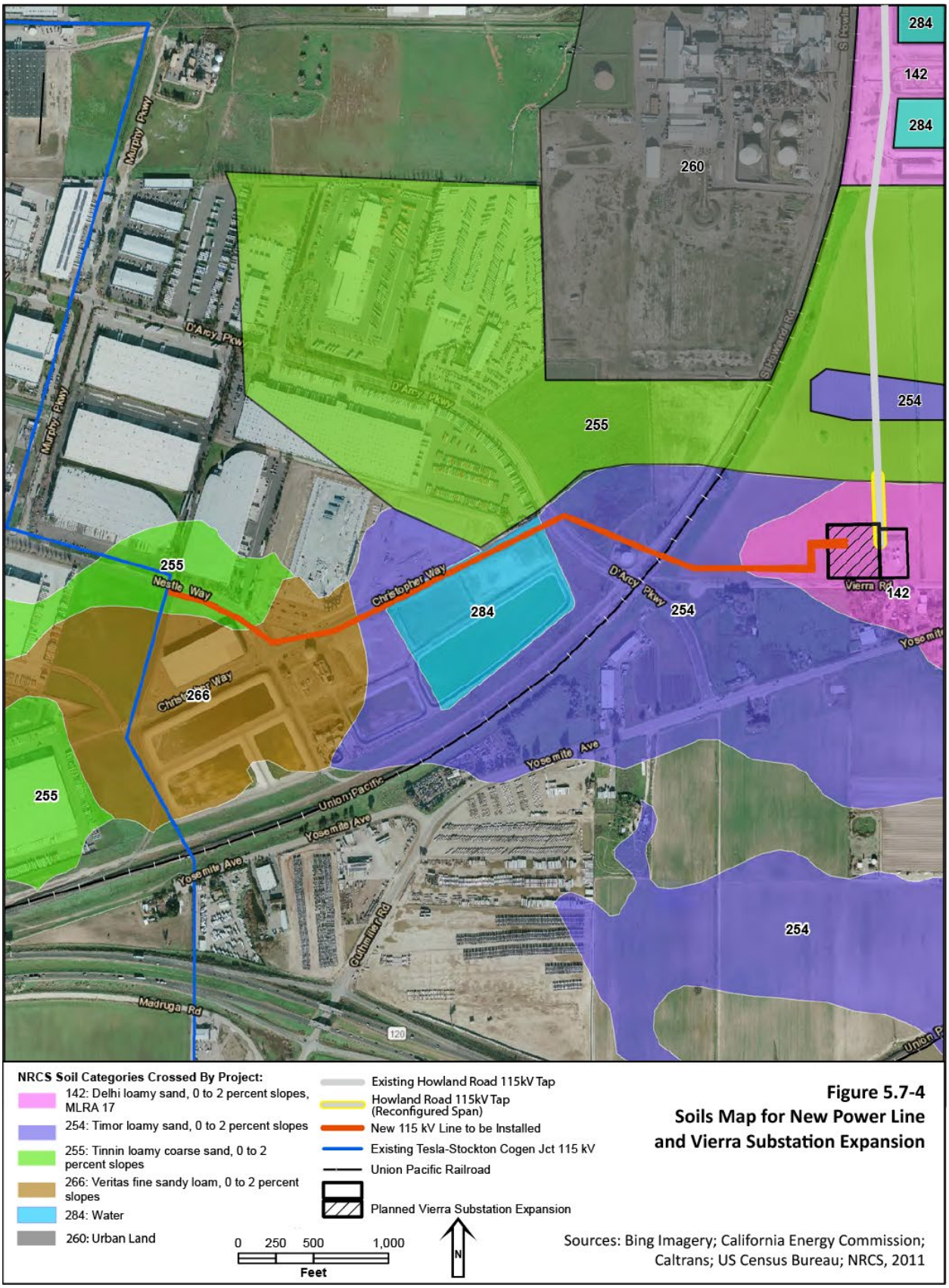

Figure 5.7-4
Soils Map for New Power Line and Vierra Substation Expansion

Sources: Bing Imagery; California Energy Commission; Caltrans; US Census Bureau; NRCS, 2011

Erosion

Erosion is a process where rocks, soil, and other land materials are abraded or worn away from the Earth's surface over time, typically by wind and water. The rate of erosion depends on many factors, including vegetative cover, soil and rock type, soil and rock texture, slope, and human activity. The potential for erosion is highest in loose, unconsolidated soils. The steepness of slopes and absence of vegetation are also factors that increase the natural rates of erosion. Erosion caused by surface runoff primarily occurs in loose soils on moderate to steep slopes, particularly during high-intensity storm events. Maps from the San Joaquin County General Plan (2014b) identify the Relative Water Erosion Potential near the project site as low. The NRCS interactive soil-mapping website identifies a wind erosion hazard ranging from moderate (4) to high (2) (**Table 5.7-2**) (NRCS, 2011).

Earthquake Hazards

Fault Rupture

The Alquist-Priolo Act requires the establishment of "earthquake fault zones" along known active faults in California. A fault is considered active if it has generated earthquakes during historic time (approximately the last 200 years) or has shown evidence of fault displacement during the Holocene period (within the last 11,000 years) (Jennings, C., and Bryant, W.A., 2010). A fault is considered potentially active if there is evidence of fault displacement during the Quaternary period (11,000 to 1.6 million years), and a fault is considered inactive if the most recent documented fault displacement pre-dates the Quaternary period (greater than 1.6 million years).

No active faults are currently mapped in San Joaquin County. Nevertheless, the county is considered susceptible to seismicity because it is located between two areas of potential seismic activity from northwest to southeast oriented fault zones (San Joaquin County, 2014b). Towards the southwest, numerous active thrust faults associated with the Great Valley Series have been mapped along the eastern foothills of the Coastal Range (east of Mount Diablo). Approximately 37.5 miles northeast of the project, a set of discontinuous shear zones associated with the Foothills Fault System is located along the western foothills of the Sierra Nevada Mountain Range.

No known active faults cross the new power line alignment, Vierra Substation expansion site, or the remote Howland Road, Kasson, Manteca, or Tracy substations (see **Figure 5.7-3**). The nearest active fault to the new power line alignment and the Vierra Substation expansion site is the Greenville fault, approximately 21.4 miles southwest of the project (Jennings, C., and Bryant, W.A., 2010). Faults considered active within 62 miles of all of the project components are listed in **Table 5.7-3**. **Figure 5.7-3** shows the nearest potentially active fault to the project components is Vernalis fault, which displays evidence of movement within the past 1,600,000 years, but no evidence of movement within the past 11,000 years. This fault has been mapped about 5.25 miles southwest of the Vierra Substation expansion site and within a mile of Kasson Substation (northeast of Tracy) (Bartow, 1991). There is minimal potential for fault rupture at any of the project component locations.

TABLE 5.7-3 KNOWN ACTIVE FAULTS WITHIN 62 MILES (100 KM) OF THE PROJECT COMPONENTS

Fault	Approximate Distance From:					Estimated Maximum Moment Magnitude	Slip Rate (mm/yr)	Approximate Recurrence Interval (years)	30-year rupture probability **M≥6.7** [Min-Max]	Estimated Site Intensity Mod Mercalli
	Vierra Substation expansion (miles)	Howland Road Substation (miles)	Kasson Substation (miles)	Manteca Substation (miles)	Tracy Substation (miles)					
Great Valley 7	12.6	18.2	9.5	19.0	6.5	6.7	1.5	560	-	IX
Great Valley 6	14.2	19.2	12.7	20.0	10.5	6.7	1.5	560	-	VIII
Greenville	21.4	22.6	18.2	25.2	14.7	6.9	2.0	550	3% [2-4]	VIII
Great Valley 8	26.6	30.3	24.6	32.5	23.8	6.6	1.5	540	-	VII
Great Valley 5	31.8	32.2	25.2	34.5	29.0	6.5	1.0	450	-	VI
Calaveras	34.7	37.3	31.7	38.9	28.2	6.8	6.0	400	7% [1-22]	VI
Ortigalita	36.0	39.5	34.7	38.5	35.3	6.9	1.0	1,100	-	VI
Hayward	37.1	43.8	35.5	42.6	32.1	7.1	9.0	210	31% [10-58]	VII
Foothills Fault System	37.5	36.7	40.7	33.7	44.4	6.5	0.1	12,500	-	VI
Great Valley 4	47.6	47.2	25.6	49.8	41.5	6.6	1.25	540	-	VI
Monte Vista-Shannon	52.0	55.3	49	56.1	56.3	6.8	0.4	2,400	-	VI
San Andreas (1906)	57.5	60.3	54.1	61.3	51.0	7.9	17.0	210	59% [22-94]	VII
West Napa	57.7	57.7	55.7	59.9	59.9	6.5	1.0	700	-	V
Quien Sabe	60.4	62.5	58.5	61.7	58.9	6.4	1.0	600	-	IV
Rogers Creek	60.4	60.5	57.9	62.7	54.3	7.0	9.0	230	31% [12-67]	V
Zayante-Vergeles	61.4	64.5	58.3	64.7	55.1	6.8	0.1	10,000	-	V

Sources: USGS, 2008; 1996; Blake, 2016.

Liquefaction and Lateral Spreading

Liquefaction can result from seismic ground-shaking when cyclically induced stresses cause increased pore water pressures within the soil matrix. This may result in a loss of shear strength that may lead to large shear deformations and/or flow failure under moderate to high shear stresses, such as beneath foundations or sloping ground (Youd and Idriss, 2001). When this happens, the soil behaves more like a liquid than a solid. Liquefied soil can also settle (compact) as pore pressures dissipate following an earthquake. Settlement approximately three to five percent of the thickness of the liquefied zone has been measured (Kayen, et. al., 2002). This results in loss of shear strength, thereby removing support from foundations and causing differential settlement, subsidence, or collapse of buildings, roadways, or other structures. Soils most susceptible to liquefaction are loose to moderately dense, saturated non-cohesive

soils with poor drainage, such as sands and silts with interbedded or capping layers of soil with relatively low permeability, such as areas underlain by saturated unconsolidated alluvium with uniform grain size. However, the presence of a capping layer is not a requirement for liquefaction (Maurath and Amick, 1988). Additionally, liquefaction hazards are most severe in saturated non-cohesive soils within the upper 50 feet of the ground surface.

The potential for liquefaction increases under conditions with shallow groundwater. Thus, in alluvial basins within San Joaquin County, the potential for liquefaction tends to increase in the winter and spring, when the groundwater table is higher. A contour map showing depths to groundwater in wells throughout the county indicates that the groundwater in the vicinity of the Vierra Substation was approximately 11 to 12 feet bgs in 1988. A geotechnical investigation performed by PG&E at the Vierra Substation included drilling two borings; one to a depth of 28.5 feet bgs, and the other to a depth of 27 feet bgs. Both borings encountered groundwater at 7 to 8 feet bgs (PGE, 1997). In 2016, a boring conducted in support of the design and construction of a TSP in a location to the south of the entrance of the existing Vierra Substation encountered groundwater at a depth of approximately 16 feet (Kleinfelder, 2016). As described above (see *Local Geology*), the predominate soil material in the area is loose to medium dense sand; the combination of the soil material and the shallow groundwater could present liquefaction hazards in these areas. Liquefaction analysis was performed as part of the geotechnical investigation at the south entrance, and the results indicate the presence of potentially liquefiable soils at depths of about 25 feet, and liquefaction-induced ground settlement of about 1 inch could occur at the site. However, no current field exploration has been performed near the site of the proposed Vierra Substation expansion to confirm this.

Lateral spreading is a form of surface displacement caused by seismically-induced liquefaction. When subsurface soil deposits liquefy, intact blocks of surficial soil can move downslope, or towards a vertical free face, even when the ground surface is nearly level (Rauch, 1997).

Ground Shaking

Although not located within or near an active fault zone, the proposed new power line alignment, Vierra Substation expansion site, and remote Howland, Kasson, Manteca, and Tracy substations are within areas that could be subject to ground shaking, particularly from the Marsh Creek-Greenville section of the Greenville fault. The Hayward, Rogers Creek, and San Andreas faults are other possible sources of ground shaking in the project area.

Shaking from an earthquake can result in structural damage and can trigger other geologic hazards, such as liquefaction and landslides. The intensity of ground shaking is a function of the earthquake magnitude, duration, and distance from the source. Ground conditions would also influence impacts from strong ground motions. Seismic waves attenuate with distance from their sources, so estimated bedrock accelerations are highest in areas closest to the source. Local soil conditions may amplify or dampen seismic waves as they travel from the underlying bedrock to the ground surface. Ground shaking may affect widespread areas distant from the earthquake epicenter and can produce a variety of shaking intensities.

Ground shaking due to a seismic event can cause extensive damage to life and property, and may affect areas hundreds of miles away from the earthquake's epicenter. The extent of the damage varies by event and is determined by several factors, including (but not limited to): magnitude and depth of the earthquake, distance from epicenter, duration and intensity of the shaking, underlying soil and rock types, and integrity of structures (USGS, 2018c).

According to the ShakeMap that corresponds with the earthquake planning scenario generated by the United States Geological Survey (USGS), if a M_W 7.0 event were to occur on the Marsh Creek-Greenville Section of the Greenville fault, the study area may experience strong to very strong ground shaking with moderate to heavy damage expected (USGS, 2016a). In 2015, the 2014 Working Group on California Earthquake Probabilities[4] (WGCEP, 2014) presented the third Uniform California Earthquake Rupture Forecast (UCERF3). According to this report, there is a 95 percent probability of a magnitude 6.7 or greater earthquake in the Northern California Region within 30 years (Field, et al., 2015).

The preliminary geotechnical investigation report by Kleinfelder includes seismic design parameters for the site to be implemented during construction (Kleinfelder, 2016). However, the parameters used are based on the 2013 CBC; the updated 2019 CBC will come into effect in January of 2020. New seismic design parameters will need to be generated and included in the final geotechnical report that would be prepared for the project.

Subsidence

Subsidence, the downward displacement of a large portion of land, is typically caused by the withdrawal of fluids (e.g., ground water or oil) from subsurface reservoirs. As the fluid is removed, fluid pore pressure is reduced and the pore spaces between the grains in the aquifer collapse. Another major cause of subsidence is oxidation of organic deposits. This is prevalent in the Sacramento – San Joaquin Delta area (Maurath, et. al., 2019).

In the San Joaquin Valley, large areas of subsidence have been mapped by the USGS (USGS, 2019). These maps show varying degrees of subsidence throughout the San Joaquin Valley during the 20th Century, with the greatest amount of subsidence occurring in areas located south of Merced, and in the vicinity of the Sacramento – San Joaquin Delta. Between 1925 and 1972, the USGS recorded 29 feet of subsidence in the agricultural areas south of Merced (Poland, 1975). In the San Joaquin Valley, state and federal projects have worked to reduce groundwater extraction, which has allowed some aquifers to partially recover and subsequently diminish the rate of subsidence in those areas. None of the project components are located in an area affected by that degree of subsidence, based on mapping performed by the USGS (USGS, 2017b).

Slope Stability

Landslides occur when a mass of rock, soil, or debris is displaced and moves downslope by sliding, flowing, or falling. Based on maps from the San Joaquin County General Plan (San Joaquin County, 2014b) the project's new power line alignment, Vierra Substation expansion site, and the remote Howland Road and Manteca substations, are located on well-drained sandy soil in areas not subject to landslides. Tracy and Kasson substations are located on clayey soil in areas also not subject to landslides. Because all of these project components are situated in areas that have relatively flat (zero to two percent slope) topography (**Table 5.7-2**), the likelihood of a landslide is remote.

[4] Referred to as WGCEP 2014, this is a working group comprised of seismologists from the U.S. Geological Survey (USGS), California Geological Survey (CGS), Southern California Earthquake Center (SCEC), and California Earthquake Authority (CEA).

Regulatory Setting

Federal

No federal regulations related to geology and soils apply to the project.

State

Alquist-Priolo Earthquake Fault Zoning Act. The Alquist Priolo Earthquake Fault Zoning Act was passed in 1972 to mitigate the hazard of surface faulting to structures for human occupancy. In accordance with this act, the State Geologist established regulatory zones, called "earthquake fault zones," around the surface traces of active faults and published maps showing these zones. Within these zones, buildings for human occupancy cannot be constructed across the surface trace of active faults. Each earthquake fault zone extends approximately 200 to 500 feet on either side of the mapped fault trace, because many active faults are complex and consist of more than one branch. There is the potential for ground surface rupture along any of the branches.

Seismic Hazards Mapping Act. The Seismic Hazards Mapping Act was passed in 1990 following the Loma Prieta earthquake to reduce threats to public health and safety and to minimize property damage caused by earthquakes. This act requires the State Geologist to delineate various seismic hazard zones, and cities, counties, and other local permitting agencies to regulate certain development projects within these zones. For projects that would locate structures for human occupancy within designated Zones of Required Investigation, the Seismic Hazards Mapping Act requires project applicants to perform a site-specific geotechnical investigation to identify the potential site-specific seismic hazards and corrective measures, as appropriate, prior to receiving building permits (Wills, et.al., 2008). The CGS Guidelines for Evaluating and Mitigating Seismic Hazards (Special Publication 117A) provides guidance for evaluating and mitigating seismic hazards (CGS, 2008). The CGS is in the process of producing official maps based on USGS topographic quadrangles, as required by the Act. The project area has not yet been evaluated.

California Building Code. The CBC, which is codified in Title 24 of the California Code of Regulations Part 2, was promulgated to safeguard the public health, safety, and general welfare by establishing minimum standards related to structural strength, means of egress to facilities (entering and exiting), and general stability of buildings. The purpose of the CBC is to regulate and control the design, construction, quality of materials, use/occupancy, location, and maintenance of all buildings and structures within its jurisdiction. The California Building Standards Commission administers Title 24, and, by law, is responsible for coordinating all building standards. Under state law, all building standards must be centralized in Title 24 or they are not enforceable. The provisions of the CBC apply to the construction, alteration, movement, replacement, repair, location, maintenance, and demolition of every building or structure or any appurtenances connected or attached to such buildings or structures throughout California.

While the project does not propose to erect any buildings or structures that would be occupied by people, it would remain under the purview of the CBC because the proposed towers, poles, foundations, retaining walls, etc., are considered structures. The California Health and Safety Code defines a "structure" as an edifice or building of any kind or any piece of work artificially built or composed of parts joined together in some definite manner (Health and Safety Code §18908). Title 24 also states that the construction, installation, alteration, removal, repair, or replacement of any electrical system are regulated by CBC.

Relevant to the project, Chapter 18 of the CBC covers the requirements of geotechnical investigations, including expansive soils (§1803); excavation, grading, and fills (§1804); load-bearing of soils (§1806); as

well as foundations (§1808), shallow foundations (§1809), and deep foundations (§1810) (CBC, 2016b). Chapter 18 requires analysis of slope instability, liquefaction, and surface rupture attributable to faulting or lateral spreading, plus an evaluation of lateral pressures on basement and retaining walls, liquefaction and soil strength loss, and lateral movement or reduction in foundation soil-bearing capacity. It also addresses mitigation measures to be considered in structural design, which may include ground stabilization, selecting appropriate foundation type and depths, selecting appropriate structural systems to accommodate anticipated displacements, or any combination of these measures. The potential for liquefaction and soil strength loss must be evaluated for site-specific peak ground acceleration magnitudes and source characteristics consistent with the design earthquake ground motions (CBC, 2016b).

Public Resources Code sections 5097.5 and 5097.9. These sections of state code, entitled Archaeological, Paleontological, and Historical Sites, defines any unauthorized disturbance or removal of a fossil site or remains on public land as a misdemeanor and specifies that state agencies may undertake surveys, excavations, or other operations as necessary on state lands to preserve or record paleontological resources.

Local

The project is not subject to local discretionary regulations because the CPUC has exclusive jurisdiction over the siting, design and construction of the project under CPUC General Order No. 131-D (CPUC, 2015). Local ordinance policies and requirements are summarized here for information purposes.

Local land use plans are an important resource for evaluating potential geologic hazards. The San Joaquin County General Plan and the City of Lathrop General Plan do not contain any designated, regionally-significant, or known geologic hazards in the proximity of the proposed project components. PG&E would obtain a building permit or other required ministerial permits if needed for construction of the perimeter wall at the Vierra Substation expansion site.

5.7.2 Applicant Proposed Measures

PG&E proposes to implement the following Applicant Proposed Measures (APMs) for geology and soils as part of the project.

APM GS-1: Minimization of construction above liquefiable soils or in soft or loose soils. PG&E will conduct geotechnical investigations prior to construction to identify liquefiable, soft, or loose soils, and implement design and civil engineering standards in accordance with California Building Code (2016) and to comply with California State General Order 95 (2015) standards.

APM CUL-5: Discovery of paleontological resources. If paleontological resources are discovered during construction activities, the following procedures will be followed*:*

- Stop work immediately within 100 feet of the discovery.
- Contact the designated project inspector PG&E CRS, and the CPUC immediately.
- Protect the site from further impacts, including looting, erosion, or other human or natural damage.
- PG&E's CRS will arrange for a Principal Paleontologist to evaluate the discovery. If the discovery is determined to be significant, PG&E will consult with the CPUC and implement appropriate measures to protect and document the paleontological resource. Examples of such measures include:

establishing recovery standards, preparing specimens for identification and preservation, and securing a curation agreement from the appropriate agency.

- Work may not resume within 100 feet of the find until approval by the paleontologist and PG&E CRS, and the CPUC.

5.7.3 Environmental Impacts and Mitigation Measures

Approach to Analysis

The following impact analysis considers the potential geology, soils, and seismicity impacts associated with the construction, operation and maintenance of the project. Impacts related to geologic and seismic hazards would be considered significant if they resulted in injury, structural collapse, unrepairable facility or utility damage, or severe service disruption. This analysis assumes that construction and design of project components would utilize standard site preparation practices, engineering designs, and seismic safety techniques that are required under the CBC (CBC, 2016a; 2016b) and other state and local geologic hazard regulations. Soil settlements, earthquake shaking, and/or liquefaction would not be considered significant in cases where structural damage would be minor, undetectable, repairable, or would otherwise not pose substantial risk to the public or the environment.

The California Environmental Quality Act (CEQA) requires analysis of a project's effects on the environment; consideration of the potential effects of a site's environment on a project are outside the scope of required CEQA review (California Building Industry Association v. Bay Area Air Quality Management District [2015] 62 Cal. 4th 369). As stated in Ballona Wetlands Land Trust v. City of Los Angeles (2011) 201 Cal.App.4th 455, 473: "[T]he purpose of an EIR is to identify the significant effects of a project on the environment, not the significant effects of the environment on the project." The impacts discussed in this section related to increased exposure of people or structures to risks associated with seismic occurrences and location of people or structures on unstable geologic units are effects on users of the project and structures in the project of preexisting environmental hazards, and therefore do not relate to environmental impacts under CEQA.

a. Would the project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:

i. rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.

Construction

NO IMPACT. The probability that construction of the proposed new power line, Vierra Substation expansion, and modifications at Howland Road, Kasson, Manteca, or Tracy substations would have an impact on the risk of loss, injury, or death involving rupture of an earthquake fault during construction is remote. There are no mapped Alquist-Priolo Earthquake Fault Zones for active faults in San Joaquin County, and none of the project elements are located within an earthquake fault zone. Several potentially active faults have been mapped outside of the general project area, the closest being the Vernalis fault, which is located approximately 5.25 miles southwest of the proposed Vierra Substation expansion (**Figure 5.7-3**). Therefore, no impacts related to fault rupture would be likely to occur at

the sites of the new power line, Vierra Substation expansion, and the remote Howland Road, Kasson, Manteca, or Tracy substations.

Operation and Maintenance

NO IMPACT. The probability that operation or maintenance of the project's new power line, Vierra Substation expansion, or the modified Howland Road, Kasson, Manteca, or Tracy substations would have an impact on the risk of loss, injury, or death involving rupture of an earthquake fault during construction is remote. There are no mapped Alquist-Priolo Earthquake Fault Zones for active faults in San Joaquin County. Several potentially active faults have been mapped for locations outside of the general project area, the closest is the Vernalis fault, located approximately 5.25 miles southwest of the Vierra Substation expansion (see **Figure 5.7-3**). The zone of damage associated with a rupture of that fault would be limited to a relatively narrow area along either side of the fault. Therefore, no impacts related to fault rupture would be likely to occur in the vicinity of the project.

ii. Would the project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving strong seismic ground shaking?

Construction

LESS THAN SIGNIFICANT IMPACT. Strong seismic ground shaking could occur in the study area because there are active fault zones near the project. The greatest potential for seismic ground shaking within the general project area comes from the Marsh Creek-Greenville Section of the Greenville Fault. According to USGS ShakeMap data, the study area may experience strong to very strong ground shaking in the event of an earthquake on this fault. While the project would be located in a seismically active area, the substations and associated infrastructure would not be used for human occupancy, nor would any project components exacerbate the existing risk of seismic shaking or associated hazards. All project components would be designed and constructed in a manner consistent with California Public Utilities Commission (CPUC) General Order 95 (CPUC, 2015) and the applicable sections of the CBC, as required by state law. Although a final geotechnical report would be required as part of the final design as required by the CBC, the preliminary investigation did not include analysis of the proposed new power line and associated structures, nor did it include analysis of the Howland Road, Kasson, Manteca, or Tracy substations. Additionally, the 2019 CBC update is now available, and would need to incorporated into the final geotechnical report as well.

Implementation of APM GS-1 would ensure seismic ground motions are considered in the project design and construction of each project component. These design measures would further ensure impacts are less than significant. All work would comply with federal and state Occupational Safety and Health Administration (OSHA) requirements, which would also help minimize risks to workers.

PG&E shall submit the final geotechnical report to the CPUC for review and approval at least 30 days prior to the start of construction. Adherence to CPUC General Order 95 and the CBC, which require the project adhere to and implement the seismic design recommendations of the Preliminary Geotechnical Recommendations Report and the final geotechnical report, would ensure that impacts associated with seismic ground shaking would be less than significant.

Mitigation Measures: None recommended.

Operation and Maintenance

LESS THAN SIGNIFICANT IMPACT. Operation and maintenance activities for the new power line, Vierra Substation expansion, Howland Road Substation, and the new microwave monopoles at Kasson, Manteca, and Tracy substations would not differ materially from existing operations and maintenance activities and ordinarily would not include placement of new structures that would be subject to strong seismic ground shaking. During day-to-day operations, these project components would continue to be unattended, and operated and monitored remotely, which reduces the potential to expose people to hazards from ground shaking. If pole replacement were necessary, design requirements and best management practices similar to those in APM GS-1 would be implemented. Therefore, risks to people or structures from strong seismic ground-shaking would continue to be less than significant.

Mitigation Measures: None recommended.

iii. Would the project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving seismic-related ground failure, including liquefaction?

Construction

LESS THAN SIGNIFICANT IMPACT. The project area has not been evaluated by the CGS or USGS for liquefaction potential. The soil and groundwater conditions in the vicinity of Vierra Substation are consistent with moderate to high liquefaction potential. The soil and groundwater conditions beneath Howland Road and Manteca substations are expected to be similar to the conditions beneath the Vierra Substation expansion. Therefore, there could be an impact related to liquefaction hazards for these components of the project.

However, project construction would comply with federal and state OSHA requirements and design and civil engineering standards, which would decrease risks to construction personnel. The project would also be required to adhere to the standards and guidelines set forth by the CBC, which would require that a site-specific geotechnical investigation be performed to identify any potential geotechnical hazards, as well as provide recommendations to address any identified hazards.

Lateral spreading is closely related to liquefaction and typically occurs at a free face such as along a water front or some other exposed sloped area. The proposed new power line alignment, Vierra Substation expansion, and remote Howland Road, Kasson, Manteca, and Tracy substations are not located near a waterfront nor exposed slope; therefore, the potential for any of these project components to expose people or structures to substantial adverse effects involving lateral spreading is remote. There would be no impact.

Mitigation Measures*:* None recommended.

Operation and Maintenance

LESS THAN SIGNIFICANT IMPACT. Operation and maintenance activities for the new power line, Vierra Substation expansion, Howland Road Substation modifications, and the new microwave monopoles at Kasson, Manteca, and Tracy substations would not differ materially from existing operations and maintenance activities. During day-to-day operations, these project components would continue to be remotely operated and monitored. Thus, as no staff would be onsite, no personnel would be

affected by these potential hazards. In the event of necessary pole replacement or similar maintenance, design requirements and best management practices similar to those in APM GS-1 would be implemented. Therefore, impacts related to risks to people or structures from seismic-related ground-failure would be less than significant.

Mitigation Measures: None recommended.

iv. Would the project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving Landslides?

Construction

NO IMPACT. There would be no impact from landslides. The new power line alignment, Vierra Substation expansion site, Howland Road Substation modifications, and the new microwave monopoles at Kasson, Manteca, and Tracy substations are all located on very mildly sloping terrain and are not located in areas subject to landslides identified in the San Joaquin County General Plan (San Joaquin County, 2014b). Grading for the Vierra Substation expansion would not create steep slopes. Construction of the project would not directly or indirectly cause a landslide.

Operation and Maintenance

NO IMPACT. Operation and maintenance activities would not change materially from existing activities and would not include construction or grading of new slopes. For these reasons, and because the project components are not located in areas subject to landslides as identified in the San Joaquin County General Plan (San Joaquin County, 2014b), no impact would occur.

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b. Would the project result in substantial soil erosion or the loss of topsoil?

Construction

LESS THAN SIGNIFICANT IMPACT. Construction of the proposed new power line, Vierra Substation expansion, Howland Road Substation modifications, and the new microwave monopoles at Kasson, Manteca, and Tracy substations would not result in substantial soil erosion or loss of topsoil. Power pole installation would require excavation, some of which would occur in soils on mild slopes that have a moderate wind erosion potential (San Joaquin County, 2014b). In addition, grading and/or scraping and vegetation clearing would be required to expand Vierra Substation, and may be required for establishing construction work areas and access roads. Substantial storm water erosion is known to occur on steeper sloping hillsides. Because the project components are located on very mildly sloping to relatively flat topography, the potential for substantial soil erosion is reduced. In addition, storm water erosion of soil and topsoil at the project components would be managed by using the SWPPP and BMPs (APM HYD-1) (see Section 5.10, *Hydrology and Water Quality*), which would address impacts related to soil erosion or loss of topsoil. Wind erosion, a common phenomenon occurring mostly in flat, bare areas, especially those with dry sandy soils, could occur during construction, particularly at the substation expansion while grading is taking place. BMPs would help ensure that any impacts from wind-related soil erosion or loss of topsoil would be less than significant. All work would comply with federal and state OSHA requirements, which would help minimize risks to workers. Implementation of APM GS-1 when encountering unconsolidated soil material would ensure less-than-significant impacts.

Mitigation Measures: None recommended.

Operation and Maintenance

NO IMPACT. Operation and maintenance of the new power line, Vierra Substation expansion, Howland Road Substation modifications, and the new microwave monopoles at Kasson, Manteca, and Tracy substations would not change materially from existing activities and would not cause soil erosion or loss of topsoil. Occasional minor surface disturbance may continue to be required during inspections and maintenance or on an as-needed basis, but such disturbance would be temporary and small. Continuing operation and maintenance work would not result in increased erosion or topsoil loss and therefore, no impacts associated with erosion or loss of topsoil would occur.

Mitigation Measures: None recommended.

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c. Would the project be located on geologic units or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?

Construction

LESS THAN SIGNIFICANT IMPACT. Construction of the new power line, Vierra Substation expansion, Howland Road Substation modifications, and the new microwave monopoles at Kasson, Manteca, and Tracy substations would be located on a geologic unit or soil that may become unstable; however, the soils are unlikely to become unstable as a result of the project. Portions of the project components may become unstable if an earthquake generates significant ground shaking during construction, but impacts would be minimized through implementation of APM GS-1.

As previously discussed, the Preliminary Geotechnical Recommendations Report by Kleinfelder recognizes the possibility of soil liquefaction at the Vierra Substation; however, the soils underlying the other project components were not analyzed. Specifically, the new power lines and associated structures, and the Howland, Kasson, Manteca, and Tracy substations. The project would be required to adhere to the standards and guidelines set forth by the CBC, which would require that a site-specific geotechnical investigation be performed to identify any potential geotechnical hazards, as well as provide recommendations to address any identified hazards. If significant impacts arise from that investigation, appropriate design recommendations would be implemented. Adherence to these measures would reduce impacts to a less-than-significant level.

Ground cracking is typically a problem on narrow-crested, steep-sided ridges or in close proximity to fault rupture zones. The new power line, Vierra Substation expansion, Howland Road Substation modifications, and the new microwave monopoles at Kasson, Manteca, and Tracy substations are all located on very mildly sloping to level topography and there are no fault rupture hazard zones identified for any of the project components. Incorporation of standard engineering practices as part of the project would reduce the probability that people or structures are exposed to geological or seismic hazards. Therefore, there would be no impacts due to ground cracking.

Mitigation Measures: None recommended.

Operation and Maintenance

NO IMPACT. Operation and maintenance activities associated with the new power line, Vierra Substation expansion, Howland Road Substation modifications, and the new microwave monopoles at Kasson, Manteca, and Tracy substations would not change materially from existing activities and would not introduce new soil stability hazards. Inspections and routine maintenance would occur on an occasional basis. Therefore, no impact would occur.

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d. Would the project be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?

Construction

LESS THAN SIGNIFICANT IMPACT. Expansive soil behavior is a condition where clay soils react to changes in moisture content by expanding or contracting. Poorly-drained soils have greater shrink-swell potential. According to the NRCS, the soil types identified within the proposed new power line alignment, Vierra Substation expansion site, Howland Road Substation, and the new microwave monopole site at the Manteca Substation are characterized as having low linear extensibility, and therefore low expansion potential. The impact at these project components would be less than significant.

The soils at Kasson and Tracy substations are characterized as having a high to very high linear extensibility rating, indicating a high expansion potential. As mentioned above, the 2016 preliminary geotechnical investigation by Kleinfelder provides recommendations for the non-expansive engineered soil that is to be used at the site to address any potential soil expansion at the site. Additionally, the project would be required to adhere to the standards and guidelines set forth by the CBC, which include guidelines for addressing expansive soils. A final site-specific geotechnical investigation be performed to identify potential geotechnical hazards, as well as provide recommendations to address any identified hazards. Adherence to the soil engineering requirements of the CBC, would reduce potentially significant impacts at Kasson and Tracy substations related to expansive soils to less than significant.

Mitigation Measures: None recommended.

Operation and Maintenance

LESS THAN SIGNIFICANT IMPACT. None of the natural soil types identified within the new power line, Vierra Substation expansion, Howland Road Substation, and the new microwave monopole at the Manteca Substation are characterized as having high clay content and poor drainage with moderate to high shrink-swell potential. Therefore, no impact would occur from ongoing operations and maintenance activities.

The soil at Kasson and Tracy substations is characterized as having high linear extensibility, which correlates with expansive soil conditions. This could affect the stability of the monopole foundations proposed for these project components, but impacts would be minimized through implementation of APM GS-1. Therefore, impacts would be less than significant.

Mitigation Measures: None recommended.

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e. Would the project have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?

Construction

NO IMPACT. The proposed project does not include a septic tanks or alternative wastewater disposal systems. Therefore, no construction, operation, or maintenance impacts would occur.

Operation and Maintenance

NO IMPACT. Ongoing operation and maintenance activities at the project components would not introduce septic tanks or waste water disposal systems; therefore, no impacts related to septic tanks or wastewater disposal systems would occur.

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f. Would the project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

Construction

LESS THAN SIGNIFICANT IMPACT. Project impacts on paleontological resources were evaluated based on an assessment of the paleontological sensitivity of identified geologic formations in relation to the project activities. No previously recorded fossil localities occur within the proposed new power line alignment, Vierra Substation expansion site, or Howland Road, Kasson, Manteca, and Tracy substations. However, Pleistocene-aged mammalian fossils have been found within San Joaquin County, and similar fossils may be encountered during excavation into the moderate paleontologically sensitive (PFYC 3) Modesto Formation and Quaternary Alluvial Fan deposits (San Joaquin County, 2014b).

Based on the ground disturbance necessary to complete the project components, there is a limited potential for adverse impacts to scientifically significant paleontological resources with moderate sensitivity (PFYC 3). Pleistocene-age Modesto Formation and Alluvial Fan deposits (Qm and Qf) may be encountered along the eastern portion of the new power line alignment, Vierra Substation expansion site, and Howland Road, Kasson, Manteca, and Tracy substations. These same moderate sensitivity (PFYC 3) units (Qm and Qf) may also be encountered along the western portion of the power line alignment where excavations would extend below low sensitivity (PFYC 2) Dos Palos Alluvium (Qdp) (see **Figure 5.7-2**). The exact depth at which the Modesto Formation and Alluvial Fan deposits (Qm and Qf) would be encountered within the project area beneath the Dos Palos Alluvium (Qdp) is uncertain.

Construction at the Vierra Substation expansion site would include excavation for a 6-foot deep and 25 feet by 25 feet square lattice tower foundation. Poles for the new power line would require drilling holes up to 6 feet in diameter and up to 30 feet deep. Construction at the Howland Road substation would include an approximately 228-foot long by 5-foot wide by 5-foot deep trench for the 115 kV Tap cable bank and two foundation piers, one 4 feet in diameter and one 2 feet in diameter, which are 12 feet and 9 feet deep, respectively (PGE, 2018a). Given the limited depth and area of excavation

for the substation expansion, towers, and poles, and lack of any known or recorded fossils, and moderate paleontological resource sensitivity, there is a limited potential that scientifically significant fossils would be recovered during construction. With projected excavations of 11 feet by 11 feet and 4 feet deep at Tracy, Manteca, and Kasson substations, there would also be limited potential that scientifically significant fossils would be recovered during foundation construction at these sites. In addition, potential impacts resulting from these project components would be reduced with implementation of APMs CUL-1 and CUL-5. APM CUL-1 would require environmental awareness training of crews and actions to implement if paleontological resources are encountered during construction and procedures for procuring and protecting fossils if encountered. APM CUL-5 would require protection of the fossil site from further impacts, including looting, erosion, or other human or natural damage. A Principal Paleontologist would then evaluate the discovery. If the discovery were determined to be significant in terms of its uniqueness, PG&E would consult with the CPUC and implement appropriate measures to protect and document the paleontological resource. Therefore, impacts to paleontological resources would be less than significant.

Mitigation Measures: None recommended.

Operation and Maintenance

NO IMPACT. Operation and maintenance activities would not change materially from current activities at the existing substations. There would be no impact to paleontological resources.

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5.8 Greenhouse Gas Emissions

This section describes the environmental and regulatory setting and discusses impacts associated with the construction and operation of the project with respect to greenhouse gas (GHG) emissions. Analysis of greenhouse gas emissions impacts encompasses construction and operation of all project components.

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?	☐	☐	☒	☐
b. Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☐	☐	☒

Environmental checklist established by California Environmental Quality Act Guidelines, Appendix G.

5.8.1 Setting

Environmental Setting

Gases that trap heat in the atmosphere are called GHGs. The principal GHGs that contribute to global warming and climate change include carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), black carbon, and fluorinated gases (F-gases) such as hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6). The anthropogenic GHGs that are emitted in the greatest quantities are CO_2 and CH_4. Emissions of CO_2 are largely by-products of fossil fuel combustion, whereas CH_4 results mostly from off-gassing associated with agricultural practices and landfills.

Each GHG has its own potency and effect upon the Earth's energy balance, expressed in terms of a global warming potential (GWP), with CO_2 being assigned a value of 1. Specifically, the GWP is a measure of how much energy the emissions of 1 ton of a gas will absorb over a given period of time, relative to the emissions of 1 ton of CO_2. The larger the GWP, the more that a given gas warms the Earth compared to CO_2 over that time period. The time period usually used for GWPs is 100 years.

For example, CH_4 has a GWP of 28 over 100 years from the Fifth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC, 2013), which means that it has a global warming effect 28 times greater than CO_2 on an equal-mass basis. The F-gases are sometimes called high-GWP gases because, for a given amount of mass, they trap substantially more heat than CO_2. The GWPs for these gases can be in the thousands or tens of thousands. The CO_2 equivalent (CO_2e) for a source is obtained by multiplying each quantity of GHG by its GWP and then adding the results together to obtain a single, combined emission rate representing all GHGs in terms of CO_2e.

An expanding body of scientific research supports the theory that global climate change is currently affecting weather patterns, average sea levels, ocean acidification, chemical reaction rates, and precipitation rates, and that it will increasingly do so in the future. The climate and several naturally occurring resources within California could be adversely affected by global climate change. Increased precipitation and sea level rise could increase coastal flooding, saltwater intrusion, and degradation of wetlands. Mass migration and/or loss of plant and animal species could also occur. Potential effects of global climate change that could adversely affect human health include more extreme heat waves and heat-related stress; an increase in climate-sensitive diseases; more frequent and intense natural disasters such as flooding, hurricanes, and drought; and increased levels of air pollution. There is also growing

evidence that anthropogenic climate change is increasing the frequency and magnitude of wildfires (Abatzoglou and Williams, 2016).

California is a substantial contributor to global GHG emissions. The total gross California GHG emissions in 2017 were 424.1 million metric tons (MMT) of CO_2e (CARB, 2019). The largest source of GHG emissions in California is transportation, followed by industrial activities and electricity generation in state and out of state (CARB, 2019). In 2017, total gross United States (U.S.) greenhouse gas emissions were 6,456.7 MMT of CO_2e (U.S. EPA, 2019).

Regulatory Background

Federal

Endangerment Finding and Cause or Contribute Finding. In April 2007, the U.S. Supreme Court held that GHG emissions are pollutants within the meaning of the Clean Air Act (CAA). In reaching its decision, the Court also acknowledged that climate change results, in part, from anthropogenic causes (*Massachusetts et al. v. Environmental Protection Agency*, 549 U.S. 497 (2007)). The Supreme Court's ruling paved the way for the regulation of GHG emissions by the United States Environmental Protection Agency (U.S. EPA) under the CAA.

In response to this Supreme Court decision, on December 7, 2009, the U.S. EPA Administrator signed two distinct findings regarding GHGs under the CAA, section 202(a):

- Endangerment Finding: That the current and projected concentrations of the GHGs in the atmosphere threaten the public health and welfare of current and future generations; and
- Cause or Contribute Finding: That the combined emissions of GHGs from new motor vehicles and new motor vehicle engines contribute to the GHG pollution, which threatens public health and welfare.

Mandatory Reporting of Greenhouse Gases Rule. In 2009, the U.S. EPA issued the Final Mandatory Reporting of Greenhouse Gases Rule, which requires reporting of GHG emissions from large sources and suppliers in the United States (U.S.). This rule requires suppliers of fossil fuels and industrial GHGs, manufacturers of vehicles and engines outside of the light-duty sector, and facilities that emit more than 25,000 metric tons of CO_2e ($MTCO_2e$) per year to submit annual reports to the U.S. EPA. The rule is intended to collect accurate and timely emissions data to guide future policy decisions on climate change.

Prevention of Significant Deterioration and Title V Tailoring Rule. Previously, the U.S. EPA has mandated that Prevention of Significant Deterioration (PSD) and Title V requirements apply to facilities whose stationary source CO_2e emissions exceed 100,000 tons per year. However, the Supreme Court decision in *Utility Air Regulatory Group v. EPA et al.*, 573 U.S. 302 (2014), found that the U.S. EPA does not have the authority to require PSD and Title V permitting for facilities based solely on GHG emissions. The Supreme Court also found that the U.S. EPA can regulate GHG emissions from sources which are already subject to PSD and Title V requirements due to emissions of other pollutants.

40 C.F.R. Part 98. Use of Electric Transmission and Distribution Equipment. Pursuant to federal regulations (i.e., 40 C.F.R. Part 98, Subpart DD) operators of certain electrical facilities, such as SF_6-containing circuit breakers, are required to report SF_6 emissions to the U.S. EPA (U.S. EPA, 2016). SF_6-containing circuit breakers associated with the project would be subject to reporting under this regulation.

State

Executive Order S-3-05. State Executive Order (EO) S-3-05, issued in 2005, established GHG emissions reduction targets for the state of California. The targets called for a reduction of GHG emissions to 2000 levels by 2010, 1990 levels by 2020, and 80 percent below 1990 levels by 2050. The California EPA secretary is required to coordinate development and implementation of strategies to achieve the GHG reduction targets.

GHG Environmental Performance Standard. In 2006, the California Public Utilities Commission (CPUC) and California Energy Commission established requirements for the utilities under Senate Bill (SB) 1368[1] (Stats. 2006), which requires that generation and contracts be subject to a GHG Environmental Performance Standard of 1,100 pounds (or 0.5 metric tons) of CO_2 per megawatt-hour (MWh) of electricity produced. The Environmental Performance Standards applies to base load power from new power plants, new investments in existing power plants, and new or renewed contracts with terms of five years or longer, including contracts with power plants located outside of California.[2]

Global Warming Solutions Act of 2006. In 2006, the California State Legislature signed the Global Warming Solutions Act of 2006, or Assembly Bill (AB) 32, which provides the framework for regulating GHG emissions in California. This law requires the California Air Resources Board (CARB) to design and implement emission limits, regulations, and other measures such that statewide GHG emissions are reduced in a technologically feasible and cost-effective manner to 1990 levels by 2020.

Early Action Measures. AB 32 required CARB to identify and adopt regulations for discrete early action GHG reduction measures that could be enforceable on or before January 1, 2010 (Health and Safety Code section 38560.5). In October 2007, CARB adopted 44 Early Action Measures, nine of which are consistent with the AB 32 definition of discrete early action measures (CARB, 2007). These discrete early action measures included the Low Carbon Fuel Standard, Restrictions on High Global Warming Potential Refrigerants, Landfill Methane Capture, SF_6 Reductions in the Non-Electric Sector, Reduction of High GWP GHGs in Consumer Products, SmartWay Truck Efficiency, Tire Inflation Program, Reduction of perflurochemicals (PFCs) from the Semiconductor Industry, and Green Ports (CARB, 2007).

AB 32 Scoping Plan. Part of CARB's direction under AB 32 was to develop a Scoping Plan that contains the main strategies California will use to reduce GHG emissions that cause climate change. CARB first approved the AB 32 Scoping Plan in 2008 and released its first update in 2014. The Scoping Plan includes a range of GHG reduction actions, which include direct regulations, alternative compliance mechanisms, monetary and non-monetary incentives, voluntary actions, market-based mechanisms such as a cap-and-trade system, and an AB 32 cost of implementation fee regulation to fund the program. In December 2007, CARB set the statewide 2020 emissions limit at 427 $MMTCO_2e$. The May 2014 First Update to the Climate Change Scoping Plan adjusted the statewide 2020 emissions limit to 431 $MMTCO_2e$ (CARB, 2014). This emission limit goal was achieved ahead of schedule by 2016.

Advanced Clean Cars. In January 2012, CARB approved a new emissions-control program for vehicles of model years 2017 through 2025. The program combines the control of smog, soot, and GHG into a single package of standards referred to as the Advanced Clean Cars program (Cal. Code Regs., tit. 13, §§ 1962.1, 1962.2). The Advanced Clean Cars requirements include new GHG standards for vehicle model years 2017 to 2025. The Advanced Clean Cars Program also includes amendments to the low emission vehicle

[1] Public Utilities Code § 8340 et seq.
[2] See Rule at http://www.cpuc.ca.gov/PUBLISHED/FINAL_DECISION/64072.htm

amendments (referred to as the LEV III regulations; Cal. Code Regs., tit. 13, § 1900 et seq.), a zero emission vehicle regulation, and a regulation referred to as the Clean Fuels Outlet Regulation.

Executive Order B-30-15. On April 29, 2015, Governor Brown issued EO B-30-15, directing state agencies to implement measures to reduce GHG emissions 40 percent below their 1990 levels by 2030 and to achieve the previously-stated goal of an 80 percent GHG reduction by 2050.

Renewable Energy Programs. In 2002, California initially established its Renewables Portfolio Standard, with the goal of increasing the percentage of renewable energy in the state's electricity mix to 20 percent by 2017. State energy agencies recommended accelerating that goal, and California EO S-14-08 (November, 2008) required California utilities to reach the 33 percent renewable electricity goal by 2020, consistent with the AB 32 Scoping Plan. In April 2011, Senate Bill 2 of the First Extraordinary Session (SB X1-2) was signed into law. SB X1-2 expressly applies the new 33 percent Renewables Portfolio Standard by December 31, 2020, to all retail sellers of electricity and establishes renewable energy standards for interim years prior to 2020. On October 7, 2015, SB 350 was signed into law, establishing new clean energy, clean air, and GHG reduction goals for 2030 and beyond. SB 350 increases California's renewable electricity procurement goal from 33 percent by 2020 to 50 percent by 2030.

Mobile Source Strategy. In May 2016, CARB prepared the Mobile Source Strategy, which addressed the current and proposed programs for reducing all mobile source emissions including GHG emissions. The Mobile Source Strategy identifies programs that the state and federal government have or will adopt, which further the goals of the Scoping Plan. Some programs provide incentives to facilitate increased purchase of new, lower emission light-, medium-, and heavy-duty vehicles to aid the state in achieving emission reduction goals. Other programs such as the On-Road, Low-NOx, and Zero-Emission Technology Program require vehicle manufacturers to offer engines that reduce NOx emissions 90 percent from current levels. This will have a co-benefit for reducing GHG emissions depending on how this goal is met (CARB, 2016). These programs calling for more stringent emissions limits are required by state and federal law and monitored by CARB or U.S. EPA.

Senate Bill 1383. SB 1383 of 2016 (Stats. of 2016) sets forth legislative direction for control of short lived climate pollutants. It required CARB to approve and begin implementing its short lived climate pollutants strategy to achieve the following reductions in emissions by 2030 compared to 2013 levels: methane by 40 percent, hydrofluorocarbons by 40 percent, and black carbon (non-forest) by 50 percent.

Senate Bill 32 and Assembly Bill 197. On September 8, 2016, SB 32, codified as Section 38566 of the Health and Safety Code, was enacted. It extended California’s commitment to reduce GHG emissions by requiring the state to reduce statewide GHG emissions by 40 percent below 1990 levels by 2030. A companion bill, AB 197, assures that the state’s implementation of its climate change policies is transparent and equitable, with the benefits reaching disadvantaged communities. In response, CARB updated the AB 32 Scoping Plan in November 2017 to establish a path that will get California to its 2030 target (CARB, 2017a).

SF_6 Regulation. A Regulation for Reducing SF_6 Emissions from Gas Insulated Switchgear was implemented as part of AB 32, mandating utility-wide reduction of SF_6 emissions to a 1 percent leak rate by 2020 (Calif. Code of Regs., title 17, §§ 95350 to 95359). In pending amendments to these sections dated November 16, 2017, CARB proposes to phase out using SF_6 in switchgear effective January 1, 2025 (CARB, 2017b). Since the project is expected to become operational in 2023 or earlier, the phase-out provision would not be applicable to this project.

Regional

As mentioned in Section 5.3, *Air Quality*, construction of the project components would occur in two air basins: the San Joaquin Valley Air Basin (SJVAB) and the San Francisco Bay Area Air Basin (SFBAAB). Construction of the new power line, the Vierra Substation expansion, and modifications at the remote Howland Road, Kasson, Manteca, Tracy, and Ripon Cogen substations, and Mount Oso tower would all be in the SJVAB. Work at the remote Tesla Substation and Highland Peak communication tower would be in the SFBAAB. The SJVAB is under jurisdiction of SJVAPCD and the SFBAAB is under jurisdiction of BAAQMD.

Most project-related GHG emissions would occur in the SJVAB. In August 2008, the SJVAPCD's Governing Board adopted the Climate Change Action Plan. The Climate Change Action Plan directed the SJVAPCD's Air Pollution Control Officer to develop guidance to assist lead agencies, project proponents, permit applicants, and interested parties in assessing and reducing the impacts of project-specific GHG emissions on global climate change (SJVAPCD, 2008).

On December 17, 2009, the SJVAPCD adopted the District Policy: Addressing GHG Emission Impacts for Stationary Source Projects Under CEQA [California Environmental Quality Act] When Serving as the Lead Agency (SJVAPCD, 2009a). The SJVAPCD also approved the guidance document: Guidance for Valley Land-Use Agencies in Addressing GHG Emission Impacts for New Projects Under CEQA (SJVAPCD, 2009b). According to these documents, projects complying with an approved GHG emission reduction plan or GHG mitigation program, which avoids or substantially reduces GHG emissions within the geographic area in which the project is located, would be determined to have a less-than-significant individual and cumulative impact for GHG emissions. These policies are cited in the most recent SJVAPCD Guidance for Assessing and Mitigating Air Quality Impacts (SJVAPCD, 2015). Where an approved GHG emission reduction program is not in place, or the project would not comply with it, the guidance documents recommend reliance on the use of Best Performance Standards (BPS) as a basis for assessing the significance of project GHG emissions on global climate change under CEQA. Projects implementing BPS would have less-than-significant impacts for GHG emissions. Projects that do not comply with an approved GHG emission reduction plan or use BPS must demonstrate a 29 percent reduction in GHG emissions from business-as-usual in order to be determined to have a less-than-cumulatively-significant impact on global climate change. The SJVAPCD guidance does not limit a lead agency's authority to establish its own process and guidance for determining significance of project-related impacts on global climate change (SJVAPCD, 2009b).

A minor portion of project-related GHG emissions would occur in the SFBAAB. The BAAQMD adopted the 2017 Bay Area Clean Air Plan (2017 CAP) on April 19, 2017 (BAAQMD, 2017a). The 2017 CAP provides a regional strategy to protect public health and protect the climate. To protect public health, the plan describes how the BAAQMD will continue its progress toward attaining all state and federal ambient air quality standards and eliminating health risk disparities from exposure to air pollution among Bay Area communities. To protect the climate, the plan defines a vision for transitioning the region to a post-carbon economy needed to achieve ambitious GHGs reduction targets for 2030 and 2050, and provides a regional climate protection strategy that will put the Bay Area on a pathway to achieve those GHG reduction targets.

BAAQMD publishes CEQA guidelines to assist lead agencies in evaluating a project's impacts on air quality (BAAQMD, 2017b). This document describes the criteria that BAAQMD uses when reviewing and commenting on the adequacy of environmental documents. It recommends thresholds for use in determining whether a project would have significant adverse environmental impacts, identifies methodologies for predicting project emissions and impacts, and identifies measures that can be used to

avoid or reduce air quality impacts. The BAAQMD CEQA Guidelines also outline a methodology for estimating GHG emissions.

Local

The project is not subject to local discretionary regulations because the CPUC has exclusive jurisdiction over the siting, design, and construction of the project under CPUC General Order No. 131-D. Regardless, there are no local ordinance policies or requirements that would be directly applicable to the project.

5.8.2 Applicant Proposed Measures

Pacific Gas and Electric (PG&E) proposes to implement the following Applicant Proposed Measures (APMs) for GHG emissions as part of the project.

Construction

APM GHG-1: Minimize GHG Emissions. The following procedures will be implemented:

- Minimize unnecessary construction vehicle idling time. The ability to limit construction vehicle idling time will depend on the sequence of construction activities and when and where vehicles are needed or staged. Certain vehicles, such as large diesel-powered vehicles, have extended warm-up times following start-up that limit their availability for use following start-up. Where such diesel-powered vehicles are required for repetitive construction tasks, these vehicles may require more idling time. The project will apply a "common sense" approach to vehicle use, so that idling is reduced as far as possible below the maximum of 5 consecutive minutes allowed by California law; if a vehicle is not required for use immediately or continuously for construction activities, its engine will be shut off. Construction foremen will include briefings to crews on vehicle use as part of pre-construction conferences. Those briefings will include discussion of a "common sense" approach to vehicle use.
- Maintain construction equipment in proper working conditions in accordance with PG&E standards.
- Minimize construction equipment exhaust by using low-emission or electric construction equipment where feasible. Portable diesel fueled construction equipment with engines 50 hp or larger and manufactured in 2000 or later will be registered under the CARB Statewide Portable Equipment Registration Program.
- Minimize welding and cutting by using compression of mechanical applications where practical and within standards.
- Encourage the recycling of construction waste where feasible.

Operation and Maintenance

PG&E would employ standard BMPs—such as minimizing vehicle trips and keeping vehicles and equipment well maintained during operation. PG&E would also implement the following APM that is specifically related to avoidance and minimizing potential SF_6 emissions.

APM GHG-2: Minimize SF_6 Emissions. The following procedures will be implemented:

- Incorporate the new breakers to be installed at Vierra Substation into PG&E's system-wide SF_6 emission reduction program. CARB has adopted the Regulation for Reducing Sulfur Hexafluoride Emissions from Gas Insulated Switchgear sections 95350 to 95359, title 17, California Code of Regulations, which requires that company-wide SF_6 emission rate not exceed 1 percent by 2020. Since

1998, PG&E has implemented a programmatic plan to inventory, track, and recycle SF_6 inputs, and inventory and monitor system-wide SF_6 leakage rates to facilitate timely replacement of leaking breakers. PG&E has improved its leak detection procedures and increased awareness of SF_6 issues within the company. X-ray technology is now used to inspect internal circuit breaker components to eliminate dismantling of breakers, reducing SF_6 handling and accidental releases. As an active member of EPA's SF_6 Emission Reduction Partnership for Electrical Power Systems, PG&E has focused on reducing SF_6 emissions from its transmission and distribution operations.

- Require that the new breakers at Vierra Substation have a manufacturer's guaranteed maximum leakage rate of 0.5 percent per year or less for SF_6.
- Maintain substation breakers in accordance with PG&E's maintenance standards.
- Comply with California Air Resources Board Early Action Measures as these policies become effective.

5.8.3 Environmental Impacts and Mitigation Measures

Methodology

PG&E estimated the project's short-term construction GHG emissions using CalEEMod version 2016.3.1, with the exception of helicopter emissions, which were estimated manually using emissions factors obtained from the California Climate Action Registry and data from the Federal Office of Civil Aviation. PG&E also evaluated long-term operational GHG emissions. These emissions are a result of potential leakage from new SF_6-insulated circuit breakers. PG&E did not estimate the GHG emissions associated with inspections and ongoing maintenance activities (primarily associated with periodic maintenance vehicle travel), as these activities are part of PG&E's existing and ongoing operations. Changes to PG&E's ongoing operations as a result of the project are expected to be negligible.

CPUC staff reviewed PG&E's emission estimates and found them to be technically adequate with the following exceptions. The short-term construction emissions estimates provided by PG&E do not include emissions estimates associated with construction activities for the remote Ripon Cogen and Tesla substations or indirect emissions associated with the proposed use of approximately 2 acre-feet of water for dust suppression and compaction. Therefore, PG&E's emissions estimates are supplemented to include construction-related emissions associated with Ripon Cogen and Tesla substations (see Section 5.3, *Air Quality*, for additional information) and indirect, short-term GHG emissions associated with proposed water consumption using emission and use factors established in CalEEMod. See footnotes under **Table 5.8-1** and *Appendix B* for all emission factors and assumptions used to estimate GHG emissions that would be associated with construction of the proposed project.

GHG emission calculations in this document are based on worst-case estimates of emissions to ensure presentation of a conservative environmental analysis. More detailed emissions calculations can be found in *Appendix B.*

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

Methodology

The SJVAPCD has adopted guidance for assessing and reducing the impacts of project-specific GHG emissions, as described in Section 5.8.1, *Environmental Setting*. According to the SJVAPCD guidance documents (SJVAPCD, 2009a; 2009b), projects complying with an approved GHG emission reduction

plan or GHG mitigation program, which avoids or substantially reduces GHG emissions within the geographic area in which the project is located, would be determined to have a less-than-significant individual and cumulative impact for GHG emissions. Compliance with state and regional GHG plans and regulations is discussed under criterion "b", below.

Where an approved GHG emission reduction plan or program is not in place, or the project would not comply with it, the SJVAPCD guidance documents rely on the use of BPS to assess significance as required by CEQA. However, the current list of BPS developed by the SJVAPCD for stationary sources does not include specific performance standards for substations or other electrical facilities. The SJVAPCD guidance documents do not address construction sources either. However, the SJVAPCD guidance documents do not limit the authority of the lead agency (CPUC for this project) in establishing its own process and guidance for determining significance of project-related impacts on global climate change.

None of the air districts have adopted or recommended a significance threshold of GHG emissions from construction. Therefore, CPUC has elected to use an approach to determine the significance of GHG emissions from construction based on guidance from SCAQMD (SCAQMD, 2008). SCAQMD recommends that construction emissions be amortized over a 30-year project lifetime, so that GHG reduction measures will address construction GHG emissions as part of the operational GHG reduction strategies (SCAQMD, 2008). Although GHG emission reduction measures for construction equipment are relatively limited, impacts from construction activities are temporary and limited in duration and would contribute a relatively small portion of the overall lifetime project GHG emissions. Therefore, SCAQMD recommends that the 30-year amortized construction emissions be added to operational emissions, and then compared to applicable significance thresholds (SCAQMD, 2008).

The BAAQMD 2017 CEQA Air Quality Guidelines (BAAQMD, 2017b) established a significance threshold of 1,100 $MTCO_2e/yr$ for development projects other than stationary sources. The BAAQMD established this GHG significance threshold based on AB 32 GHG emission reduction goals while taking into consideration emission reduction strategies outlined in CARB's Scoping Plan. Emissions from projects that are below the threshold would not be a "cumulatively considerable" contribution under CEQA because they would be helping to solve the cumulative problem as a part of the AB 32 process, not hindering it (BAAQMD, 2017b).

The BAAQMD's 1,100 $MTCO_2e/yr$ significance threshold for development projects other than stationary sources is operations-related. Because construction emissions would cease once construction is complete, they are considered short-term. The BAAQMD CEQA Guidelines do not identify a GHG emissions significance threshold for construction-related emissions. Instead, BAAQMD recommends that GHG emissions from construction be quantified and disclosed. The BAAQMD further recommends incorporation of BMPs to reduce GHG emissions during construction. BMPs may include use of alternative-fueled (e.g., biodiesel, electric) construction vehicles and equipment for at least 15 percent of the fleet, use of at least 10 percent of local building materials, and recycling or reusing at least 50 percent of construction waste or demolition materials. CPUC staff's approach below reflects a hybrid approach, combining the SCAQMD's policy regarding amortization of construction emissions with the significance threshold developed by the BAAQMD significance threshold for development projects other than stationary sources.

Construction

Construction of the project would generate GHG emissions resulting from off-road construction equipment and machinery, helicopter activity, and from vehicular traffic generated by commuting workers and material hauling and disposal (PGE, 2018a). Following project completion, all construction emissions would cease. Emissions were analyzed for the air basin within which they would be generated.

Table 5.8-1 shows the estimated GHG emissions associated with construction activities of the project. Because the effects of GHG emissions are global and not confined to the air basin where they are generated, total emissions are presented and are not delineated by air basin.

TABLE 5.8-1 ESTIMATED CONSTRUCTION GHG EMISSIONS

Construction Phase	Amortized CO_2e Emissions (MT/yr) [a]
Site Preparation	<0.1
Water Use	<0.1 [b]
Traffic Control	0.2
TSP Installation	2.7
Conductor Installation	1.2
Vierra Substation Expansion	10.3
Helicopter Operations	0.1
Other Substation and Communication Tower Modifications [c]	5.1
Total GHG Emissions	19.5

[a] GHG emissions listed are annual emissions derived from the amortization of total construction emissions over a 30-year period. [b] The total water available for use by the project would be 640,000 gallons (i.e. 0.64 million gallons [MG], see more details in Section 5.10). CPUC staff used the electricity intensity factors associated with water end-use from CalEEMod Appendix A (CAPCOA 2017), which were obtained from the 2006 CEC report, "Refining Estimates of Water-Related Energy Use in California." The energy intensity of 3,500 kWh/MG for outdoor water in Northern California was used here. In addition, the GHG carbon intensity factors for PG&E (641.3 lbs CO_2/MWh, 0.029 lbs CH_4/MWh, and 0.006 lbs N_2O/MWh) were used here. The amortized GHG emissions due to water use for the project would be 0.02 MT CO_2e/yr (= 0.64 MG * 3,500 kWh/MG * [1 MW-hr/ 1,000 kW-hr] * [614.3 + 0.029 * 25 + 0.006 * 298] lbs CO_2e/MWh * [1 MT / 2,204.6 lbs] / 30 years).
[c] The GHG emissions from other substation and communication tower modifications include those from the telecom work at the Vierra Substation, Howland Road Substation, Kasson Substation, Manteca Substation, Tracy Substation, Ripon Cogen Substation, Tesla Substation and Mount Oso and Highland Peak communication tower. PG&E did not estimate GHG emissions associated with vehicle trips to and from Ripon Cogen Substation or Tesla Substation (PGE, 2019a). Based on vehicle trips information, CPUC staff added GHG emissions from vehicle trips to and from Ripon Cogen Substation and Tesla Substation as five times the emissions from vehicle trips to and from Highland Peak.
Sources: PGE, 2018b; 2019a and CPUC analysis

As described in **Table 5.8-1**, the unmitigated construction activities of the project would generate about 19.5 $MTCO_2e$/yr amortized over a 30-year period. PG&E assumed a five percent reduction in GHG emissions as a result of APM GHG-1. The reference that PG&E used for the five percent reduction in GHG emissions due to implementation of APM GHG-1 was the Revised Draft Options and Justification Report, CEQA Thresholds of Significance (BAAQMD, 2009). This report states that it is relatively easy to achieve five percent reduction in operational GHG emissions through implementation of relatively few performance measures. However, the report did not mention how much the construction GHG emissions would reduce with reduction measures. Therefore, CPUC did not apply the five percent reduction in GHG emissions as a result of APM GHG-1 during construction of the project. However, it should also be noted that the unmitigated GHG emissions of 19.5 $MTCO_2e$/yr would be well below the operation-based significance threshold of 1,100 $MTCO_2e$/yr.

Implementation of APM GHG-1 would further reduce the GHG emissions during construction. The impact would be less than significant.

Operation and Maintenance

The expansion of the Vierra Substation, which is in the SJVAB, would include removal of two circuit breakers and installation of eleven new SF_6 circuit breakers with potential for SF_6 leakage during operation. The estimated GHG emissions from operation and maintenance due to SF_6 leakage would be 94 $MTCO_2e$/yr with a one percent leakage rate, which would be reduced to 47 $MTCO_2e$/yr with a 0.5 percent leakage rate through implementation of APM GHG-2.

The operation and maintenance activities for the expanded Vierra Substation would not result in a material change in long-term vehicle or equipment exhaust GHG emissions. The operation and maintenance activities for the new power line would result in GHG emissions during annual inspection from transportation exhaust (e.g., helicopters, on-road vehicles, etc.). However, due to the limited and infrequent use of vehicles and helicopters, and the current ongoing inspections of nearby lines, operation and maintenance of the new power line would continue to have negligible GHG emissions. The operation and maintenance activities for the remote substations and communication towers would not result in a material change in long-term vehicle or equipment exhaust GHG emissions.

Total Project GHG Emissions

LESS THAN SIGNIFICANT IMPACT. The project's total annual GHG emissions would be 113.5 $MTCO_2e$/yr, which is the sum of the estimated annual construction emissions of 19.5 MT/yr CO_2e (amortized over 30 years and shown in **Table 5.8-1**) and estimated unmitigated operational emissions of 94 $MTCO_2e$/yr from the circuit breakers. The project's unmitigated total amortized annual GHG emissions would be well below the BAAQMD significance threshold of 1,100 $MTCO_2e$/yr for development projects other than stationary sources. Therefore, the project's GHG emissions would not have a significant direct or indirect impact on the environment. PG&E would implement APM GHG-1 and APM GHG-2 to further minimize GHG emissions of the project.

The GHG significance thresholds were established considering GHG emission reduction goals of AB 32, EO S-3-05, GHG emission reduction strategies in the Scoping Plan, and regional GHG reduction goals. The GHG emissions that would be generated by the project would not be a "cumulatively considerable" contribution under CEQA because they would be helping to solve the cumulative problem as a part of the AB 32 and EO S-3-05 process.

Mitigation Measures: None recommended.

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b. Would the project conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

Construction

NO IMPACT. The project's GHG emissions would not exceed regional or quantitative thresholds developed to comply with AB 32 and California Climate Change Scoping Plan statewide reduction targets. Therefore, the project would not conflict with an applicable plan, policy, or regulation adopted to reduce GHG emissions.

The project's minimal short-term construction GHG emissions would not interfere with the state's ability to achieve long-term goals of AB 32, SB 32, or EO S-3-05. The vehicles used during construction of the project would be required to comply with the applicable GHG reduction programs for mobile sources. The project would conform to relevant programs and recommended actions detailed in the AB 32 Scoping Plan, Mobile Source Strategy, and 2017 Scoping Plan Update. Similarly, the project components would not conflict with regulations adopted to achieve the goals of the Scoping Plans. Also, the project components would not conflict with the SJVAPCD GHG policy and guidance documents. The project would not conflict with the BAAQMD 2017 CAP because GHG emissions would be below the BAAQMD operational significance thresholds for GHGs.

Operation and Maintenance

NO IMPACT. Operation and maintenance of the project would be the same as existing PG&E activities. Therefore, vehicle and equipment GHG emissions due to operation and maintenance of the project are not anticipated to increase. The substation circuit breakers would generate a minor amount of additional CO_2e emissions due to SF_6 leakage (see discussion above under criterion "a"). These emissions would be tracked annually per CARB's regulation for Reducing SF_6 Emissions from Gas Insulated Switchgear. The current SF_6 regulation, implemented as part of AB 32, mandates utility-wide reduction of SF_6 emissions to a one percent leak rate by 2020. Per APM GHG-2, PG&E would require that the new breakers at Vierra Substation have a manufacturer's guaranteed maximum leakage rate of 0.5 percent per year or less for SF_6, which is 50 percent less than the leakage rate required by the SF_6 regulation. The project components would not conflict with state SF_6 regulations implemented as part of AB 32. Additionally, APM GHG-1 would incorporate measures that would further reduce GHG emissions during construction. Therefore, no impact would occur because the project components would not conflict with an applicable plan, policy, or regulation adopted to reduce GHG emissions.

5.8.3 References

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5.9 Hazards and Hazardous Materials

This section describes the environmental and regulatory setting and discusses impacts associated with the construction and operation of the project with respect to hazards and hazardous materials.

Analysis of impacts from hazards and hazardous materials was limited to project components where hazards are present and the use of hazardous materials could result in impacts. These project components include the new power line, Vierra Substation expansion, remote substation modifications at Howland Road, Kasson, Manteca, and Tracy substations, and the remote telecommunication tower upgrades at Mount Oso and Highland Peak microwave stations. The proposed modifications at two other remote substations, Tesla and Ripon Cogen substations, involve modifications to control room components that would not increase or otherwise adversely affect existing hazards at the site, and would not introduce new hazardous materials that are not already used for substation operation, or increase the use of presently used hazardous materials. The proposed modifications at Tesla and Ripon Cogen substations would not result in any change in the existing baseline conditions for hazardous materials. Therefore, there would be no impact related to hazards or hazardous materials due to the Tesla and Ripon Cogen Substation control room modifications, and these project components are not discussed further in this section.

This analysis is based, in part, on an environmental database search performed for this project as well as available agency information, as referenced. The Phase I Environmental Site Assessment performed by ERM-West, Inc. (ERM) for the project is also incorporated into this analysis.

HAZARDS AND HAZARDOUS MATERIALS Would the project:	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less than Significant Impact	No Impact
a. Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	☒	☐
b. Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☐	☒	☐
c. Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☐	☒
d. Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☐	☒	☐
e. For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area?	☐	☒	☐	☐
f. Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☒	☐
g. Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?	☐	☒	☐	☐

Environmental criteria established by California Environmental Quality Act Guidelines, Appendix G.

5.9.1 Setting

Hazardous Waste and Substances Sites

Pacific Gas and Electric Company (PG&E) hired ERM to conduct a Phase I Environmental Site Assessment for the proposed project, which includes a database search to determine the location of hazardous waste and hazardous material release sites within 0.25-mile of the new power line and Vierra Substation expansion (ERM, 2018). ERM's research involved searches of 117 databases prepared by local, state, federal, and tribal agencies, in addition to ERM's proprietary database, related to the generation, storage, handling, transportation, and treatment of wastes and the remediation of contaminated soil and groundwater sites. The database search was augmented by searches of the State Water Resources Control Board's (SWRCB) GeoTracker database and the California Department of Toxic Substance Control's (DTSC) EnviroStor database. The search revealed that there were no open contaminated sites within 0.25-mile of the new power line, Vierra Substation expansion site, the remote substations, or microwave stations (telecommunication tower upgrade site) (SWRCB, 2018; DTSC, 2018).

The findings from the Phase I assessment include one Recognized Environmental Conditions (RECs) site in proximity to the proposed Vierra Substation expansion site. This site is located approximately 3,300 feet north of the expanded substation site and was operated as an agricultural chemical production facility from 1964 to 1982. Remediation of historical contaminants are ongoing at this property and monitoring wells are maintained immediately north of the property. This site was previously owned by Occidental Chemical Agricultural products Inc. and was then sold to the current owner, J.R. Simplot, in 1982. Simplot has continued to utilize the property for fertilizer manufacturing. At the same address, but approximately 3,200 feet north of the project site, J.R. Simplot currently manufactures phosphatic and nitrogenous fertilizer. This site is listed as "Active assessment as of 2006, and contaminated groundwater migrating onto the property is interpreted to be a REC (ERM, 2018)."

Airports

There are no public or active private airports located within 2 miles of the new power line, Vierra Substation expansion, remote substations, or microwave stations. There is an old airstrip, Sharp Army Airfield, located 2 miles from the new power line and Vierra Substation expansion that is no longer used as an airstrip. The nearest airport to any of the project components is the Stockton Metropolitan Airport located approximately 7 miles to the northeast of the new power line and Vierra Substation expansion.

Schools

There are no schools within 0.25-mile of the new power line, Vierra Substation expansion, the remote substations, or existing microwave stations.

Emergency Evacuation Routes

The San Joaquin County Local Hazard Mitigation Plan identifies hazards and provides a risk assessment for the potential natural hazards that could impact the county (San Joaquin County, 2017). Flood evacuation maps located on the San Joaquin County Office of Emergency Services highlighted the emergency evacuation routes for the county (San Joaquin County, 2018a). The plan and maps do not identify any designated evacuation routes near the new power line, expanded substation, or remote substations.

The Contra Costa Local Hazard Mitigation Plan and Stanislaus County Local Hazards Mitigation Plan identify hazards and provide a risk assessment for the potential natural hazards that could impact each

county (Contra Costa County, 2011; Stanislaus County, 2017). The plans do not identify any designated evacuation routes for the microwave stations in Stanislaus and Contra Costa counties, respectively.

Wildfire Hazards

The California Department of Forestry and Fire Protection (Cal Fire) identifies and maps areas of significant fire hazards based on fuels, terrain, and other relevant factors. The maps identify this information as Fire Hazard Severity Zones, which are unzoned, moderate, high, and very high. State responsibility areas (SRA) are locations where the State of California is responsible for wildland fire protection and local responsibility areas (LRA) are locations where the responding agency is the county or city. The new power line, substation expansion, and remote upgrades span the Contra Costa, San Joaquin, and Stanislaus counties with the majority of the project components located within San Joaquin County.

The Cal Fire maps for San Joaquin County indicate that the new power line, and Vierra, Manteca, Kasson, and Tracy substations are located in the LRA (Cal Fire, 2007a). Within the LRA, these four substations fall within an unzoned Fire Hazard Severity Zone, which indicates that the substations have a less than moderate susceptibility to wildland fires. The Cal Fire maps for Stanislaus County indicate that the Mount Oso microwave station is located in an SRA with a high Fire Hazard Severity Zone that indicates a high susceptibility to wildland fire (Cal Fire, 2007b). The Cal Fire maps for Contra Costa County indicate that the Highland Peak microwave station is located within a SRA with a high Fire Hazard Severity Zone that indicates a high susceptibility to wildland fire (Cal Fire, 2007c). For more information on wildfire hazards, see Section 5.19, *Wildfire*.

Regulatory Background

Hazardous substances are defined by federal and state regulations that aim to protect public health and the environment. Hazardous materials have certain chemical, physical, or infectious properties that cause them to be considered hazardous. Hazardous substances are defined in the federal Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) section 101(14), and also in Title 22, California Code of Regulations, section 66261, which provides the following definition:

> A hazardous material is a substance or combination of substances which, because of its quantity, concentration, or physical, chemical or infectious characteristics, may either: (1) cause, or significantly contribute to, an increase in mortality or an increase in serious irreversible, or incapacitating reversible, illness; or (2) pose a substantial present or potential hazard to human health or environment when improperly treated, stored, transported or disposed of or otherwise managed.

For this analysis, soil that is excavated from a site containing hazardous materials would be considered to be a hazardous waste if it exceeded specific Title 22, California Code of Regulations criteria or criteria defined in CERCLA or other relevant federal regulations. Remediation (cleanup and safe removal/disposal) of hazardous wastes found at a site is required if excavation of these materials occurs; it may also be required if certain other activities occur. Even if soils or groundwater at a contaminated site do not have the characteristics required to be defined as hazardous wastes, remediation of the site may be required by regulatory agencies subject to jurisdictional authority. Cleanup requirements are determined on a case-by-case basis by the agency taking lead jurisdiction.

Federal

Resource Conservation and Recovery Act. The federal Toxic Substances Control Act (1976) and the Resource Conservation and Recovery Act of 1976 (RCRA) established a program administered by the United States Environmental Protection Agency (U.S. EPA) for the regulation of the generation, transportation, treatment, storage, and disposal of hazardous waste. RCRA was amended in 1984 by the Hazardous and Solid Waste Act, which affirmed and extended the "cradle to grave" system of regulating hazardous wastes. The use of certain techniques for the disposal of some hazardous wastes was specifically prohibited by the Hazardous and Solid Waste Act.

Comprehensive Environmental Response, Compensation, and Liability Act. Congress enacted the federal Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), including the Superfund program, on December 11, 1980. This law provided broad federal authority to respond directly to releases or threatened releases of hazardous substances that may endanger public health or the environment. CERCLA established requirements concerning closed and abandoned hazardous waste sites; provided for liability of persons responsible for releases of hazardous waste at these sites; and established a trust fund to provide for cleanup when no responsible party could be identified. CERCLA also enabled the revision of the National Contingency Plan. The National Contingency Plan provided the guidelines and procedures needed to respond to releases and threatened releases of hazardous substances, pollutants, and/or contaminants. The National Contingency Plan also established the National Priorities List. CERCLA was amended by the Superfund Amendments and Reauthorization Act on October 17, 1986.

Department of Transportation. The United States (U.S.) Department of Transportation is the primary federal agency responsible for regulating the proper handling and storage of hazardous materials during transportation (49 C.F.R. §§ 171-177 and 350-399).

State

California Environmental Protection Agency. The California Environmental Protection Agency (CalEPA) was created in 1991. Its creation unified California's environmental authority in a single cabinet-level agency and brought the CARB, SWRCB, RWQCBs, Integrated Waste Management Board, DTSC, Office of Environmental Health Hazard Assessment, and Department of Pesticide Regulation under one agency. These agencies were placed within the CalEPA "umbrella" for the protection of human health and the environment and to ensure the coordinated deployment of state resources. Their mission is to restore, protect and enhance the environment, to ensure public health, environmental quality, and economic vitality.

The California Hazardous Waste Control Law. The California Hazardous Waste Control Law is administered by CalEPA to regulate hazardous wastes. The Hazardous Waste Control Law lists 791 chemicals and about 300 common materials that may be hazardous; establishes criteria for identifying, packaging and labeling hazardous wastes; prescribes management controls; establishes permit requirements for treatment, storage, disposal and transportation; and identifies some wastes that cannot be disposed of in landfills.

Department of Toxic Substances Control. DTSC is a department within CalEPA and is the primary agency in California that regulates hazardous waste, cleans-up existing contamination, and looks for ways to reduce the hazardous waste produced in California. DTSC regulates hazardous waste in California primarily under the authority of RCRA and the California Health and Safety Code. Other laws that affect

hazardous waste are specific to handling, storage, transportation, disposal, treatment, reduction, cleanup, and emergency planning.

California Occupational Safety and Health Administration. The Occupational Safety and Health Administration (OSHA) is the primary agency responsible for worker safety related to the handling and use of chemicals in the workplace. California OSHA standards are generally more stringent than federal regulations. The employer is required to monitor worker exposure to listed hazardous substances and notify workers of exposure (Cal. Code Regs., tit. 8, §§ 337-340). The regulations specify requirements for employee training, availability of safety equipment, accident-prevention programs, and hazardous substance exposure warnings.

Department of California Highway Patrol. Department of California Highway Patrol is the primary agency responsible for enforcing the regulations related to the transport of hazardous materials on California roads and highway (Cal. Code Regs., tit. 13, §§ 1160-1167).

CPUC General Order 95: Rules for Overhead Electric Line Construction. California Public Utilities Commission (CPUC) General Order 95, Section 35, covers all aspects of design, construction, operation, and maintenance of overhead electrical lines and safety hazards, the application of which will ensure adequate service and secure safety to persons engaged in the construction, maintenance, operation or use of overhead lines and to the public in general.

CPUC Final Decision D.17-12-024: Decision Adopting Regulations to Enhance Fire Safety in the High Fire –Threat District. This decision adopts new regulations to enhance the fire safety of overhead electric power lines and communication lines located in high fire-threat areas (CPUC, 2017).

Local

The project is not subject to local discretionary regulations because the CPUC has exclusive jurisdiction over the siting, design and construction of the project under CPUC General Order No. 131-D. Local ordinance policies and requirements are summarized here for information purposes.

Contra Costa County Hazard Mitigation Plan Update Volume 1: Planning-Area-Wide Elements. The plan includes risk assessment that identifies the natural hazards and risks that can impact a community based on historical experience, estimate the potential frequency and magnitude of disasters, and assess potential losses to life and property. The plan also includes developed mitigation goals and objectives as part of a strategy for mitigating hazard-related losses.

Lathrop Evacuation Zone Brochure. The brochure highlights the evacuation routes out of the city of Lathrop in the case of a flood.

Manteca Evacuation Zone Brochure. The brochure highlights the evacuation routes out of the city of Manteca in the case of a flood.

San Joaquin County Local Hazard Mitigation. The plan includes risk assessment that identifies the natural hazards and risks that can impact a community based on historical experience, estimate the potential frequency and magnitude of disasters, and assess potential losses to life and property. The plan also includes developed mitigation goals and objectives as part of a strategy for mitigating hazard-related losses.

Stanislaus County Local Hazard Mitigation Plan. The plan includes risk assessment that identifies the natural hazards and risks that can impact a community based on historical experience, estimate the potential frequency and magnitude of disasters, and assess potential losses to life and property. The plan also includes developed mitigation goals and objectives as part of a strategy for mitigating hazard-related losses.

5.9.2 Applicant Proposed Measures

PG&E proposes to implement the following Applicant Proposed Measures (APMs) for hazards and hazardous materials as part of the project.

APM HM-1: Worker Environmental Training Program. An environmental training program will be established to communicate environmental concerns and appropriate work practices to all construction field personnel. The training program will emphasize site-specific physical conditions to improve hazard prevention, and will include: an overview of Personal Protection Equipment (PPE) (safety vest and hard had requirements); fire safety and fire control (general requirements, preventative steps, and PPE); personal health and safety, electrical safety, and safety procedures and protocols; and a review of the Stormwater Pollution Prevention Plan (SWPPP), which will also address spill response. The worker environmental training program will be provided to CPUC staff for review prior to construction.

APM HM-2: Update Spill Prevention Control and Counter Measures (SPCC) Plan and Hazardous Materials Business Plan (HMBP). The expanded substation will be equipped with a retention basin that meets SPCC Guidelines (40 Code of Federal Regulations 112). Prior to operation of the project, PG&E will update the existing SPCC Plan and HMBP for Vierra Substation to include all new equipment and on-site hazardous materials associated with the substation expansion, and to address containment from an accidental spill. A copy of the updated SPCC Plan and HMBP will be submitted to the CPUC for record keeping.

APM HM-3: Emergency spill response equipment and training. Emergency spill response and cleanup kits will be readily available at Vierra Substation for cleanup of an accidental spill. Construction crews will be trained in safe handling and cleanup responsibilities.

APM HM-4: Soil and groundwater testing and disposal. In the event soils suspected of being contaminated (on the basis of visual, olfactory, or other evidence) are removed during site grading or excavation activities, the excavated soil will be tested, and if measured above hazardous waste levels, will be contained and disposed of at a licensed waste facility. The presence of known or suspected contaminated soil will require testing and investigation procedures to be supervised by a qualified person, as appropriate, to meet state and federal regulations.

In the event groundwater is encountered during construction, the groundwater will be tested prior to being discharged over land or removed from the site. Testing of groundwater will be supervised by a qualified person, as appropriate, to meet state and federal regulations.

5.9.3 Environmental Impacts and Mitigation Measures

a. Would the project create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?

Construction

LESS THAN SIGNIFICANT IMPACT. Hazardous materials would be used during construction at the new power line, Vierra Substation expansion, Howland Road, Manteca, Kasson, and Tracy substations, and the Mount Oso and Highland Peak microwave station towers. Construction at the sites of these project components would involve the limited use of hazardous materials such as gasoline, diesel fuel, motor oil, transmission fluids, hydraulic fluids and lubricants, paints, solvents, adhesives and cleaning chemicals. When not in use, any hazardous material would be stored in designated construction staging areas in compliance with local, state, and federal requirements. The volume of stored materials located in the staging areas would be relatively small. There would not be any above ground storage tanks or 55-gallon drums of hazardous materials at the staging areas. The maintenance and servicing of construction vehicles would occur offsite. Transportation of hazardous materials would be conducted in compliance with Department of Transportation and California Highway Patrol requirements.

There would be subsurface work for the 22 tubular steel pole (TSP) installation sites including relocated poles for the new power line, microwave tower in the Vierra Substation expansion, and microwave monopole at Tracy, Kasson, and Manteca substations. In addition, there would be subsurface excavation at Howland Road Substation with the installation of a new circuit switcher, a new voltage transformer, and a new duct bank between the new circuit switcher and the control building. The excavated soils from the TSP, microwave tower, microwave monopole installations, and equipment installation at Howland Road Substation would be analyzed and disposed of in accordance with APM HM-4. Implementation of APMs HM-1, HM-3, and HM-4**,** would assure that impacts associated with the routine transport, use, or disposal of hazardous materials would be less than significant.

Mitigation Measures: None recommended.

Operation and Maintenance

NO IMPACT. Any routine transport, use, or disposal of hazardous materials for the expanded Vierra Substation and remote substations would be consistent with current PG&E practices as would be the maintenance of the new power line. There would be no impact.

As discussed in Section 4, *Project Description* subsection 4.10, *Electric and Magnetic Fields Summary*, this IS does not consider electric and magnetic fields (EMF) in the context of a California Environmental Quality Act analysis of potential environmental impact.

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b. Would the project create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?

Construction

LESS THAN SIGNIFICANT IMPACT. The routine use of hazardous materials during construction could result in an accidental spill, which could pose a significant impact to the public. However, as described under the discussion for impact criterion (a), project construction would require the limited use of hazardous materials, such as fuels, lubricants, and solvents. The storage and use of hazardous materials during construction could result in the accidental release of small quantities of hazardous materials typically associated with minor spills or leaks. Spills and leaks could degrade soil, groundwater, and surface water quality.

As discussed in impact criterion (a), hazardous materials would be stored, handled, and used in accordance with applicable regulations. The impact could be significant if proper procedures are not followed to contain and clean up leaks or spills of hazardous materials. The implementation of APMs HM-1, HM-3, and HM-4 would provide personnel with instructions and training on health and safety precautions and procedures to follow in the event of a release of hazardous materials, and would ensure that the proper procedures would be in place to protect the workers from hazardous materials and to mitigate any spill that might occur during construction. All equipment and materials storage must be routinely inspected for leaks. Records must be maintained for documenting compliance with the storage and handling of hazardous materials. For the above reasons, with implementation of APMs HM-1, HM-3, and HM-4, the project impacts would be less than significant.

Mitigation Measures: None recommended.

Operation and Maintenance

LESS THAN SIGNIFICANT IMPACT. APM HM-2 would ensure there would be a new updated Hazardous Materials Business Plan and Spill Prevention Control and Counter Measures in place for operations. The new Hazardous Materials Business Plan would ensure that the hazardous materials are cataloged on site and provide details on the appropriate handling and storage of these materials. The Spill Prevention Control and Counter Measures would ensure that there would be a new spill response and prevention plan to prevent the release of hazardous materials during operations and provide protocols for spill response to isolate and contain a spill, in the event one would occur. Therefore, the impact would be less than significant.

The newly installed power line, monopoles at the remote substations, microwave dishes on the microwave station tower, and equipment installed at Howland Road Substation would be operated and maintained consistent with current PG&E practices and Hazardous Materials Business Plan, which are consistent with existing regulatory requirements regarding the appropriate transport, handling, and disposal of hazardous materials. As a result, the potential impact from upset and accident conditions would be less than significant.

Mitigation Measures: None recommended.

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c. Would the project emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?

Construction, Operation and Maintenance

NO IMPACT. There are no schools located within 0.25 mile of the proposed new power line, Vierra Substation expansion, the remote substations, or microwave stations. Therefore, there would be no impact.

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d. Would the project be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?

Construction

LESS THAN SIGNIFICANT IMPACT. There would only be subsurface work for the 22 new TSPs including relocated poles for the new power line, the new microwave tower at the Vierra Substation expansion, and the new microwave monopoles at Kasson, Manteca, and Tracy substations. According to the ERM report and review of the Envirostor and GeoTracker databases, there are no known open hazardous materials sites within 0.25 mile of the power line alignment or any of the project component sites (ERM, 2018). However, the RECs described in the ERM report indicate that project subsurface work could encounter contaminated groundwater and create a significant hazard to the public or the environment associated with a known hazardous materials site.

Ground disturbing activities for the new power line's TSPs that are east of the railroad and parallel to Vierra Road, the relocated poles, and the microwave tower for the Vierra Substation expansion along with the Howland Road Substation have the potential to encounter groundwater contamination from a fertilizer plant to the north according to the Phase 1 Environmental Site Assessment. However, with the implementation of APM HM-4, the soil and groundwater would be tested to determine whether contamination is present before the start of subsurface work. If any contamination were found, APM HM-4 would ensure that the contaminated soil and/or water would be contained and disposed of properly. Potential impacts would be less than significant.

Mitigation Measures: None recommended.

Operation and Maintenance

NO IMPACT. Operation and maintenance activities would not involve excavation activities and would therefore have no impact.

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e. For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area?

Construction

LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED. There are no public or private airports within 2 miles of the new power line, Vierra Substation expansion site, the remote substation, or microwave station tower sites; therefore, no impact would occur. More detailed analysis of noise impacts is addressed in Section 5.13, *Noise*.

However, a helicopter would be used to install stringing rollers on the TSP cross-arms and to attach a pulling line between each TSP for the new transmission line to the expanded Vierra Substation. The helicopter landing zone would be located on the west of the existing Vierra Substation. Helicopter flight paths would generally be limited to the new power line right of way and project specific landing zones near Vierra Substation. Helicopter use would be in accordance with all applicable federal, state, and local aviation rules and regulations. APM TRA-2 would require PG&E during construction to: comply with all applicable FAA regulations regarding air traffic within 2 miles of the project alignment; and coordinate all project helicopter operations with the local airport before and during project construction. However, construction-related helicopter activity should comply with all applicable FAA regulations regardless of its distance from the project alignment in order to ensure that potential safety hazard impacts from helicopter operations would be less than significant. **Mitigation Measure** (**MM) 5.17-2** would ensure that PG&E complies with all applicable FAA regulations regarding air traffic regardless of helicopter distance from the project alignment and the helicopter pilot would coordinate all helicopter operations with the local airport. In addition, implementation of APM NOI-6 would require PG&E to notify any sensitive receptors in areas where the helicopter would be used. To avoid the potential for significant impacts associated with excessive nighttime helicopter noise, implementation of **MM 5.13-1** would limit all helicopter activity to daytime hours (see Section 5.13, *Noise*). Accordingly, with the implementation of **MMs 5.13-1** and **5.17-2**, the significant helicopter safety hazard and excessive noise impact for people working or residing in the area would be reduced to less than significant.

Mitigation Measures**:** Implementation of **MMs 5.13-1** and **5.17-2**.

Significance after Mitigation: Less than Significant.

Operation and Maintenance

NO IMPACT. Operation and maintenance activities for the new power line, expanded Vierra Substation, and the remote substation and telecommunication sites would not require additional aerial inspections beyond those conducted under existing conditions for power lines and thus, there would be no new impact on people working or residing in the area.

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f. Would the project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

Construction

LESS THAN SIGNIFICANT IMPACT. The new power line, Vierra Substation expansion, and remote Howland Road, Manteca, Tracy, and Kasson substations are located within San Joaquin County. A review of the San Joaquin County Local Hazard Mitigation Plan revealed that several emergency evacuation routes have been identified in response to flooding hazards (San Joaquin County, 2018a). A review of the Lathrop Evacuation Zone Brochure and Manteca Evacuation Zone Brochure maps found that the new power line, Vierra Substation expansion, and remote Howland Road, Kasson, Manteca, and Tracy substations are not located along any roads designated as major transportation or emergency routes (San Joaquin County, 2018b). During project construction, the impact on an adopted response plan or emergency evacuation plan would be less than significant.

A review of the Contra Costa and Stanislaus County's Local Hazard Mitigation Plans for the Mount Oso and Highland Peak microwave stations revealed no specific mapping or delineation of emergency evacuation or access routes (Contra Costa County, 2011; Stanislaus County, 2017). The plans identified that the area police, fire department, and other emergency services would implement their emergency response or evacuation plans according to their communications protocols and hazard mitigation programs. The two remote microwave station sites are very remote and are not identified on any emergency evacuation or access routes. In addition, the associated construction would not require any road closures since the work would all be done onsite and be for a very limited time. During project construction, the impact on an adopted response plan or emergency evacuation plan would be less than significant.

Mitigation Measures: None recommended.

Operation and Maintenance

NO IMPACT. After construction, no lane closures would be needed, and no impact on a response plan or emergency evacuation plan would occur.

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g. Would the project expose people or structures, either directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires?

Construction

LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED. The new power line, Vierra Substation expansion, and remote Howland Road, Kasson, Manteca, and Tracy substations are located in San Joaquin County. All of these project components are located within an unzoned Fire Hazard Severity Zone, within a LRA, indicating that the new power line, expanded Vierra Substation and these remote substations have a less than moderate susceptibility to wildland fires. These project components are not adjacent to wildlands. Although equipment and vehicles used during construction, as well as welding activities, have the potential to ignite dry vegetation, these project components are not located within a zoned fire hazard area. As such, the risk of project-related construction exposing people or structures to wildland fires is low. Therefore, the impacts from wildland fires for construction activities related to these project components would be less than significant.

The remote Highland Peak and Mount Oso microwave stations are located in Contra Costa and Stanislaus counties, respectively. The microwave stations are located within a high Fire Hazard Severity Zone, within a SRA, and adjacent to a very high Fire Hazard Severity Zone. In addition, Highland Peak telecommunication tower is located within a CPUC Tier 3 high fire threat area, while the Mount Oso telecommunication tower is located within a CPUC Tier 1 high fire threat area.

Construction activities associated with the installation of the microwave dishes on the existing towers would increase fire risk, which include vehicle and equipment use (e.g., starting a vehicle on a grassy area), worker activities (e.g., workers smoking in a vegetative area), and any other activities that could ignite a fire in the nearby vegetation surrounding the two sites, thereby possibly exposing people and structures to wildland fire. This could result in a significant impact. **MM 5.9-1** as outlined below and discussed further in Section 5.19, *Wildfire*, would require the applicant to prepare and implement fire hazard reduction measures to minimize the risk of fire and to address impacts should a fire occur. The fire hazard reduction measures would include worker training for reporting, controlling, and extinguishing incipient fires, access to fire extinguishers, and prohibiting certain activities that could pose a fire hazard. All of the items outlined above would ensure that construction workers would be aware of the danger and with training take the necessary steps to prevent a fire from occurring. Through the implementation of **MM 5.9-1**, potential impacts associated with wildland fires would be reduced to less than significant.

> **MM 5.9-1: Fire Hazard Reduction Measures**. Pacific Gas and Electric Company shall implement the following measures prior to and during construction activities at the Highland Peak and Mount Oso microwave stations:
>
> - As part of the Worker Training Program, workers will be trained in fire prevention and response practices to be implemented to minimize the risk of fire, and in the event of fire, trained to provide immediate response. Construction personnel will be trained in reporting and incipient stage fire prevention, control, and extinguishing.
> - Prohibit smoking at the worksites other than in designated areas that are free of ignitable material. Require disposal of cigarette butts in a way that will not ignite vegetation or other materials.
> - Ensure an appropriate fire extinguisher is present during any hot work activity.
> - Do not park vehicles in areas with vegetation prone to ignition.
> - Equip all vehicles with a fire extinguisher.

Significance after Mitigation: Less than Significant.

Operation and Maintenance

NO IMPACT. Operation of the expanded Vierra Substation would be conducted remotely from PG&E's Grid Control Center. Maintenance of the new power line, expanded Vierra Substation, and remote Kasson, Manteca, and Tracy substations would be consistent with current PG&E practices. These project components are located in a less-than-moderate Fire Severity Hazard Zone and therefore, there would be no impact from wildland fires. Operation and maintenance activities at the Highland Peak and Mount Oso microwave stations would not increase or change as a result of installing the new microwave dishes on the tower at these sites. Therefore, there would be no impact from wildland fires.

5.9.3 References

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http://www.cpuc.ca.gov/environment/info/CEC/VierraReinforcement/attachments/Responses_to_DR_4_Part_C_April%2025.pdf.

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5.10 Hydrology and Water Quality

This section describes the environmental and regulatory setting and discusses impacts associated with the construction and operation of the project with respect to hydrology and water quality.

Analysis of impacts is limited to the project components that require ground disturbance including through the introduction of impervious surfaces, and associated effects to hydrology or water quality. These project components include the new power line, Vierra Substation expansion, and remote substation modifications at Howland Road Substation in the city of Lathrop, Kasson Substation in San Joaquin County, Manteca Substation in the city of Manteca, and Tracy Substation in the city of Tracy. The proposed modifications at the Tesla and Ripon Cogen substations and the Mount Oso and Highland Peak microwave stations include upgrades to existing control room equipment and modifications to existing structures, where there would be no ground disturbance or alteration that could affect conditions for surface runoff. These components of the project would have no impact on hydrology and water quality resources and are not discussed further in this section.

HYDROLOGY AND WATER QUALITY Would the project:	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less than Significant Impact	No Impact
a. Violate water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?	☐	☐	☒	☐
b. Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?	☐	☐	☒	☐
c. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or through the addition of impervious surfaces, in a manner which would:				
i. result in substantial erosion or siltation, on- or offsite;	☐	☐	☒	☐
ii. substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite;	☐	☐	☒	☐
iii. create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or	☐	☐	☒	☐
iv. impede or redirect flood flows?	☐	☐	☒	☐
d. In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?	☐	☐	☒	☐
e. Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?	☐	☐	☒	☐

Environmental criteria established by California Environmental Quality Act Guidelines, Appendix G.

5.10.1 Setting

Hydrologic Basin

The remote Manteca, Kasson, and Tracy substations are all located within San Joaquin County and the San Joaquin hydrologic basin boundary. The 15,200-square mile drainage unit is ultimately drained by the San

Joaquin River. The northern portion of the San Joaquin River in the vicinity of the project collects the Fresno, Merced, Tuolumne, and Stanislaus Rivers and flows northwards to the Sacramento-San Joaquin Delta (see **Figure 5.10-1**) (DWR, 2003).

The project area is characterized by hot, dry summers and mild winters. This middle portion of the Central Valley is in the rain shadow of the Coast Ranges, resulting in average annual precipitation of about 13 inches, with a majority of the rainfall occurring between the months of October and April (NOAA, 2018). Periods of abundant rainfall and prolonged droughts are frequent for this area in the historical record.

Groundwater

Modifications to Vierra, Howland Road, Manteca, Kasson, and Tracy substations would occur within the San Joaquin Valley groundwater basin boundary, as defined by the California Department of Water Resources (DWR). The Vierra, Howland Road, and Manteca substation work would occur in the 1,105-square mile Eastern San Joaquin Valley Subbasin and the Tracy and Kasson substation work would occur in the 539-square mile Tracy Subbasin (see **Figure 5.10-2**) (DWR, 2006a; 2006b).

The San Joaquin Valley aquifers are relatively thick in the vicinity of the project, with groundwater wells commonly extending to depths of 800 feet. These aquifers typically include unconsolidated alluvium and consolidated rocks with unconfined and confined groundwater conditions. Typical well yields in the San Joaquin Valley range from 300 to 2,000 gallons per minute (gpm) with yields of 5,000 gpm possible. Water-bearing formations of significance in the Eastern San Joaquin Subbasin consist of the Alluvium and Modesto/Riverbank Formations, Flood Basin Deposits, Laguna Formation, and Mehrten Formation (DWR, 2006a; 2006b).

Agricultural and urban water needs account for a significant proportion of the groundwater use in the region. The use of groundwater throughout the region as a water supply source has created overdraft conditions and contamination of the water-bearing aquifers. The Eastern San Joaquin Valley Subbasin is identified as a basin "subject to critical conditions of overdraft" by DWR, with a high priority for reducing groundwater level decline. The city of Lathrop, which would be the primary water supplier for the project, supplies groundwater from wells located in the Eastern San Joaquin Valley Subbasin. Additionally, the city of Lathrop's wells are treated for arsenic contamination (PGE, 2018a).

The Tracy Subbasin, where Tracy and Kasson substations are located, is identified as having a medium priority for addressing its water level declines. Basins that are designated as high or medium priority are subject to the requirements of the Sustainable Groundwater Management Act (SGMA) (described below).

A geotechnical investigation performed in 1997 at Vierra Substation drilled two borings to 28.5 feet and one boring to 27 feet below ground surface (bgs). Silty to clean loose sand was the predominant soil material encountered in each boring from near the surface to approximately 15 feet bgs. Below 15 feet, the sandy material was interbedded by intermittent sequences of sand, clayey or silty sand; silt, clayey or sandy silt; and sandy or silty clay. Pacific Gas and Electric Company's (PG&Es) boring logs also indicate that the groundwater table was encountered at 7 to 8 feet bgs in each boring (PGE, 2018a). A more recent geotechnical investigation for the project site conducted on August 25, 2016, indicates that groundwater was encountered at a depth of 16 feet bgs (Kleinfelder, 2016).

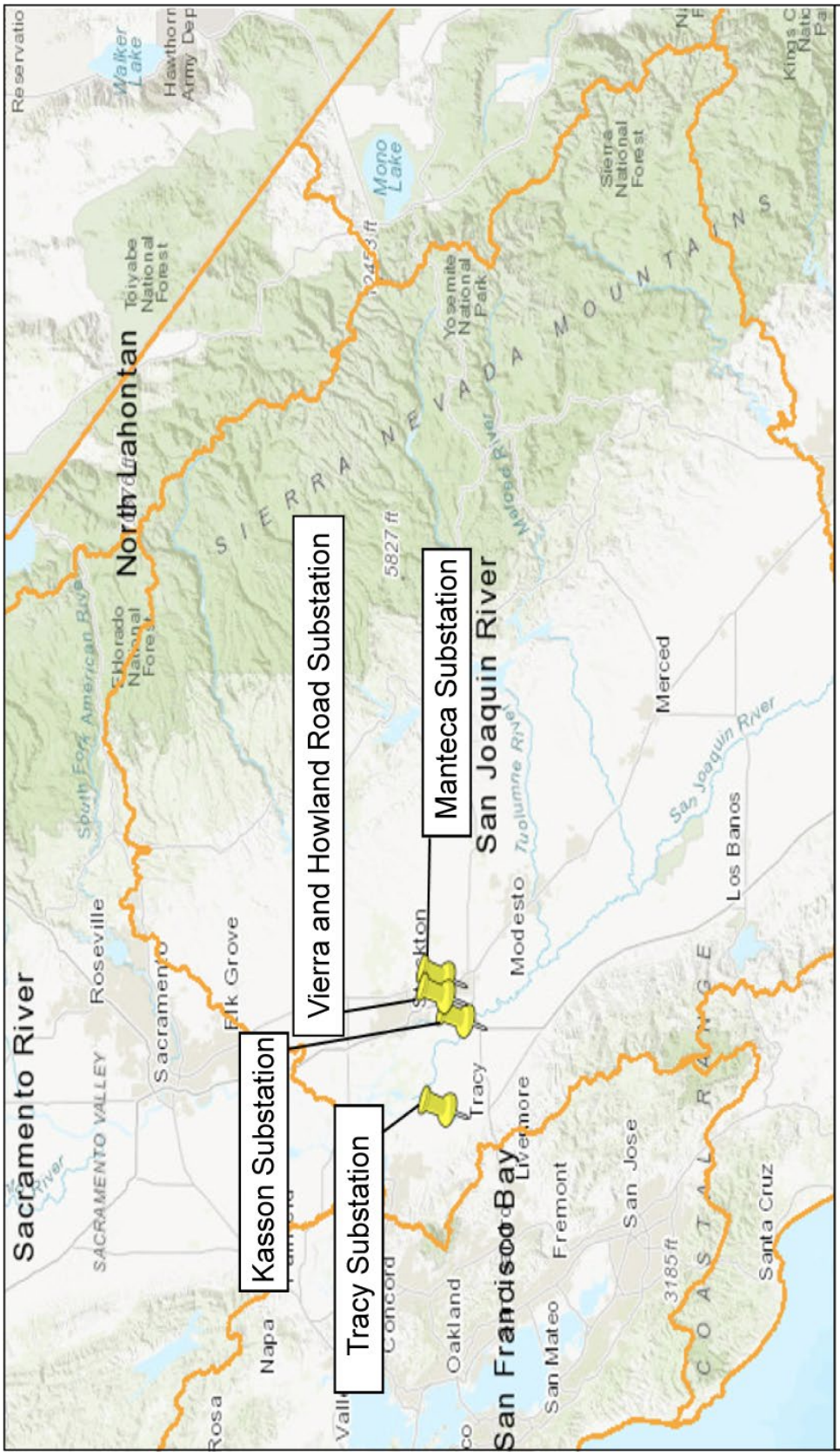


Figure 5.10-1
Substation Components and the San Joaquin River Hydrologic Basin

Source: DWR, 2003

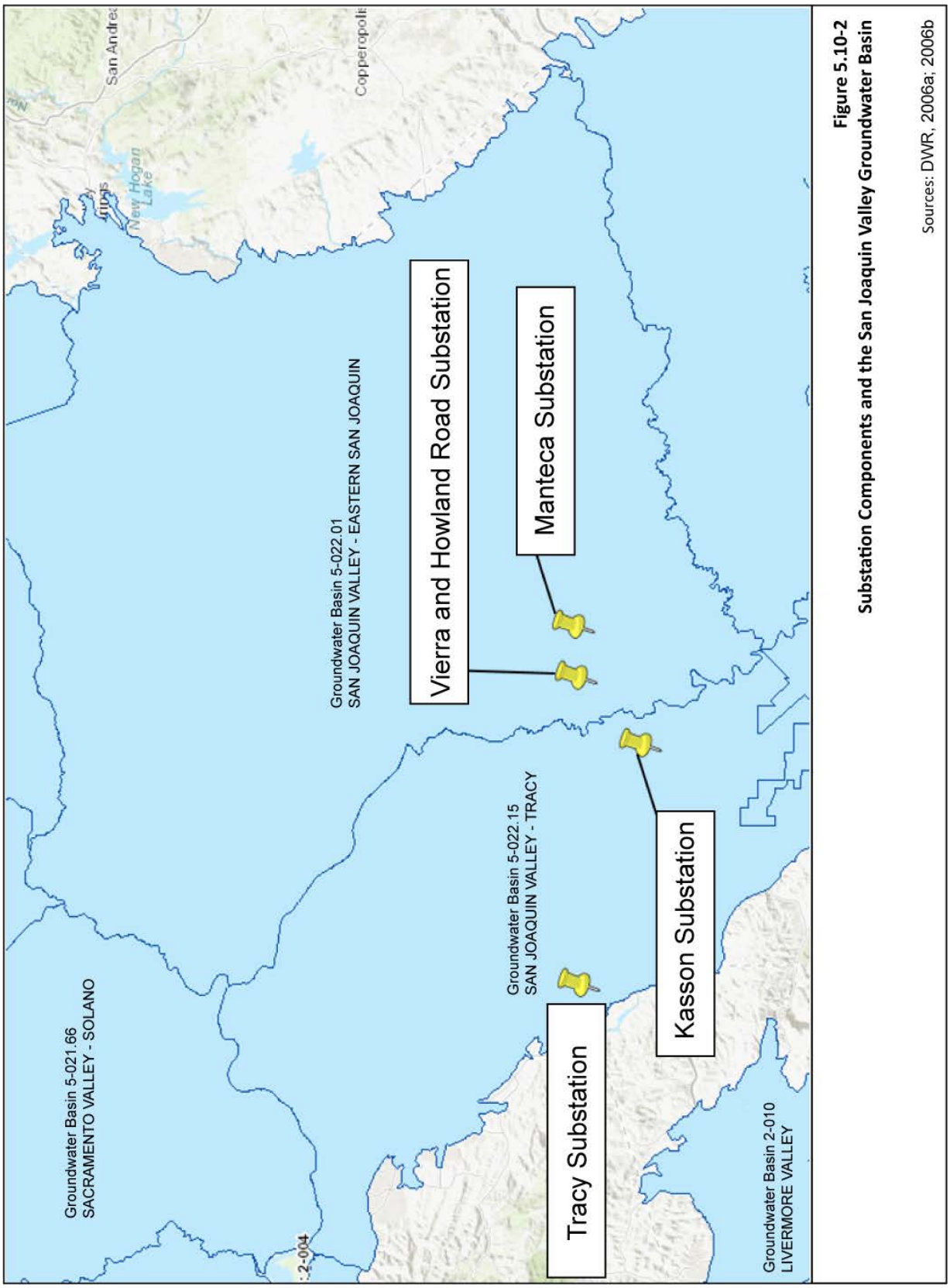


Figure 5.10-2
Substation Components and the San Joaquin Valley Groundwater Basin

Sources: DWR, 2006a; 2006b

Flooding

According to the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRMs), Kasson Substation is located within Flood Zone AE, or the 100-year flood hazard zone. Flood Zone AE is defined as areas of 1.0 percent annual chance of flood (also referred to as the 100-year flood) with average depths of 1 foot or higher. Properties in Zone AE area considered to be at higher risk of flooding under the National Flood Insurance Program (NFIP). Construction in these areas must meet local floodplain zoning ordinance requirements, including evidence that principle structures are above the Base Flood Elevation as shown on the adopted FIRM (see **Table 5.10-1** and **Figure 5.10-3**).

The Manteca, Tracy, Howland Road, and Vierra substations are located in Flood Zone X. FEMA describes Zone X as, "Areas of 0.2 percent annual chance flood; areas of 1.0 percent annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from the 1.0 percent annual flood." Zone X is considered a lower risk area for development projects and typically does not have associated design or insurance requirements. A FIRM is not available for the Tracy Substation and therefore no figure is provided showing the flood zone for this project component (see **Table 5.10-1** and **Figures 5.10-4** and **5.10-5**) (FEMA, 2018).

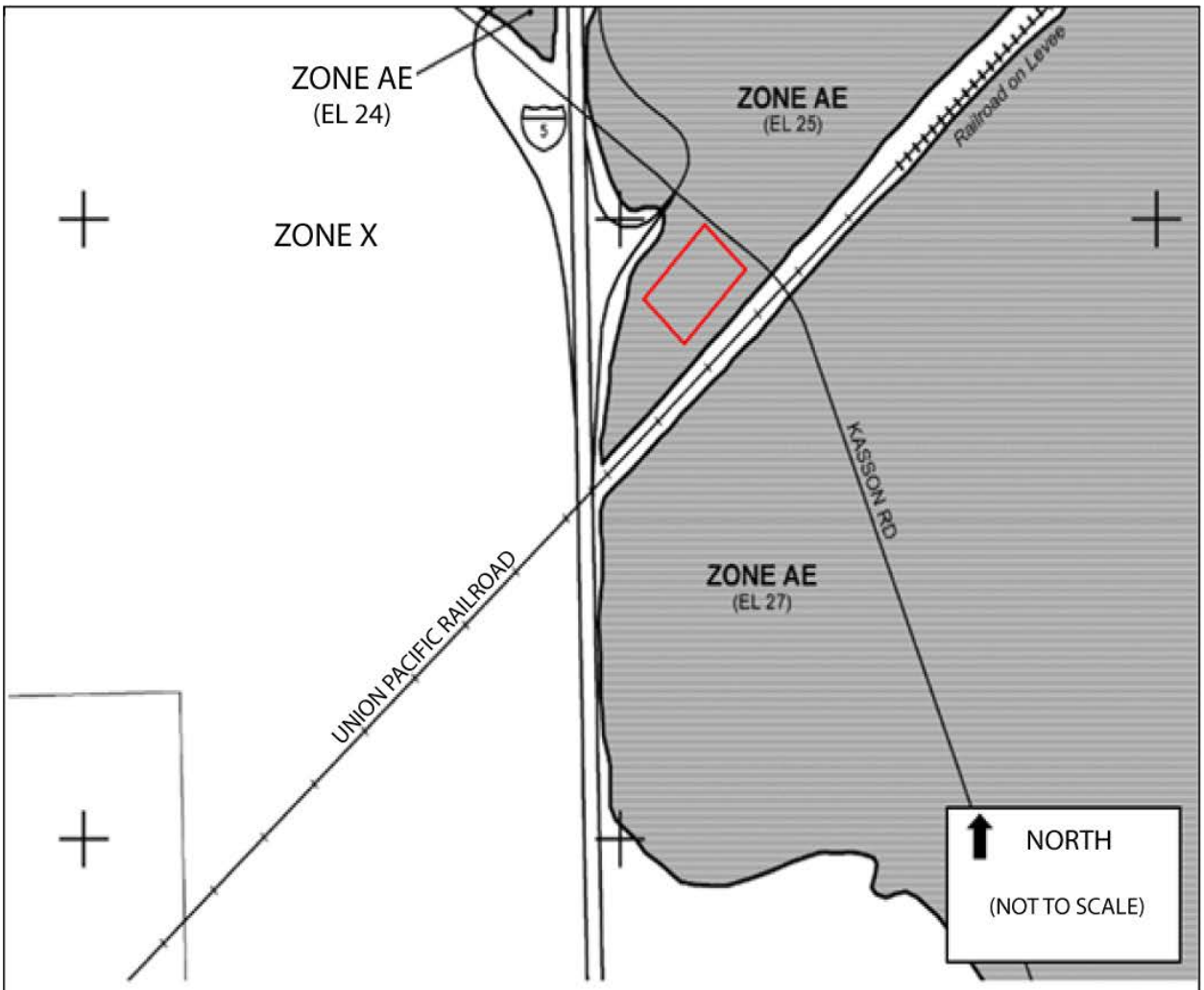
A seiche is defined as a surface water free or standing wave oscillation that is contained within a partially or completely enclosed basin. Seiches are initiated by some meteorological or geologic event occurring within an enclosed basin such as a lake, which results in sloshing of water within the basin as it reflects off the perimeter of the basin. A tsunami is a series of waves generated in a body of water by a rapid disturbance (e.g., submarine seismic, volcanic, or landslide event) that vertically displaces water. Based on the project locations, there are no recognized threats of seiche or tsunami flood hazards in the project area.

The project components are located in a potential dam failure inundation area from the San Luis Dam, approximately 50 miles south of the project area, and the New Melones Dam, approximately 40 miles northeast of the project area. New Melones is owned and operated by the United States Bureau of Reclamation (USBR), San Luis is owned by USBR and operated by the DWR. The mapping of inundation zones assumes complete failure of the dams with a full reservoir that becomes completely emptied upon dam failure. The actual extent and depth of inundation (in the event of a failure) depends on the volume of storage in the reservoir at the time of failure. New Melones Lake is currently at an estimated 86 percent of total storage capacity (DWR, 2019). If the dams were to fail, it would take approximately 8 hours for water from the New Melones Lake to affect Lathrop, and approximately 34 hours for water from the San Luis Reservoir to affect Lathrop (PGE, 2018a).

TABLE 5.10-1 PROJECT COMPONENT FLOOD ZONE DESIGNATIONS

Project Component	Flood Zone	FIRM, map number and date
Howland Road Substation	Zone X	06077C0620F, effective 10/16/2009
Kasson Substation	Zone AE	06077C0755F, effective 10/16/2009
Manteca Substation	Zone X	06077C0640F, effective 10/16/2009
Tracy Substation	Zone X	06077C0735F, "NOT PRINTED"
Vierra Substation	Zone X	06077C0620F, effective 10/16/2009

Source: FEMA, 2018



ZONE X

OTHER AREAS

Areas determined to be outside the 0.2% annual chance floodplain.

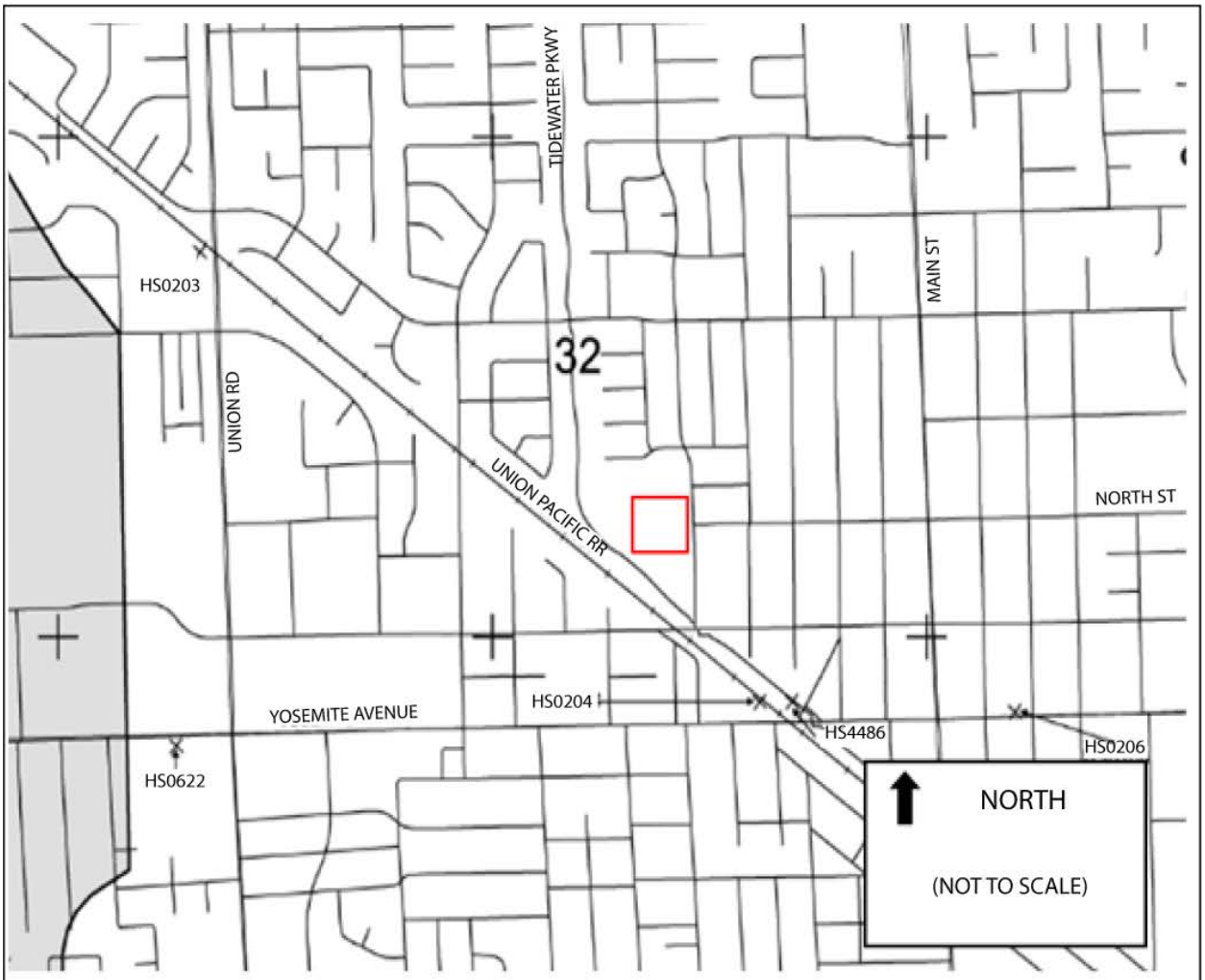
SPECIAL FLOOD HAZARD AREAS (SDHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

PROJECT AREA

Figure 5.10-3
FEMA FIRM in the Vicinity of Kasson Substation

Source: FEMA, 2018



OTHER FLOOD AREAS

ZONE X

Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

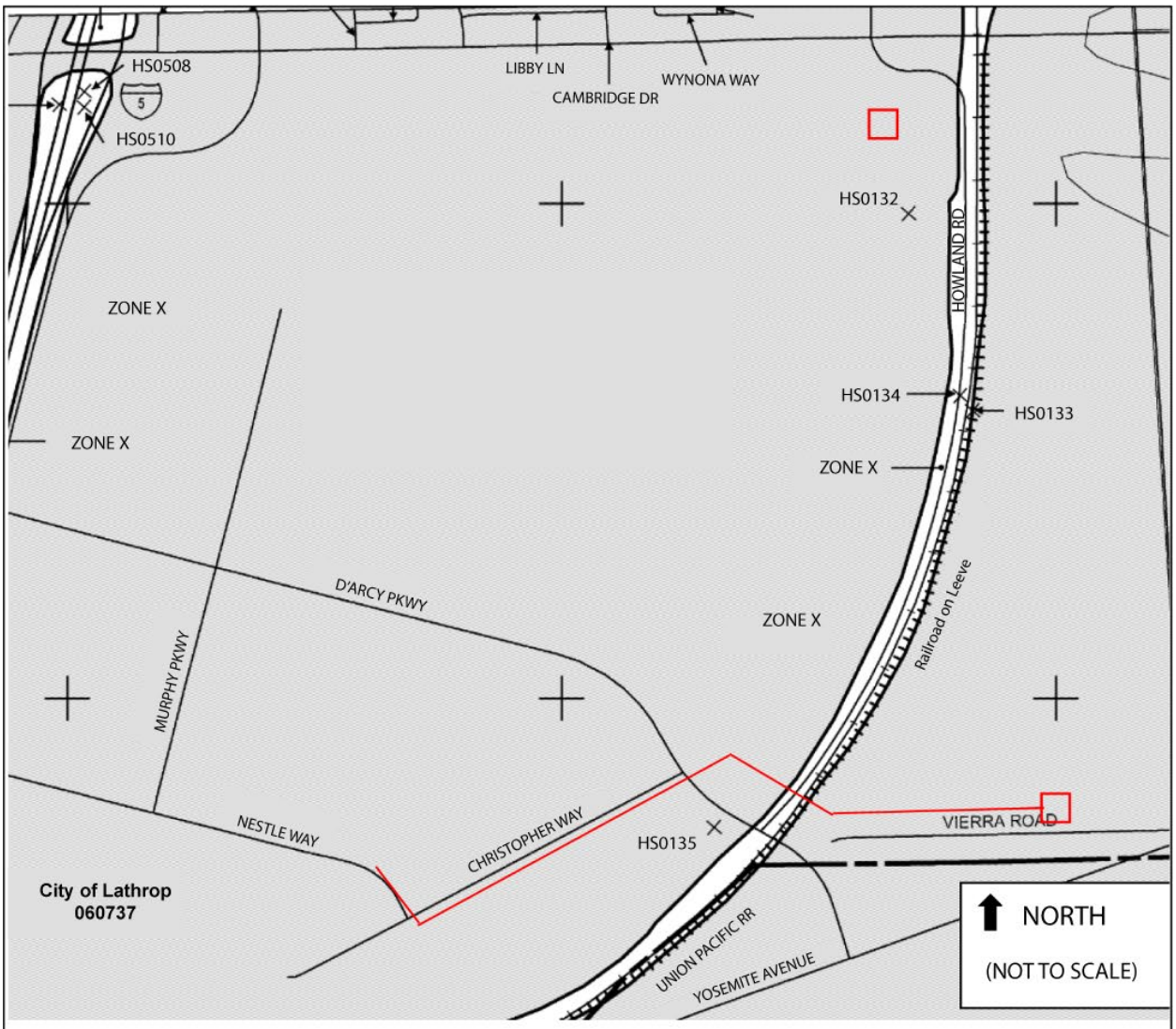
ZONE X

Areas determined to be outside the 0.2% annual chance floodplain.

PROJECT AREA

Figure 5.10-4
FEMA FIRM in the Vicinity of Manteca Substation

Source: FEMA, 2018



ZONE X — OTHER FLOOD AREAS
Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square miles; and areas protected by leeves from 1% annual chance flood.

ZONE X — OTHER AREAS
Areas determined to be outside the 0.2% annual chance floodplain.

PROJECT AREA
(Howland Road Substation, top; Vierra Substation, bottom)

Figure 5.10-5
FEMA FIRM in the Vicinity of Vierra Substation and Howland Road Substation

Source: FEMA, 2018

Water Quality

Historic and ongoing point and nonpoint source discharges impact surface waters and groundwater in the northern San Joaquin River basin and Sacramento-San Joaquin Delta waterways. Significant portions of the region's major rivers and the Delta are impaired due to discharges from agriculture, construction, mines, urban areas, and industries (CVRWQCB, 2018).

The project sites would discharge to an estuary defined by the United States Environmental Protection Agency (U.S. EPA) and State Water Resources Control Board (SWRCB) as "Delta Waterways, southern portion." This region is primarily impaired from agricultural industry pollutants and not those most common to the industrial and construction sectors. Common and problematic pollutants from the construction and industrial sectors are sediment and metals.

The construction industry has been identified as a problematic source of sediment to California waterways and also a risk to spawning habitats. The Construction General Stormwater permit uses a project's location relative to sensitive receiving water spawning habitats along with its susceptibility to discharge sediment, to determine a project's overall risk. According to the SWRCB's 2014 and 2016 Statewide Integrated Report (Clean Water Act section 303(d) List / 305(b) Report), none of the waterways subject to direct or indirect discharge from the project are 303(d)-listed waterbodies impaired by sediment. None of the waterways subject to direct or indirect discharge from the project have a U.S. EPA-approved total maximum daily load (TMDL) implementation plan for sediment. Additionally, none of the waterways that would be subject to direct or indirect discharge from the project have designated beneficial uses of spawn and cold and migratory (SWRCB, 2010).

Regulatory Background

Federal

National Flood Insurance Program (42 U.S.C. § 4001 et seq.). Federal Emergency Management Agency (FEMA) is responsible for determining flood elevations and floodplain boundaries based on U.S. Army Corps studies. FEMA is also responsible for distributing the FIRM used in the NFIP (42 U.S.C. § 4102). These maps identify the locations of special flood hazard areas, including 100-year floodplains. FEMA allows non-residential development in the floodplain; however, FEMA has criteria to "constrict the development of land which is exposed to flood damage where appropriate" and "guide the development of proposed construction away from locations which are threatened by flood hazards." Federal regulations governing development in a floodplain are set forth in Title 44, Part 60 of the Code of Federal Regulations. Consistent with these regulations, FEMA requires municipalities that participate in the NFIP to adopt certain flood hazard reduction standards for construction and development in 100-year floodplains.

Clean Water Act (33 U.S.C. § 1251). The Clean Water Act (CWA), formerly the Federal Water Pollution Control Act of 1972, was enacted with the intent of restoring and maintaining the chemical, physical, and biological integrity of the waters of the United States. The CWA requires states to set standards to protect, maintain, and restore water quality through the regulation of point source and certain non-point source discharges to surface water. Those discharges are regulated by the National Pollutant Discharge Elimination System (NPDES) permit process (CWA section 402).

The California Legislature has assigned the primary responsibility to administer and enforce statutes for the protection and enhancement of water quality under the NPDES framework (CWA section 402),

described above, to the SWRCB and its nine Regional Water Quality Control Boards (RWQCBs). The project is under the jurisdiction of the Central Valley RWQCB.

Projects that disturb one or more acres are required to obtain NPDES coverage under the California General Permit for Discharges of Stormwater Associated with Construction Activity (Construction General Permit). The Construction General Permit requires the development and implementation of a Stormwater Pollution Prevention Program (SWPPP). The SWPPP describes best management practices (BMPs) the discharger would use to protect stormwater runoff. The SWPPP must contain a visual monitoring program and a chemical monitoring program for "non-visible" pollutants to be implemented if there is a failure of BMPs.

The cities of Lathrop, Lodi, Manteca, Patterson, and Tracy, and portions of the County of San Joaquin are each co-permittees in the regional NPDES Phase II Municipal Separate Storm Sewer System (MS4). In 2013, the SWRCB adopted a NPDES general permit, Water Quality Order No. 2013-0001-DWQ, for Phase II MS4 communities to regulate stormwater and non-stormwater discharges from MS4s to waters of the United States. As part of the Phase II general permit, the co-permittees are required to develop or update post-construction standards to address stormwater quality for regulated new development and redevelopment projects (Provision E.12).

Under section 303(d) of the CWA, states are required to identify impaired surface water bodies and develop TMDLs for contaminants of concern. The TMDL is the quantity of a pollutant that can be safely assimilated by a water body without violating water quality standards. Listing of a water body as impaired does not necessarily suggest that the water body cannot support the beneficial uses; rather, the intent is to identify the water body as requiring future development of a TMDL to maintain water quality and reduce future water quality degradation.

State

Porter-Cologne Water Quality Control Act (Water Code §13000 et seq.). The SWRCB has the ultimate authority over State water rights and water quality policy. The Porter-Cologne Water Quality Control Act also establishes nine RWQCBs to oversee water quality on a day-to-day basis at the local/regional level. This regulatory framework protects the beneficial uses of the state's surface and groundwater resources for public benefit and environmental protection.

Sustainable Groundwater Management Act. The 2014 SGMA requires local public agencies and Groundwater Sustainability Agencies (GSAs) in high- and medium-priority basins to develop and implement Groundwater Sustainability Plans (GSPs) or Alternatives to GSPs. GSPs are detailed road maps for how groundwater basins will reach long term sustainability. GSPs are currently in progress for both the Eastern San Joaquin Valley and Tracy Subbasins.

Local

The project is not subject to local discretionary regulations because the CPUC has exclusive jurisdiction over the siting, design and construction of the project under CPUC General Order No. 131-D. Local ordinance policies and requirements are summarized here for information purposes.

Multi-Agency Post-Construction Manual. To comply with the NPDES Phase II general permit, the cities and San Joaquin County formed a partnership and developed the Multi-Agency Post-Construction Stormwater Manual. The Multi-Agency Post Construction Stormwater Manual provides guidance for planning, implementing, and maintaining effective control measures with the intention of improving

water quality and mitigating potential water quality impacts, including hydromodification, from stormwater and non-stormwater discharges.

Implementation of stormwater standards are required in each agency's municipal codes and/or ordinances. The following regulations have been adopted by the different cities for that purpose.

City of Lathrop Municipal Code Chapter 13.28 - Stormwater Management and Discharge Control. The purpose of this chapter is to establish minimum stormwater management requirements and controls to assist in the protection and enhancement of the water quality of watercourses, water bodies and wetlands in a manner pursuant to and consistent with the Federal CWA (33 U.S.C. § 1251 et seq.) and any subsequent amendments thereto, by reducing pollutants in stormwater discharges to the maximum extent practicable (Lathrop, 2018a).

City of Manteca Municipal Code Chapter 13.28 - Stormwater Management and Discharges. The purpose of this chapter is to establish minimum stormwater management requirements and controls to protect and safeguard the general health, safety, and welfare of the public residing in watersheds within the city of Manteca.

City of Tracy Municipal Code Chapter 11.34 - Stormwater Management and Discharge Control. The purpose of this chapter is to protect and promote the health, safety, and general welfare of the citizens of the city by controlling non-stormwater discharges to the stormwater conveyance system, by eliminating discharges to the stormwater conveyance system from spills, dumping, or disposal of materials other than stormwater, and by reducing pollutants in urban stormwater discharges to the maximum extent practicable. This chapter is intended to assist in the protection and enhancement of the water quality of watercourses, water bodies, and wetlands in a manner pursuant to and consistent with the Federal Water Pollution Control Act (Clean Water Act, 33 U.S.C. § 1251 et seq.), Porter-Cologne Water Quality Control Act (California Water Code § 13000 et seq.), and NPDES Permit No. CAS000004, as such permit is amended and/or renewed.

San Joaquin County Ordinance Code, Title 5, Division 10 – Stormwater Management and Discharge Control. This Division establishes uniform requirement for protection and enhancement of the water quality of waters of San Joaquin County, the State of California and the United States in a manner consistent with the Federal CWA. The purpose of this chapter is to protect the health, safety, and general welfare of San Joaquin County citizens by establishing requirements for:

- Operating and maintaining certain stormwater systems;
- Eliminating non-stormwater discharge to certain stormwater facilities;
- Controlling the accidental or intentional dumping of materials other than stormwater into certain storm water facilities; and
- Reducing pollutants in stormwater by establishing BMPs and through the use of the best available technologies.

5.10.2 Applicant Proposed Measures

PG&E proposes to implement the following Applicant Proposed Measure (APM) for hydrology and water quality as part of the project. Additionally, APM HM-1 and APM HM-3 would reduce any potential construction impacts in the event of an accidental release of diesel fuel, hydraulic fluid, oils, or grease to less than significant. In the event standing water (beyond 48 hours) in the retention pond contains

pollutants, APM HM-2 would be implemented to ensure that the impacts would be less than significant. See Section 5.9, *Hazards and Hazardous Materials*, for a full description of the APMs listed above.

APM HYDRO-1: Stormwater Pollution Prevention Plan. PG&E will prepare and implement a SWPPP to prevent construction-related erosion, sediment runoff, and discharge of other pollutants into adjacent waterways and onto neighboring properties. Because project activities will result in ground disturbance of more than one acre, PG&E will obtain coverage under the SWRCB General Permit for Stormwater Discharges Associated with Construction Activity Order No. 2009-0009-DWQ (and as amended by 2010-0014-DWQ and 2012-006-DWQ). To obtain coverage under the permit, PG&E will develop and submit permit registration documents—including a Notice of Intent, SWPPP, risk assessment, site map, construction drawings, certification by Legally Responsible Person (LRP), contractor contact information, and annual fee—to the State of California's SMARTS database and obtain a WDID number prior to initiating construction activities.

PG&E will prepare and implement a SWPPP to help stabilize disturbed areas and reduce erosion and sedimentation. A monitoring program will also be established to ensure that the prescribed BMPs are followed during project construction. A qualified SWPPP practitioner will oversee the implementation of the SWPPP and associated BMPs. The following measures are generally drawn from the permit and will be included in the SWPPP prepared for the construction of the project:

- All BMPs will be on site and ready for installation before the start of construction activities.
- BMPs will be developed to prevent the acceleration of natural erosion and sedimentation rates, such as the use of silt fence and wattles.
- Prior to conducting clearing activities during the wet season and before the onset of winter rains or any anticipated storm events, erosion-control measures will be installed. Temporary measures such as silt fences or wattles, which are intended to minimize sediment transport from temporarily disturbed areas, will remain in place until disturbed areas have stabilized.

If the project is exempt from local post-construction storm water BMP requirements, the permit registration documents shall contain:

- A post-construction storm water system design
- Demonstrated compliance with post-construction water balance calculator

5.10.3 Environmental Impacts and Mitigation Measures

a. Would the project violate water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?

Construction

LESS THAN SIGNIFICANT IMPACT. Impacts to water quality can result from several different construction-related sources, including contamination from fuels or other hazardous materials, erosion and sedimentation generated through excavation or vegetation clearing leading to siltation of waterways. Vegetation may need to be cleared or mowed to improve access to the project sites. Erosion could occur during ground disturbing construction activities, which are expected to take 12 to 18 months (PGE, 2018a).

The Vierra Substation expansion and new power line would require temporary disturbance of about 13 acres during construction. This includes disturbance area for tubular steel pole sites, pull sites, and temporary access roads and staging areas, and approximately 2.8 acres associated with expanding the substation (PGE, 2018a).

Kasson, Manteca, and Tracy substations would each require a small amount of disturbance for the installation of an 11 foot by 11 foot by 4 foot deep slab foundation and a 60-foot tall monopole. The Howland Road Substation would require disturbance for a conduit trench (228 feet long by 5 feet wide and 5 feet deep), three -12 feet deep by 4 feet in diameter piers for the circuit switcher foundation, and a voltage transformer pier foundation (9 feet deep by 2 feet in diameter).

Implementation of APM HYDRO-1 would ensure that water quality standards of the Basin Plan and waste discharge requirements of the Construction General Permit would not be violated. PG&E would develop a SWPPP to address potential water quality concerns related to construction. The SWPPP would specify measures for each activity that has the potential to degrade water quality through erosion, sediment runoff, and the discharge of other pollutants. Any dewatering discharge, if necessary, would be contained, analyzed, and discharged in accordance with the SWPPP. These measures would be implemented and monitored throughout construction of the project by a qualified SWPPP practitioner to ensure water quality standards and waste discharge requirements are not violated.

Construction of the project components could result in the accidental release of diesel fuel, hydraulic fluid, oils, or grease. The impact of accidental releases of hazardous materials that would be used during construction and associated APMs are discussed in more detail in Section 5.9, *Hazards and Hazardous Materials*. If there were a spill to soil or water during project construction, potential impacts from project construction would be less than significant with the implementation of APMs HM-1 and HM-3.

The proposed construction activities would not be expected to cause adverse impacts to water quality, or to violate any identified water quality standard or waste discharge requirements. Any potential construction impacts would be less than significant with implementation of APMs HYDRO-1, HM-1, and HM-3.

Mitigation Measures: None recommended.

Operation and Maintenance

LESS THAN SIGNIFICANT IMPACT. The proposed Vierra Substation expansion project component would result in the construction of a stormwater infiltration basin within the expanded substation, measuring approximately 300 feet long by 40 feet wide and 3 feet deep at the Vierra Substation site.

The requirements for post-construction stormwater BMP design within the city of Lathrop are contained in the Multi-Agency Post-Construction Stormwater Manual. The infiltration basin proposed by the owner would serve as an alternative to the standard treatment control basin design requirement for bioretention. The city of Lathrop's Phase II municipal stormwater permit (Provision E.12.e.(f)) identifies bioretention as the standard stormwater treatment control measure unless (1) an alternative treatment control measure that is equivalent to bioretention is proposed and demonstrated (Provision E.12.e.(g)), or (2) a specific exception applies (Provision E.12.e.(i)) (Lathrop, 2015).

An infiltration basin can be proposed as an alternative to bioretention if it meets all of the following measures of equivalent effectiveness:

- Equal or greater amount of stormwater runoff infiltrated or evapotranspired;
- Equal or lower pollutant concentrations in stormwater runoff that is discharged after biotreatment;
- Equal or greater protection against shock loadings and spills; and
- Equal or greater accessibility and ease of inspection and maintenance.

The applicant proposes this alternative to bioretention due to concerns that vegetation within the fence line poses a fire hazard to electrical structures. The owner proposes to build an infiltration basin that meets the effectiveness criteria listed above.

The infiltration basin would have 27,300 cubic feet (ft^3) of storage capacity, much more than the 85^{th} percentile stormwater design volume required by the city of Lathrop post-construction stormwater standards manual, which would be 5,230 ft^3 (PGE, 2018e). Thus, the proposed basin would have adequate capacity to accommodate stormwater.

The Multi-Agency Post-Construction Stormwater Manual states that five feet of separation between the bottom of the basin and groundwater should be maintained at all times. As discussed above, groundwater levels were measured at seven to eight feet in borings during a geotechnical investigation in 1997 (PGE, 2018a). The most recent geotechnical investigation for the project site (August 25, 2016) indicates that groundwater was encountered at a depth of 16 feet bgs. Groundwater levels at the site have varied between 5.5 feet and 17 feet below grade from 1963 to 1990 (PGE, 2018c). These variations could be due to seasonal irrigation of the underlying farmland where the substation is located. Periodic application of treated wastewater in ponds to the south of the site at the Lathrop Consolidated Treatment Facility and groundwater pumping at or near the site could also influence the observed fluctuation and affect the short term and long term groundwater levels. Impacts to groundwater quality could occur if the proposed infiltration basin is not adequately separated from groundwater levels. Given the available groundwater level data, 5.5 feet bgs could be considered as a worst-case scenario for separation from groundwater, since the invert of the new basin (3 feet deep) would be approximately equal to the current grade. Under such a scenario, the project would meet the groundwater separation clearance guidelines in the Multi-Agency Post Construction Stormwater Manual.

Estimates show the 3-foot-deep basin is expected to be half-full, or contain 18 inches of stormwater during a 1-in-10-year storm event. Standing water within the pond would likely infiltrate within 48 hours; however, complete infiltration could take longer than 48 hours if there is a high water table and a half-full detention base. If water is standing in the pond after 48 hours PG&E would take prompt action to inspect and test the contained stormwater, and if clean, pump it out of the basin. If pollutants are identified during testing, the hazardous handling procedure would be followed to remove the water from the pond in accordance with the Spill Prevention, Control, and Countermeasure plan required by APM HM-2.

APM HYDRO-1 and a SWPPP would be implemented for the project, which contain requirements for post-construction BMP design and would be in compliance with the post-construction elements of the state's Construction General Permit for stormwater discharges. The SWPPP would specify steps

to ensure compliance with city of Lathrop BMP standards and all applicable stormwater and other waste discharge requirements. Therefore, operational impacts associated with surface and groundwater quality would be less than significant.

Mitigation Measures: None recommended.

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b. Would the project substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?

Construction

LESS THAN SIGNIFICANT IMPACT. Potable water in the city of Lathrop is provided by the city's Department of Public Works, Utilities Division. The majority of potable water supply in the city comes from groundwater using 6 deep city-owned wells that extract groundwater from approximately 160 to 270 bgs, while the remaining demand is met with surface water obtained from the Woodward Reservoir, which is distributed by the South San Joaquin Irrigation District (SSJID). According to the 2015 Urban Water Management Plan, use of surface water supplies has been declining from about 28 percent in 2011 to only 7 percent in 2016 (Lathrop, 2017). Several fire hydrants located along the proposed power line alignment and near the Vierra Substation could also be used for supply.

The applicant received a letter of commitment from the city of Lathrop showing the city's approval to supply the project with the estimated amount of water needed during construction (Lathrop, 2018b). The supply would primarily be used at the Vierra Substation for dust control. The city confirmed that the Vierra Substation construction, which is estimated to last 8 weeks (approximately 56 days) and require 10,000 gallons per day, 560,000 gallons, or 1.7 acre-feet (AF), would be available for use by the project. The letter also indicates that there is adequate supply for the up to 4 months (approximately 16 weeks) of 5,000 gallons per week needed for power pole construction. This would add about 0.2 AF (PGE, 2018g) to the project's overall water use during construction. Total water use for construction would be about 2 AF.

Water demand for the modifications at Howland Road, Kasson, Manteca, and Tracy substations is expected to be minor and would come from local sources predominantly reliant on groundwater or provided by others such as ready mixed concrete placed in the tower foundations. Substantial use of groundwater would not occur at the substations where modifications would be constructed.

The total water needs for construction would be temporary and very low; therefore; substantial groundwater depletion would not occur as a result of construction and impacts would be less than significant. The city has confirmed the availability of adequate water resources to meet project's proposed water use; therefore, the project would not impede efforts towards sustainable groundwater management in the project's underlying groundwater subbasins.

Water supply from the city of Lathrop is derived primarily from groundwater pumped from six municipal wells just east of McKinley Avenue and south of Lathrop Road. The 2 AF required for construction would come from one or more of these wells. Groundwater could be influenced by the proposed project, but the impact would be small. A detailed analysis of local groundwater supply is provided in Section 5.18, *Utilities and Service Systems*. The 2 AF of groundwater that would be

required for construction would represent a minimal level of demand. This would not substantively change groundwater levels, such that an impedance to sustainable management of the groundwater basin would occur. Impacts associated with demands on basin groundwater would be limited to the approximately 56-day portion of construction requiring water for dust control and would be less than significant.

Mitigation Measures: None recommended.

Operation and Maintenance

LESS THAN SIGNIFICANT IMPACT. The Vierra Substation expansion would add less than 2.8 acres of impervious surfaces and provide an infiltration basin for stormwater management. Any interference with recharge due to the impervious surface areas associated with the expansion would be offset by the infiltration from the proposed stormwater retention basin. There would be no other impact to recharge of groundwater from project elements. Water use for operation and maintenance at the five substations would not change from current operation and maintenance activities as a result of implementation of the project. The substations do not typically require water for operation or maintenance. Therefore, there would be no depletion of groundwater supplies during operation such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level. A less than significant impact would occur.

Mitigation Measures: None recommended.

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c. Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:

i. result in substantial erosion or siltation, on- or offsite;

Construction

LESS THAN SIGNIFICANT IMPACT. None of the five project substations are in the immediate vicinity of any waterways, streams, or rivers. Although grading would be required for the Vierra Substation expansion and minor grading may be required for leveling of the trench excavation at Howland Road Substation, the work would be done in a manner to prevent erosion or sedimentation on or off the substation sites. All construction work would occur on previously disturbed sites that are relatively flat. The project modifications are not expected to substantially alter the drainage patterns at the construction sites or the course of any rivers or streams.

Construction at the five substation sites is not expected to add significant imperviousness and therefore are not expected to substantially increase the rate of surface runoff or result in substantial erosion or siltation, on- or off-site. Howland Road, Manteca, Kasson, and Tracy substations would each require a small (less than 121 square feet) addition of impervious area for tower and pier foundations, which translates to approximately one percent of an acre. The most significant project component, the Vierra Substation expansion, is designed to retain on-site surface water runoff. The other project elements would not add substantial impervious areas.

Appropriate BMPs would also be implemented through the SWPPP, as described in APM HYDRO-1. After project construction is completed, temporary work areas would be stabilized. Through project design and implementation of the SWPPP, the temporary and short-term effects of erosion or siltation from site runoff would be addressed.

Construction of the proposed project is not expected to alter drainage patterns or result in substantial erosion. A less-than-significant impact would occur.

Mitigation Measures: None recommended.

Operation and Maintenance

LESS THAN SIGNIFICANT IMPACT. Operation and maintenance activities would be similar to that at existing substations and would not be expected to alter existing drainage patterns of the project sites in a way that would result in substantial erosion or sedimentation on- or off-site, and therefore, would not result in impacts. The Vierra Substation expansion would be graded to capture on-site surface water run-off and ensure impacts from off-site flow would be less than significant.

Mitigation Measures: None recommended.

ii. substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite;

Construction

LESS THAN SIGNIFICANT IMPACT. As described under question "a", construction of the proposed project would implement AMP HYDRO-1, which includes stormwater protection measure requirements, preparation and implementation of a SWPPP, and associated BMPs, which would limit and/or accommodate surface runoff. Thus, the project's construction would not substantially increase surface runoff or result in flooding. Impacts would be less than significant.

Mitigation Measures: None recommended.

Operation and Maintenance

LESS THAN SIGNIFICANT IMPACT. The project components are not expected to add significant impervious surface areas to the site and therefore are not expected to substantially increase the rate of surface runoff to on- or off-site areas. The project component with the most impervious surfaces, the Vierra Substation expansion, is designed to retain on-site surface water runoff. The proposed retention basin is designed to contain two 10-year, 24-hour events, while maintaining one foot of freeboard. The infiltration basin would have 27,300 cubic feet (ft^3) of storage capacity, much more than the 85th percentile stormwater design volume required by the city of Lathrop post-construction stormwater standards manual, which would be 5,230 ft^3 (PGE, 2018g).

The four remote substations would each require the addition of 121 square feet (or less) of impervious area, which translates to roughly one percent of an acre in total. This would not be expected to result in flooding because the new structures would be disconnected impervious areas, with allowances for infiltration to occur between the project's structures. The design would allow capture or infiltration of surface water discharge from the site, resulting in less-than-significant impacts.

Mitigation Measures: None recommended.

iii. create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff;

Construction

LESS THAN SIGNIFICANT IMPACT. As described above, construction of the proposed project would include implementation of APMs HYDRO-1, HM-2, and HM-3 to manage and limit risks associated with release of pollutants. Additionally, stormwater design measures would be implemented, such that the project would not substantially increase surface runoff or increase related pollutant loading. Impacts would be less than significant.

Mitigation Measures: None recommended.

Operation and Maintenance

LESS THAN SIGNIFICANT IMPACT. The five substation sites are not expected to add significant amounts of impervious surface areas and therefore would not substantially increase the rate of surface run -on- or runoff, or discharge additional polluted runoff. The most significant project component, the Vierra Substation expansion, is designed to retain on-site surface water runoff. The proposed retention basin is designed to contain two 10-year, 24-hour events, while maintaining one foot of freeboard. The infiltration basin would have 27,300 ft^3 of storage capacity, much more than the 85^{th} percentile stormwater design volume required by the city of Lathrop post-construction stormwater standards manual, which would be 5,230 ft^3 (PGE, 2018g). The basin would also serve to contain potentially polluted stormwater on-site.

The four remote substation modifications would each require the addition of 121 square feet (or less) of impervious area, but would not be expected to result in increased runoff because the new structures would be disconnected impervious areas, which would allow for infiltration between impervious surfaces. Impacts would be less than significant.

Mitigation Measures: None recommended.

iv. impede or redirect flood flows?

Construction

LESS THAN SIGNIFICANT IMPACT. Construction of the project would not involve substantial alterations of the existing topography of the site through grading, nor would the project place substantial amounts of impervious surface areas into the floodplain, as described below. Impacts, if any would be less than significant.

Mitigation Measures: None recommended.

Operation and Maintenance

LESS THAN SIGNIFICANT IMPACT. The Howland Road, Vierra, Manteca, and Tracy substation modifications would occur in FEMA Flood Zone X and are therefore unlikely to experience flooding (see **Figures 5.10-4** and **5.10-5**). Additionally, the proposed modifications at the remote substations would not be expected to significantly impede or redirect flood flows if they were to occur because all new foundation components are expected to be low in profile (height) and would be constructed within

the footprint of the existing substations. Therefore, there would be no impedance or redirection of flood flows associated with the project. Impacts, if any, would be less than significant.

Kasson Substation is located within Flood Zone AE, a 100-year flood hazard zone; however, the proposed project components would not result in placing any significant new structures in the 100-year flood zone that would impede or redirect flood flows (see **Figure 5.10-3**). Monopole construction at this site would be within the existing footprint of the substation. The tower construction at this substation would not result in a measureable change to flood flow depth. The project would not result in conditions that would impede or redirect flood flows, and therefore, there would be less-than-significant impacts associated with changes to flood flows during construction.

The project is also located in a potential dam failure inundation area from the San Luis Dam, located approximately 50 miles south of the project, and the New Melones Dam, located approximately 40 miles northeast of the project. New Melones is owned and operated by the USBR, San Luis is owned by USBR and operated by the DWR. New Melones Lake is currently at 86 percent of storage capacity, which is significantly above the historic average for the date examined. If the dams were to fail, assuming it would be at full capacity, it would take approximately 8 hours for water from the New Melones Lake to affect Lathrop, and approximately 34 hours for water from the San Luis Reservoir to affect Lathrop (PGE, 2018a).

The five substations are within the New Melones and San Luis identified dam inundation zones, with the project sites at a distance 40 to 50 miles from the dams. The city of Lathrop could be inundated. With implementation of APMs HYDRO-1, HM-2, and HM-3, construction and operation of the project would not exacerbate the environmental effects associated with inundation, in the unlikely event that it should occur.

The proposed project components would not significantly impede or redirect flood flows, as the structures are relatively small and separated by undeveloped areas capable of dispersing such flows. No notable increase in the depth or residence time of inundation flood waters would be anticipated as a result of the project. As previously described, the project would include minimal increases of impervious surface areas for the foundations of five disconnected substations. The proposed improvements at the substations would not displace enough floodwater in the inundation zone to increase the depth of flood waters onto adjacent properties. Therefore, even though inundation could occur at the project site in the future, the project components would not add significant amounts of impervious surface area to the sites such that the existing environmental hazard would be exacerbated.

The five substations are protected from flooding, to some degree, by levees. The levee along the San Joaquin River is accredited by FEMA as meeting federal design, construction, maintenance, and operation standards to adequately reduce the risk of flooding from a 100-year flood, and the city is working with agencies responsible for levees to correct any deficiencies that would prevent the city from meeting the 200-year flood protection standards (PGE, 2018a).

The project would not affect existing levees, dams, or other flood control mechanisms and would not exacerbate the identified existing flood hazards. Additionally, the project would not significantly impede or redirect flood flows, as limited amounts of impervious surfaces would be added to the sites. Impacts associated with operation of the project would be less than significant.

Mitigation Measures: None recommended.

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d. Would the project in flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?

Construction

LESS THAN SIGNIFICANT IMPACT. No waterbodies capable of generating seiches or tsunamis are located in the vicinity of the project sites. Mudflows require super-saturated slope conditions. The topography within and adjacent to the project sites is generally level, and would not be significantly altered through the project's construction. Slopes capable of generating mudflows are not present and would not be created by project grading activities. As the project would not be located in an area at risk for tsunami, seiche, or mudflows, the project would not be inundated by these hazards and therefore would not release pollutants in this manner.

The flood hazards applicable to the project are discussed in section "c", subdivision iv, above. As described above, some of the project elements are in zones of potential flooding hazards, associated with the project's location with respect to the identified dam inundation zones. Given the 40 to 50-mile distance of the dams to the project, the risks are remote, but if one of the two identified dams should fail, there is a risk for release and dispersal of contaminants on site and in the surrounding area. PG&E proposes to manage on-site pollutants through a Stormwater Pollution Prevention Plan (APM HYDRO-1), Worker Environmental Training (APM HM-1), a Spill Prevention, Control, and Countermeasure Plan and a Hazardous Materials Business Plan (APM HM-2), and through an emergency spill response program (APM HM-3). All of these measures would work together to help keep potential pollutants properly contained. Additionally, these APMs would help protect waters of the State and waters of the U.S. and systematically reduce the risk of pollutant release if inundation of a project site occurred. This impact would be less than significant with implementation of APMs HYDRO-1, HM-1, HM-2, and HM-3.

Mitigation Measures: None recommended.

Operation and Maintenance

LESS THAN SIGNIFICANT IMPACT. As the project would not be located in areas subject to tsunami, seiche, or mudflow hazards, there would be no risk of release associated with these hazards. The risk of pollutant release during dam failure inundation exists. However, PG&E would implement APMs HM-2 and HM-3 for spill containment and to minimize release of pollutants in the event of such a disaster. Operational impacts would be less than significant.

Mitigation Measures: None recommended.

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e. Would the project conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?

Water Quality Control Plan

Construction

LESS THAN SIGNIFICANT IMPACT. All of the project components would be constructed within the planning area of the Water Quality Control Plan (Basin Plan) for the Central Valley RWQCB. Implementation of APM HYDRO-1 would ensure that water quality standards of the Basin Plan and waste discharge requirements of the Construction General Permit would not be violated. PG&E would develop a SWPPP to address potential water quality concerns related to construction. The SWPPP would specify measures for each activity that has the potential to degrade water quality through erosion, sediment runoff, and the discharge of other pollutants. Any dewatering discharge, if necessary, would be contained, analyzed, and discharged in accordance with the SWPPP. These measures would be implemented and monitored throughout the project by a qualified SWPPP practitioner to ensure water quality standards and waste discharge requirements are not violated.

Construction of the project could result in the accidental release of diesel fuel, hydraulic fluid, oils, or grease. The impact of accidental releases of hazardous materials that would be used during construction and associated APMs are discussed in more detail in Section 5.9, *Hazards and Hazardous Materials*. If there is a spill to soil or water during project construction, impacts from project construction would be less than significant with implementation of APMs HM-1, HM-2, and HM-3.

The proposed construction activities are not expected to cause adverse impacts to water quality, or to violate any identified water quality standard or waste discharge requirements. The impact would be less than significant with implementation of APMs HYDRO-1, HM-1, and HM-3.

Mitigation Measures: None recommended.

Operation and Maintenance

LESS THAN SIGNIFICANT IMPACT. The Vierra Substation expansion would be operated and maintained using the stormwater infiltration basin which would capture on-site runoff and ensure potential impacts from polluted runoff are less than significant. APM HYDRO-1 would require that the stormwater infiltration basin be designed and maintained in a manner that would not conflict with requirements set forth in the Central Valley Basin Plan.

Although new foundations would be added at the four remote substations they would not create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems, or provide substantial additional sources of polluted runoff. Impacts would be less than significant.

The proposed operation of the project is not expected to cause adverse impacts to water quality, or to violate any identified water quality standard, waste discharge requirement, or the Central Valley Basin Plan. The impact would be less than significant with implementation of APMs HYD-1, HM-1, and HM-3. Impacts would be less than significant.

Mitigation Measures: None recommended.

Sustainable Groundwater Management Plans

Construction

LESS THAN SIGNIFICANT IMPACT. The use of groundwater throughout the project region as a water supply source has created overdraft conditions and contamination of the water-bearing aquifers. The Eastern San Joaquin Valley Subbasin is identified as a basin "subject to critical conditions of overdraft" by DWR, with a high priority for reducing groundwater level decline. The Tracy Subbasin is identified as having a medium priority for addressing its water level declines. GSPs are currently in progress for both the Eastern San Joaquin Valley and Tracy Subbasins.

The City of Lathrop has formed a GSA and currently overlies both the Eastern San Joaquin and the Tracy Subbasins; the Vierra Substation is currently within the Tracy Subbasin. The City of Lathrop submitted a petition for a basin boundary modification to DWR, which would result in the Vierra Substation being completely within the boundary of the Eastern San Joaquin Subbasin (DWR, 2018a) and a different GSA. Though this proposed modification could change the description of the basin supplying water to the city and the proposed project, it is not expected to change the physical source of the water. The city gets its water from six wells located in what is currently delineated as the Eastern San Joaquin Valley Subbasin (Lathrop, 2017).

The project proponent provided a letter of commitment from the City of Lathrop confirming the availability of adequate water supplies to serve construction of the project with the estimated amount of water needed during 8-week period of substation construction and during the three to four-month period for construction of the power line. The water supply would primarily be used at the Vierra Substation expansion for fill placement and dust control. The city of Lathrop has not indicated that service of this water to the project would create a conflict with the basin's future GSP (Lathrop, 2018b).

Water demand for construction of the microwave towers, trench backfill, piers, and foundations at Howland Road, Kasson, Manteca, and Tracy substations is expected to be minor and would come from local sources or provided by others such as ready mixed concrete for placement in the tower foundations. Measureable groundwater use is not expected at these remote substations.

The total water needs for construction are anticipated to be a maximum of 2 AF. Although this use of water would not be substantial, impacts could occur given that the basin is currently subject to conditions of critical overdraft. However, groundwater extraction would not persist beyond the 12-18-month duration of construction and would have no ongoing impact pertaining to sustainable management of the groundwater basin. The project's proposed water use would not impede efforts towards sustainable groundwater management in the project's underlying groundwater subbasins. Impacts would be less than significant.

Mitigation Measures: None recommended.

Operation and Maintenance

LESS THAN SIGNIFICANT IMPACT. Project operation and maintenance water use would not change from current operation and maintenance activities at the five substations. The substations do not typically use water for operation or maintenance, therefore, there would be no depletion of groundwater

supplies during operation such that conflicts with the sustainable management of the basin would occur. Impacts would be less than significant.

Mitigation Measures: None recommended.

5.10.4 References

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5.11 Land Use and Planning

This section describes the environmental and regulatory setting and discusses impacts associated with the construction and operation of the project with respect to land use and planning.

Analysis of impacts is limited to the new power line, and Vierra Substation expansion project components. The remote substations are existing industrial facilities with utility infrastructure. All modifications at the remote substations would be installed in the substation yard or control room within existing substation walls/fence lines, and existing roads would be used to access the sites. Three microwave dishes would be mounted on the existing tower at the Mount Oso microwave station in Stanislaus County and one microwave dish would be mounted on the existing tower at the Highland Park microwave station in Contra Costa County. Installation of the substation modifications and telecommunication tower upgrades would not change the current land uses of the facilities and therefore would not physically divide an established community or conflict with applicable land use plans, policies, or regulations. Therefore, these components of the proposed project are not discussed further in this section.

LAND USE PLANNING Would the project:	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less than Significant Impact	No Impact
a. Physically divide an established community?	☐	☐	☐	☒
b. Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☐	☒

Environmental checklist established by California Environmental Quality Act Guidelines, Appendix G.

5.11.1 Setting

The new power line and Vierra Substation expansion are in a predominantly industrial area in the City of Lathrop in San Joaquin County on land designated for General Industrial uses (Lathrop, 2017a; 2017b). The existing 1.6 acre Vierra Substation located on the north side of Vierra Road, approximately 0.20 mile west of McKinley Avenue, is surrounded by agricultural land owned by the J.R. Simplot Company. The Vierra Substation would be expanded to 5.0 acres on land currently leased for agricultural use. The new power line would originate from the Vierra Substation and extend approximately one mile west to the Tesla-Stockton Cogen Junction Power Line located off Nestle Way, crossing existing agricultural, commercial, and industrial land uses. The proposed power line alignments would cross Union Pacific Railroad tracks, a parcel owned by the City of Lathrop that is currently being used as a sprayfield for wastewater treatment and retention, a city property alongside Christopher Way adjacent to a water treatment plant, and a privately owned rail spur (PGE, 2018a). **Figure 4-1** in Section 4, *Project Description*, is an aerial image of existing land uses with existing Vierra Substation and expansion area plus new power line alignment noted. **Figure 5.11-1** shows general plan land use designations in the area of the project components and **Figure 5.11-2** shows zoning designations.

Regulatory Background

Federal

No federal regulations related to land use and planning are applicable to the project.

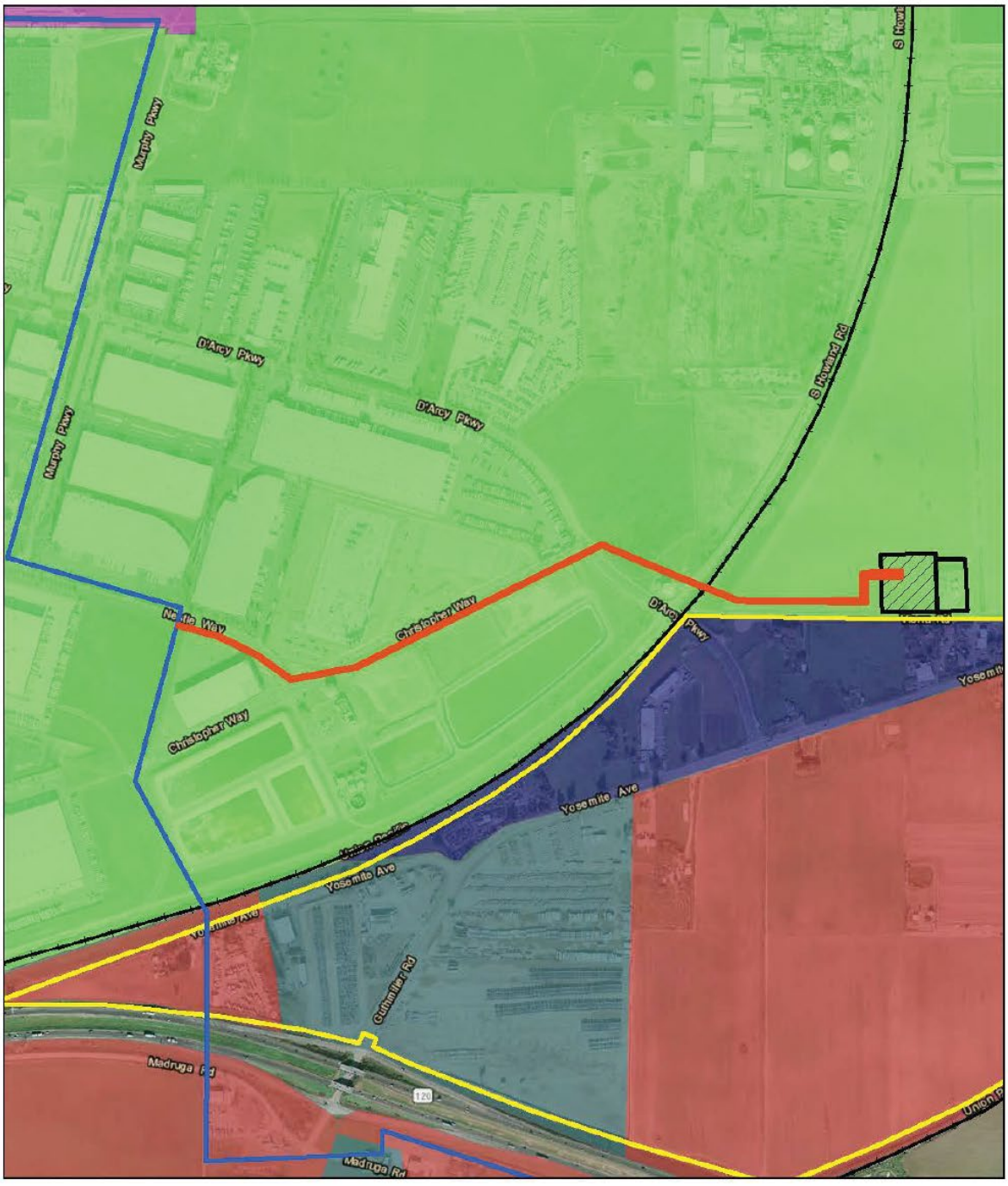
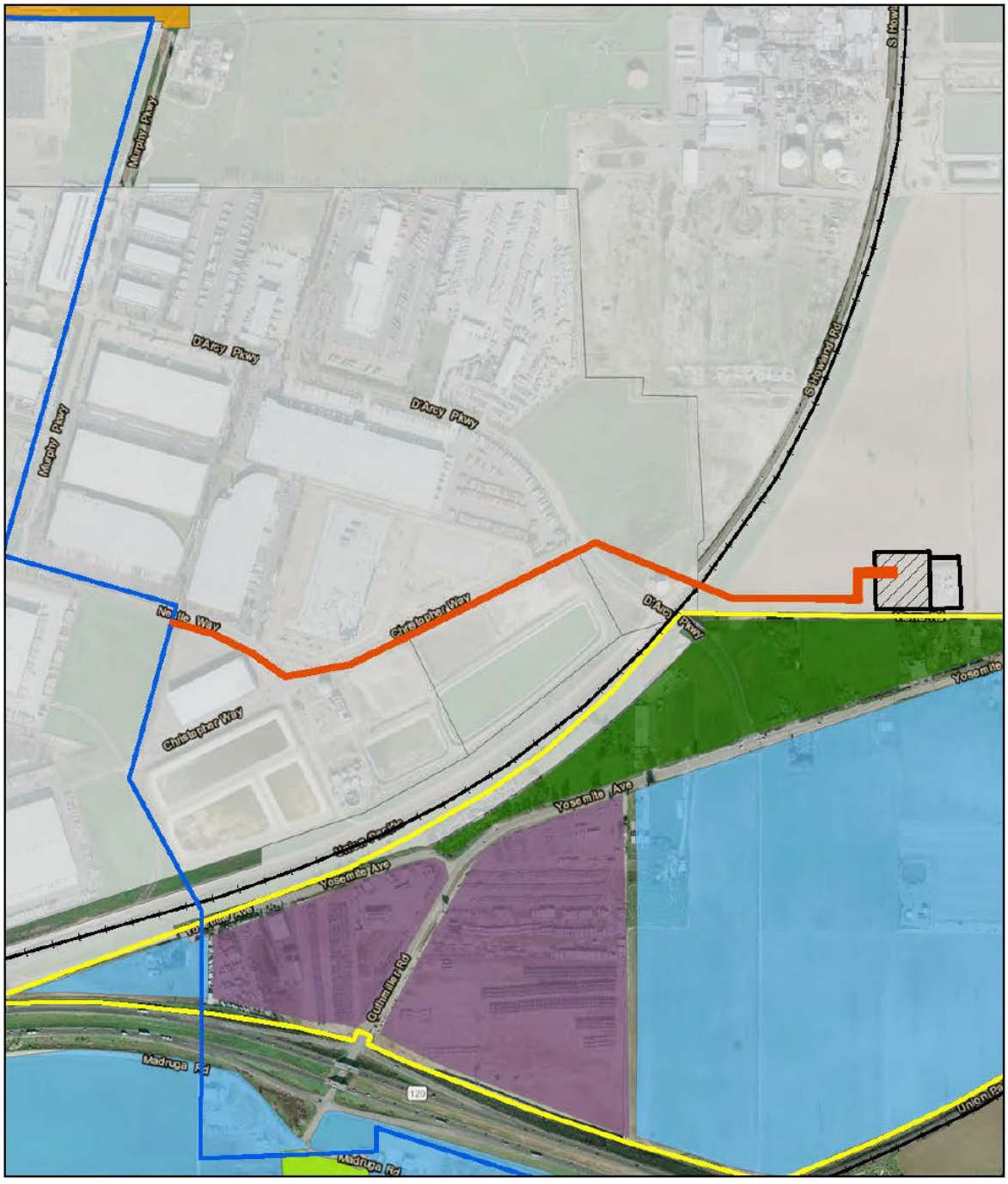


Figure 5.11-1
General Plan Land Use Designations Map

Source: PGE, 2018a



New 115 kV Line to be Installed
Existing Tesla-Stockton Cogen Jct 115 kV
Union Pacific Railroad
Lathrop Gateway Business Park
Existing Vierra Substation Footprint
Planned Vierra Substation Expansion

Zoning Designations
Commercial Office Lathrop Gateway
Commercial Office South Lathrop
Commercial Service Lathrop Gateway
General Industrial
Highway Commercial
Limited Industrial Lathrop Gateway

0 250 500 1,000
Feet
N

Figure 5.11-2
General Plan Zoning Designations Map

Source: PGE, 2018a

State

No state regulations related to land use and planning are applicable to the project.

Local

The project is not subject to local discretionary regulations because the California Public Utilities Commission (CPUC) has exclusive jurisdiction over the siting, design, and construction of the project under CPUC General Order No. 131-D. Local ordinances, policies, and requirements are summarized here for information purposes.

City of Lathrop Comprehensive General Plan. The City of Lathrop Comprehensive General Plan serves as the City of Lathrop's "constitution" and sets forth the body of policies and proposals that provide the basis for the zoning and development of all public and private land within the city. The Lathrop General Plan was adopted in 1991 and last amended in 2004. The Land Use Element designates the site of the new power line and Vierra Substation expansion as General Industrial. The General Industrial designation is intended to provide for a full range of manufacturing, industrial processing, general service, and distribution uses. These areas provide opportunities for large-scale industries requiring substantial acreage, with access to rail and freeway facilities (Lathrop, 2004). The City of Lathrop's planning area is divided into three sub-planning areas (SPAs) and the project is located within SPA #1, which covers the area east of I-5 and the San Joaquin River. SPA #1 is the only area of the city where industrial land use designations occur (Lathrop, 2004).

Within 0.50-mile of the new power line and Vierra Substation expansion sites, other land use designations include Service Commercial, Limited Industrial, and Commercial Office.

Lathrop Zoning Code. The new power line and the Vierra Substation expansion sites are zoned General Industrial (Lathrop, 2017a). Permitted uses in the General Industrial zoning district include "Public utility and public service structures and facilities, such as communications equipment buildings, electric distribution substations, electric transmission substations, gas regulator stations, pumping stations, public utility service yards, corporation yards, railroad rights-of-way and stations, reservoirs and storage tanks" as stated in sections 17.48.020(B)(2)(p) and 17.48.030(B)(1) (Lathrop, 2018).

Within 0.50-mile of the new power line and Vierra Substation expansion sites, other zones include Commercial Service-Lathrop Gateway, Limited Industrial-Lathrop Gateway, and Commercial Office-Lathrop Gateway.

Lathrop Municipal Code. Section 12.08.340 of the City of Lathrop Municipal Code governs removal of public street trees and section 12.16.060 requires tree replacement in accordance with the comprehensive street tree plan or master guidelines for trees.

Lathrop Gateway Business Park Specific Plan. The Lathrop Gateway Business Park Specific Plan area is just south of the Vierra Substation. The plan encompasses the land bordered to the north by Vierra Road, to the south by SR 120, and to the east and west by two Union Pacific Railroad lines. The plan area consists of 168 acres of limited industrial uses, 77 acres of road and public facility sites, 57 acres of commercial office, and 83 acres of commercial service uses. The plan seeks to establish local land uses with a variety of business opportunities that can support the local area's workforce (Lathrop, 2011).

5.11.2 Applicant Proposed Measures

Pacific Gas and Electric (PG&E) does not propose to implement any Applicant Proposed Measures (APMs) for Land Use and Planning as part of the project.

5.11.3 Environmental Impacts and Mitigation Measures

a. Would the project physically divide an established community?

Construction

NO IMPACT. Temporary construction work areas along the new power line alignments and adjacent to Vierra Substation would be required. The work area for the substation expansion would consist of the existing substation and the approximately 3.4-acre parcel to be acquired for the substation expansion. Temporary work areas outside of the expanded substation parcel may be required for construction of the substation expansion. This land is designated for General Industrial use, but is currently leased for agriculture. Once construction has been completed, all temporary construction work areas in agricultural areas would be restored. The power line would require an approximately 0.1- to 0.5-acre work area at each tubular steel pole location (typically ranging from approximately 100 by 40 feet to 185 by 90 feet) for installation of the poles. The temporary work areas would be within and adjacent to the existing and proposed utility easements, which are designated for General Industrial use and do not contain residences. The project components are located in an industrial area with few remaining existing agricultural uses. There are no existing or planned residential land uses within the project component sites. Existing access roads would be used and PG&E would obtain necessary transportation and/or encroachment permits. Therefore, construction of the new power line and substation expansion would not physically divide an established community and there would be no impact.

Operation and Maintenance

NO IMPACT. Operation and maintenance of the new power line and Vierra Substation would not physically divide an established community. The new power line would be adjacent to existing roadways and cross existing agricultural, commercial, and industrial land uses. Operation of the Vierra Substation would be conducted remotely from PG&E's Grid Control Center. Inspection and maintenance activities by existing PG&E staff would occur monthly for the expanded substation and annually for the new power line, or as needed for an event such as an emergency. These activities would occur within the substation, and existing and acquired easements; therefore, would not divide an established community. No impact would occur.

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b. Would the project cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?

Construction

NO IMPACT. Construction of the new power line and Vierra Substation expansion would not conflict with relevant City of Lathrop general plan land use, zoning, and specific plan designations. The project components would be consistent with the City of Lathrop general plan and zoning ordinance, which includes public utilities and public service structures and facilities as permitted uses in the General

Industrial district. The components would also be consistent with the Lathrop Gateway Business Park Specific Plan to build-out the lands south of Vierra Road. Approximately five to eight trees would need to be removed along Christopher Way and Nestle Way. The City of Lathrop municipal ordinance includes regulations on tree removal and replacement in accordance with the provisions of the street tree plan or master guidelines for trees. PG&E would coordinate with the City of Lathrop on tree replacement with species compatible with power line easements (PGE, 2018a). Therefore, the tree replacement would not conflict with the tree removal municipal ordinance regulations.

Although PG&E is not subject to local discretionary permitting, ministerial permits would be secured, as required. Table 4.6 in Section 4, *Project Description,* lists the authorizations that may be required for project construction. The project would not cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation. No impact would occur.

Operation and Maintenance

NO IMPACT. The operation and maintenance of the new power line and Vierra Substation expansion would not conflict with City of Lathrop general plan land use, zoning, and specific plan designations for the substation expansion site and power line alignments. The project site is designated and zoned General Industrial, which includes public utilities and public service structures and facilities as permitted uses. Although project components would physically convert 2.47 acres of mapped Farmland of Statewide Importance to non-agricultural use, the resulting expanded substation use would not conflict with local land use plans, policies, or regulations, which designate the area for General Industrial use (see Section 5.2, *Agriculture and Forestry Resources*, for more detail regarding potential conflicts with agricultural use).

Operation of the Vierra Substation would be conducted remotely from PG&E's Grid Control Center. Inspection and maintenance activities by existing PG&E staff would occur monthly for the expanded substation and annually for the new power line, or as needed for an event such as an emergency. These activities would be consistent with the General Industrial land uses. No impact would occur.

5.11.4 References

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5.12 Mineral Resources

This section describes the environmental and regulatory setting and discusses impacts associated with the construction and operation of the project with respect to mineral resources. Analysis of impacts is limited to project components where operation of new facilities would limit access to known and/or locally important mineral resources. These project components include the new power line, Vierra Substation expansion, and the remote substation modifications at Howland Road, Kasson, Manteca, and Tracy substations. The proposed work at other remote facilities, including: Tesla and Ripon Cogen substations and the Mount Oso and Highland Peak microwave stations, involves modifications to existing structures where there would be no change in access. These components of the project would not result in the loss of availability of a known mineral resource of regional or local importance. Therefore, these components of the project would have no impact on mineral resources, and they are not discussed further in this section.

MINERAL RESOURCES Would the project:	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less than Significant Impact	No Impact
a. Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the State?	☐	☐	☐	☒
b. Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	☐	☐	☐	☒

Environmental criteria established by California Energy Quality Act Guidelines, Appendix G.

5.12.1 Setting

Information on mineral resources was compiled from published literature, maps, and review of aerial photographs. Geologic units and structural features were obtained from maps published by the California Geological Survey (CGS), U.S. Geological Survey (USGS), San Joaquin Regional Transportation Plan and Sustainable Communities Strategy, San Joaquin General Plan, City of Lathrop General Plan, and the Proponent's Environmental Assessment (PEA) (SJCOG, 2014a; 2014b; Lathrop, 2004; 2017; PGE, 2018a). Impacts to mineral resources from project construction and operational activities were evaluated qualitatively based on the area occupied by the project, site conditions, expected construction practices, anticipated materials used, and the locations and duration of project construction and operational activities.

According to the San Joaquin County General Plan, the mineral resources of San Joaquin County consist primarily of sand and gravel aggregate, with limited mining of peat, gold, and silver. Sand and gravel extraction constitute the major portion of the county's mining activity, both in terms of quantity of material produced and value of extracted resources. According to the CGS publication Special Report 199 and Map Sheet 52, the proposed new power line, Vierra Substation expansion, and four remote substations where modifications would be constructed, are all within an area that crosses a northwest-to-southeast oriented mineral resource zone (MRZ) boundary, where the alignment crosses South Howland Road, with MRZ-1 to the west and MRZ-3 to the east (Smith and Clinkenbeard, 2012; Clinkenbeard, 2012).

MRZ-1 refers to an area where available geologic information indicates that little likelihood exists for the presence of significant mineral resources (Jensen and Silva, 1988). MRZ-3 refers to an area containing

known mineral occurrences of undetermined mineral resource significance. This potential resource would be sand and gravel deposits that are part of the Modesto Formation. USGS mapped this potential resource as underlying the eastern portion of the new power line, the Vierra Substation expansion, and the Manteca Substation (Wagner, et. al., 1991).

Regulatory Background

Federal

No federal regulations related to mineral resources apply to the project.

State

Surface Mining and Reclamation Act. The California Surface Mining and Reclamation Act of 1975 (SMARA) requires that the State Geologist classify land into MRZ or Scientific Zones according to the known or inferred mineral potential of the land (Pub. Resources Code, §§ 2710-2796).

MRZs are defined as the following (Jensen and Silva, 1988):

- MRZ-1: Areas where adequate information indicates that no significant mineral deposits are present, or where it is judged that little likelihood exists for their presence.
- MRZ-2: Areas where adequate information indicates that significant deposits are present, or where it is judged that a high likelihood for their presence exists. The guidelines set forth two requirements to be used to determine if land should be classified MRZ-2:
    - The deposit must be composed of material that is suitable as a marketable commodity. The deposit must meet threshold value.
    - The projected value (gross selling price) of the deposit, based on the value of the first marketable product, must be at least $5 million (1978 dollars).
- MRZ-3: Areas containing mineral deposits, but their significance cannot be evaluated from available data.
- MRZ-4: Areas where available information is inadequate for assignment to any other MRZ category.

Scientific Zones are defined as**:** Areas containing unique or rare occurrence of rocks, minerals, or fossils that are of outstanding scientific significance shall be classified in this zone.

Local

The project is not subject to local discretionary regulations because the CPUC has exclusive jurisdiction over the siting, design, and construction of the project under CPUC General Order No. 131-D (CPUC, 1995). Local ordinance policies and requirements are summarized here for information purposes.

San Joaquin Regional Transportation Plan and Sustainable Communities Strategy. The San Joaquin General Plan, and the City of Lathrop General Plan reference the mineral resource zoning maps prepared under SMARA. The policies relevant to the project are discussed previously under SMARA.

5.12.2 Applicant Proposed Measures

Pacific Gas and Electric Company (PG&E) does not propose to implement any Applicant Proposed Measures (APMs) for mineral resources as part of the project.

5.12.3 Environmental Impacts and Mitigation Measures

a. Would the project result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the State?

Construction, Operation, and Maintenance

NO IMPACT. The new power line, Vierra Substation expansion, and remote substation modifications would not be located within any area classified as MRZ-2 (areas with known mineral resources). The western portion of the new transmission line and poles connected to Vierra Substation would be located in an area classified as MRZ-1, which is defined as having little likelihood for the presence of significant mineral resources. The Tracy substation is located in an area mapped as MRZ-1. The Kasson Substation is located in an area that has not been mapped by the CGS for mineral resources. However, the Kasson Substation is immediately adjacent to an area mapped as MRZ-1, and based on the close proximity, about 0.4 miles, it is very likely that the location would be classified as MRZ-1. These project components would not impact mineral resources.

The eastern portion of the new power line, Vierra Substation expansion, Howland Road Substation, and Manteca Substation would be located in an area classified as MRZ-3, defined as an area with potential mineral resources. Construction activities would include ground disturbance associated with placement of new power line transmission poles, grading and fill placement for the Vierra Substation expansion, and the construction of the pier foundations for the new circuit switcher (three piers, each 12 feet deep by 4 feet diameter) and voltage transformer (one pier, 9 feet deep by 2 feet diameter) at the Howland Road Substation. There would also be excavation and backfilling of the conduit duct bank at the Howland Road Substation, which is 5-feet deep by 5-feet wide by 600-feet long. Construction activities at these project facilities would not inhibit the ability to recover known mineral resources in the future if these resources are determined to be present. Therefore, no impact would occur for these project components.

Additionally, the disturbance at Kasson, Manteca, and Tracy substations would be minimal and would occur within the footprint of the existing substations. For the Manteca Substation, located in an MRZ-3 area, existing facilities would preclude surface excavations for mineral development should a mineral resource be discovered during the operational lifespan of the facility. There would be no impact to mineral resources beyond that which is already present due to the existing substation development.

Operation and maintenance activities would not change materially from current activities at the existing substations, therefore there would continue to be no impact to mineral resources. Similarly, operation and maintenance of the new power line, Vierra Substation expansion, circuit switcher and voltage transformer at the Howland Road Substation, and new monopoles at the three remote substations would remain in areas where either there is no known mineral resource, or in areas where if a mineral resource was identified, some access could be provided. The construction or operation of

the project would not alter, destroy, or limit access to any existing significant mineral resources; therefore, there would be no impact.

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b. Would the project result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?

Construction, Operation, and Maintenance

NO IMPACT. According to the City of Lathrop General Plan Map dated February 14, 2017, the new power line, Vierra Substation expansion, and Howland Road Substation are within the Lathrop city limits, in an area designated as General Industry land use. The new power line alignment, Vierra Substation expansion, and Howland Road Substation are not within an MRZ-2 area on the City of Lathrop General Plan map showing *Lands Having Sand Deposits of Regional Significance* or *Lands Designated as Regionally Significant Construction Aggregate Resource Areas,* or in an area mapped as MRZ-2 on a regional mineral land classification map prepared by CGS.

Kasson, Manteca, and Tracy substations, located outside the City of Lathrop, are within areas covered by the CGS mineral resource mapping program, the San Joaquin Regional Transportation Plan and Sustainable Communities Strategy, and the San Joaquin General Plan. None of these three substations are mapped as being within an MRZ-2 area, and no locally important mineral resource recovery sites were identified in the immediate vicinity of any of these three substations. Therefore, no impact is anticipated to occur because of the Vierra Substation expansion, power line alignment, or any of the three remote substation locations where ground disturbing activities are planned.

Operation and maintenance activities would not change materially from current activities at the existing substations, and operations and maintenance activities for the new power line, Vierra Substation expansion, circuit switcher and voltage transformer at the Howland Road Substation, and new monopoles at the three remote substations would be the same as activities at the other substations. Therefore, there would continue to be no impact to mineral resources. In addition, ground-disturbing operation and maintenance activities would be infrequent and would not inhibit the ability to recover known mineral resources in the future if these resources are determined to be present. Therefore, no impact would occur.

5.12.3 References

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5.13 Noise

This section describes the environmental and regulatory setting and discusses impacts associated with the construction and operation of the project with respect to noise.

NOISE Would the project result in:	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less than Significant Impact	No Impact
a. Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of applicable standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☒	☐	☐
b. Generation of excessive ground-borne vibration or ground-borne noise levels?	☐	☐	☒	☐
c. For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒

Environmental checklist established by California Environmental Quality Act Guidelines, Appendix G.

5.13.1 Setting

Fundamentals of Noise and Vibration

Table 5.13-1 contains definitions of acoustical terms used in this analysis. Acoustics is the science that deals with the production, control, transmission, reception, and effects of sound, which includes noise.

TABLE 5.13-1 DEFINITION OF ACOUSTICAL TERMS

Term	Definition
Noise	Unwanted sound, which occurs as a rapid fluctuation of air pressure above and below the atmospheric pressure. There are two important characteristics of noise: frequency and loudness. The number of pressure variations per second is called the frequency of sound and is measured in Hertz. The higher the frequency, the more high-pitched a sound is perceived to be. Loudness is measured in decibels, which are defined further below. With zero dB corresponding roughly to the threshold of human hearing and 120 to 140 dB corresponding to the threshold of pain.
Decibel	Noise is measured in terms of sound-pressure level using units called decibels (dB). Since the range of intensities that the human ear can detect is large, the scale is based in multiples of 10, the logarithmic scale. Each interval of 10 dB indicates a sound energy 10 times greater. Each interval is perceived by the human ear as being roughly twice as loud.
A-Weighted Decibel (dBA)	The most common system used by regulatory bodies for noise measurement is the A-weighted decibel (dBA) scale. This scale measures sound as an approximation of how a person perceives or hears sound. A-weighted sound levels are typically measured or presented as the equivalent sound pressure level (Leq).
Statistical Noise Measurement	Statistical methods are used to capture the dynamics of a changing acoustical environment. Statistical measurements are typically denoted by Lxx, where xx represents the percentage of time the sound level is exceeded. For example, L90 represents the noise level exceeded during 90 percent of the measurement period. Similarly, L10 represents the noise level exceeded for 10 percent of the measurement period.
Equivalent Sound Pressure	The average noise level, on an equal energy basis over a stated period of time expressed

TABLE 5.13-1 DEFINITION OF ACOUSTICAL TERMS

Term	Definition
Level (Leq)	as a single numerical value.
Day–Night Average Sound Level (Ldn)	The Ldn, or day-night average sound level (DNL), is equal to the 24-hour A-weighted equivalent sound level that is weighted with a 10 dBA penalty to account for differences in noise levels and the elevated perception of noise during nighttime hours (10 p.m. to 7 a.m.).
Community Noise Equivalent Level, CNEL	The average A-weighted noise level during a 24-hour day, obtained after addition of 5 dBA to levels in the evening from 7 p.m. to 10 p.m., and after addition of 10 dBA to sound levels in the night between 10 p.m. and 7 a.m.
A-weighted Maximum Noise Level (Lmax)	Lmax is the instantaneous maximum sound level recorded over a stated period of time.
A-weighted Minimum Noise Level (Lmin)	Lmin is instantaneous lowest sound level recorded over a stated period of time.

Table 5.13-2 identifies various common outdoor and indoor noise sources and their associated sound levels. Noise levels are generally considered to be low at levels below 45 dBA, moderate in the 45 to 60 dBA range, and high above 60 dBA.

TABLE 5.13-2 COMMON OUTDOOR AND INDOOR SOUND LEVELS

Common Outdoor Activities	Sound Level (dBA)	Common Indoor Activities
	110	Rock band
Jet flyover at 1,000 feet		
	100	
Gas lawnmower at 3 feet		
	90	
Diesel truck at 50 feet at 50 mph		Food blender at 3 feet
	80	Garbage disposal at 3 feet
Noisy urban area, daytime		
Gas lawnmower, 100 feet	70	Vacuum cleaner at 10 feet
Commercial area		Normal speech at 3 feet
Heavy traffic at 300 feet	60	
		Large business office
Quiet urban daytime	50	Dishwasher in next room
Quiet urban nighttime	40	Theater, large conference room (background)
Quiet suburban nighttime		
	30	Library
Quiet rural nighttime		Bedroom at night, concert hall (background)
	20	
		Broadcast/recording studio
	10	
Threshold of hearing	0	

Source: Caltrans, 2013.

The general human response to changes in noise levels that are similar in frequency content (e.g., equivalent sound pressure level [Leq]) are summarized as follows:

- A 1-dBA change in sound level generally cannot be perceived, except in carefully controlled laboratory experiments.
- A 3-dBA change in sound level is considered a barely noticeable difference.
- A 5-dBA change in sound level is typically noticeable.
- A 10-dBA change is considered to be a doubling in loudness.

These relationships occur in part because of the logarithmic nature of sound and the decibel system. A ruler is a linear scale; it has marks on it corresponding to equal quantities of distance. One way of expressing this is to say that the ratio of successive intervals is equal to one. A logarithmic scale is different in that the ratio of successive intervals is not equal to one. Each interval on a logarithmic scale is some common factor larger than the previous interval. A typical ratio is 10, so that the marks on the scale read: 1; 10; 100; 1,000; 10,000; etc., doubling the variable plotted on the x-axis. The human ear perceives sound in a non-linear fashion; hence, the decibel scale was developed. Because the decibel scale is based on logarithms, two noise sources do not combine in a simple additive fashion, rather they combine logarithmically. For example, if two identical noise sources produce noise levels of 50 dBA, the combined sound level would be 53 dBA, not 100 dBA. However, where ambient noise levels are high in comparison to a new noise source, there would be a small change in noise levels. For example, when a 70-dBA ambient noise level is combined with a 60-dBA noise source, the resulting noise level equals 70.4 dBA.

Noise-induced hearing loss usually takes years to develop (LAWA, 2012). While the loss may be temporary at first, it can become permanent after continued exposure. When combined with hearing loss associated with aging, the amount of hearing loss directly due to the environment is difficult to quantify. Since the major cause of noise induced hearing loss is occupational, the Occupational Safety and Health Administration (OSHA) has an established noise exposure limit of 90 dBA for 8 hours per day (or higher for shorter duration exposures) to protect an individual from hearing loss (29 C.F.R. § 1910.95). It should be noted that noise levels in neighborhoods, even near a major airport or a major freeway, are not sufficiently loud to cause hearing loss (LAWA, 2012).

Nighttime noise can potentially affect human sleep and health. Noise can make it difficult to fall asleep, can create momentary disturbances of natural sleep patterns by causing shifts from deep to lighter stages, and can cause awakening (LAWA, 2012).

Human health effects from noise have been studied around the world for nearly 30 years. Scientists have attempted to determine if high noise levels can adversely affect human health apart from auditory damage. These research efforts have covered a broad range of potential impacts from cardiovascular response from fetal weight to mortality. While a relationship between noise and health effects seems plausible, it has yet to be convincingly demonstrated—that is, it has not been shown in a manner that can be repeated by other researchers while yielding similar results. In a review of 30 studies conducted worldwide between 1993 and 1998, a team of international researchers concluded that, while some findings suggest that noise can affect health, improved research concepts and methods are needed to verify or discredit such a relationship. The team of international researchers called for more study of the numerous environmental and behavioral factors that can confound, mediate, or moderate survey findings. Until science refines the research process, a direct link between a single-source noise exposure and non-auditory health effects remains to be demonstrated (LAWA, 2012).

Noise Attenuation

Sound level naturally decreases with distance from the source. This basic attenuation rate is referred to as the geometric spreading loss (Caltrans, 1998). The basic rate of geometric spreading loss depends on whether a given noise source can be characterized as a point source or a line source.

Point sources of noise, including stationary mobile sources such as idling vehicles or on-site construction equipment, attenuate (lessen) at a rate of 6.0 dBA per doubling of distance from the source. In many cases, noise attenuation from a point source increases to 7.5 dBA for each doubling of distance due to ground absorption and reflective wave canceling. These factors are collectively referred to as excess ground attenuation. The basic geometric spreading loss rate is used where the ground surface between a noise source and a receiver is reflective, such as an empty parking lot or a smooth body of water. The excess ground attenuation rate (7.5 dBA per doubling of distance) is used where the ground surface is absorptive, such as soft dirt, grass, or scattered bushes and trees.

Widely distributed noises such as a street with moving vehicles (a "line" source) would typically attenuate at a lower rate of approximately 3.0 dBA for each doubling of distance between the source and the receiver. If the ground surface between source and receiver is absorptive rather than reflective, the nominal rate increases to 4.5 dBA for each doubling of distance. Atmospheric effects, such as wind and temperature gradients, can also influence noise attenuation rates from both line and point sources of noise. However, unlike ground attenuation, atmospheric effects are constantly changing and are thus difficult to predict.

Trees and vegetation, buildings, and barriers reduce the noise level that would otherwise occur at a given receptor distance. However, for a vegetative strip to have a noticeable effect on noise levels, it must be dense and wide. For example, a stand of trees must be at least 100 feet wide and dense enough to completely obstruct a visual path to the roadway to attenuate traffic noise by 5 dBA (Caltrans, 1998). A row of structures can shield more distant receivers depending upon the size and spacing of the intervening structures and site geometry. Similar to vegetative strips discussed above, noise barriers, which include natural topography and sound walls, reduce noise by blocking the line of sight between the source and receiver. Generally, a noise barrier that breaks the line of sight between source and receiver would provide at least a 5-dBA reduction in noise.

Vibration

Vibration is an oscillatory motion through a solid medium in which the motion's amplitude can be described in terms of displacement, velocity, or acceleration. There are several different methods that are used to quantify vibration. The peak particle velocity (PPV) is defined as the maximum instantaneous peak of the vibration signal and is typically expressed in units of inches per second (in/sec). The PPV is most frequently used to describe vibration impacts to buildings. The root mean square (RMS) amplitude is most frequently used to describe the effect of vibration on the human body. The RMS amplitude is defined as the average of the squared amplitude of the signal. Vibration decibel notation (VdB) is commonly used to measure RMS. The decibel notation acts to compress the range of numbers required to describe vibration (FTA, 2006). Typically, ground-borne vibration generated by man-made activities attenuates rapidly with distance from the source of the vibration.

Some common sources of ground-borne vibration are trains, heavy trucks traveling on rough roads, and construction activities such as blasting, pile driving, and operation of heavy earth-moving equipment. The effects of ground-borne vibration include movement of the building floors, rattling of windows, shaking

of items on shelves or hanging on walls, and rumbling sounds. In extreme cases, vibration can cause damage to buildings. Building damage is not a factor for most projects, with the occasional exception of blasting and pile-driving during construction.

Ambient Noise Levels in the Project Area

In order to evaluate existing ambient noise levels in the project area, the California Public Utilities Commission (CPUC) had noise measurements collected at five locations (shown in **Figure 5.13-1**) adjacent to proposed project sites near sensitive receptors. Daytime noise measurements for periods that ranged from approximately 14 minutes to 16 minutes were collected in the vicinity of the Vierra Substation expansion site, the power line alignment, Manteca Substation, Tracy Substation, and Kasson Substation. Measurements were not collected near project component sites where no sensitive receptors are within 1,000 feet of the site, or where there would be no onsite construction noise; these project components include Ripon Cogen and Tesla substations, and Highland Peak and Oso Mountain microwave stations. Presented below in **Table 5.13-3** are the ambient noise survey results in the form of Leq, A-weighted minimum noise level (Lmin), and A-weighted maximum noise level (Lmax) that are representative of the daytime ambient noise conditions for the project area. Nighttime noise measurements were not collected during the survey; however, nighttime noise levels would be expected to be anywhere from 10 to 15 dBA less than the recorded daytime noise levels (Caltrans, 2013).

TABLE 5.13-3 AMBIENT NOISE MEASUREMENT SURVEY

Measurement No.	Location	Time	Leq	Lmin	Lmax	Noise Sources Observed
1	Vierra Substation - In front of residence at 2080 Vierra Road across the street from the Pole R6 and Vierra Substation expansion site, approximately 20 feet from the road.	9:54 to 10:08 a.m.	55.3	46.2	75.6	Cars on Vierra Road, hum from existing substation, birds chirping, dog barking at nearby residence, and some aircraft noise.
2	Power Line Alignment – Across the street from Pole R4, in front of residence at 1866 Vierra Road, approximately 20 feet from the road.	10:12 to 10:28 a.m.	58.4	49.0	74.5	Construction equipment at a nearby building being constructed – beeping during operation of man hoist, drilling, sawing, workers talking, arrival of flatbed truck.
3	Manteca Substation - Southeast quadrant of the intersection of Elm Avenue and W. North Street at 246 Elm Avenue, approximately 30 feet from Elm Ave.	10:44 to 11:01 a.m.	55.6	44.5	75.0	Traffic on Elm Avenue and W. North Street, hum from the substation, and wind-induced noise.
4	Tracy Substation – Approximately 500 feet east of the substation, in front of a townhome at 355-3 Acacia Street behind the tree line and wall between the townhomes and the Calstone facility in between the residences and the substation.	9:02 to 9:18 a.m.	47.7	42.6	62.6	Operations at the nearby Calstone facility across the wall, including beeping noise from equipment, truck idling, and other vehicle activity.
5	Kasson Substation – Approximately 500 feet east of the substation at the southeast quadrant of the intersection of the train tracks and Kasson Road, about 15 feet from Kasson Road.	11:37 to 11:52 a.m.	62.6	45.2	80.7	Traffic on Kasson Road and vehicles entering and existing the driveway to Deuel Vocational Institution; in addition, traffic on Interstate 5 was audible from a distance.

Source: ESA, 2019a

Figure 5.13-1
Noise Survey Locations

Source: ESA, 2019a

Noise-Sensitive Receptors

Noise-sensitive receptors generally are defined as locations where people reside or where the presence of unwanted sound may adversely affect the existing land use. Typically, noise-sensitive land uses include residences, hospitals, places of worship, libraries, performance spaces, offices, and schools, as well as nature and wildlife preserves, recreational areas, and parks.

Vierra Substation Expansion and New Power Line

The nearest noise-sensitive receptors to the proposed Vierra Substation expansion site and the new power line alignment are six residences and a church between Vierra Road and Yosemite Avenue, across the street from the Vierra Substation expansion site and the east end of the proposed power line alignment. The closest residences are approximately 100 feet from the site and alignment. Light of the World Christian Center on Yosemite Avenue is located approximately 500 feet south of the substation expansion site. All of these sensitive receptors are located on land zoned commercial. No schools, hospitals, parks, other residences, or other sensitive facilities are located within 1,000 feet of these project components.

Remote Substation and Telecommunication Sites

Below are descriptions of the sensitive receptors in the vicinity of the proposed remote substation and telecommunication sites.

- The Howland Road Substation is surrounded by agricultural and industrial uses, and railroad tracks are 100 feet to the east. The nearest noise-sensitive receptor is a residential area located more than 1,000 feet to the north-northwest that is separated from the substation by the Simplot fertilizer manufacturing company.
- The Kasson Substation is surrounded by agricultural property with the nearest noise-sensitive receptor, a residence, about 500 feet east from the proposed monopole site at the substation.
- Residences and a skate park surround the Manteca Substation. The nearest residences to the proposed monopole site at the substation are across the street along Elm Avenue, at a distance of approximately 250 feet.
- The closest residential area to Tracy Substation is approximately 500 feet to the west, beyond the railroad tracks and industrial area.
- The closest sensitive receptor to Ripon Cogen Substation is a residence approximately 100 feet to the west.
- The closest sensitive receptor to Tesla Substation is a residence approximately 800 feet to the south.
- There are no sensitive receptors in the vicinity of the Mount Oso telecommunication tower site.
- The closest sensitive receptor to the Highland Peak telecommunication tower site is a residence approximately 1,750 feet to the east.

Airports and Airstrips

No public airports or private airstrips are within 2 miles of any of the project components.

Regulatory Background

CEQA does not specify a numerical threshold for substantial increases in noise. Additionally, there are no state or federal regulations that limit overall environmental noise levels. However, federal guidance documents address environmental noise and regulations for specific sources (e.g., aircraft or federally funded highways). These standards are not directly applicable to utility construction projects. The cities and/or counties where each component of the project, which include the new power line, Vierra Substation expansion, and remote Howland Road, Tracy, Manteca, and Kasson substations modifications is to be located or is located, uphold the same or similar policy framework for addressing potential noise impacts.

Federal

Occupational Safety and Health Act. Under the Occupational Safety and Health Act of 1970, the Department of Labor, the Occupational Safety and Health Administration (OSHA) adopted regulations, listed at Title 29, Code of Federal Regulations, section 1910.95, designed to protect workers against the effects of occupational noise exposure. These regulations list permissible noise exposure levels as a function of the amount of time during which the worker is exposed. The regulations further specify a hearing protection program that involves monitoring the noise to which workers are exposed, assuring that workers are made aware of overexposure to noise, and periodically testing the workers' hearing to detect any degradation.

In addition, guidelines are available from the United States Environmental Protection Agency (U.S. EPA) to assist state and local government entities in developing state and local laws for noise.

State

Government Code section 65302(f). This statute requires each local government to prepare and implement a noise element as part of its general plan.

California Occupational Safety and Health Administration. California OSHA has adopted occupational noise exposure regulations (Cal. Code Regs., tit. 8, §§ 5095-5099) that set employee noise exposure limits. These standards are equivalent to federal OSHA standards.

Local

The project is not subject to local regulations because the California Public Utilities Commission (CPUC) has exclusive jurisdiction over the siting, design, and construction of the project under CPUC General Order No. 131-D. Local noise element and noise ordinance policies and requirements are summarized here for informational purposes.

City of Lathrop Municipal Code. The new power line, Vierra Substation expansion, and remote Howland Road Substation would be located in the city of Lathrop. Lathrop City Code section 8.20.100 restricts noise levels from the operation of any machinery, equipment, pump, fan, air conditioning apparatus, or similar mechanical device to less than 5 dBA above ambient noise levels at the property line (Lathrop, 2018).

Lathrop City Code section 8.20.110 restricts, without permit, the unreasonable operation of equipment or performing outdoor construction or repair work on buildings, structures, or projects or operating any pile driver, power shovel, pneumatic hammer, derrick, power hoist, or any other construction type device within 500 feet of a residential zoned property between the hours of 10 p.m. and 7 a.m., or 11 p.m. and 9 a.m. Fridays, Saturdays, and legal holidays (Lathrop, 2018).

City of Lathrop General Plan. Noise Hazards Policy 3 states that new development of industrial, commercial, or other noise generating land uses will not be permitted if resulting noise levels will exceed 60 dB CNEL in areas containing residential or other noise-sensitive land uses (Lathrop, 2018).

City of Manteca Municipal Code. Manteca Substation is located in the City of Manteca. Manteca City Code section 9.52.040 restricts use of any construction equipment to the hours between 7:00 a.m. to 8:00 p.m. if noise form the equipment is plainly audible at the property line of the property where work is occurring. Similarly, loading, unloading, opening, closing or other handling of boxes, crates, containers, building materials, garbage cans or similar objects is restricted to the hours between 8:00 a.m. to 10:00 p.m., unless for solid waste collection. Finally, the use of engines, motors, and mechanical devices near residential districts is restricted to between the hours of 8:00 a.m. and 10:00 p.m. unless sound insulation is installed to prevent the noise from being plainly audible at the property line of the activity (Manteca, 2018).

City of Tracy Municipal Code. Tracy Substation is located in the City of Tracy. The City of Tracy Municipal Code section 4.12.820 prohibits the overnight operation of certain construction-related equipment between the hours of 10:00 p.m. and 7:00 a.m. (Tracy, 2018).

City of Ripon. The Ripon Cogen Substation is located in the City of Ripon. There are no applicable General Plan policies or municipal codes related to noise that would be applicable to the project (Ripon, 2007).

Alameda County. Tesla Substation is located in unincorporated Alameda County. There are no applicable General Plan policies or municipal codes related to noise that would be applicable to the project.

Contra Costa County General Plan. Highland Peak Microwave Station is located in unincorporated Contra Costa County. Contra Costa County General Plan Noise Element Policy 11-8 states that construction activities should be concentrated during the hours of the day that are not noise-sensitive for adjacent land uses and should be commissioned to occur during normal work hours of the day to provide relative quiet during the more sensitive evening and early morning periods (Contra Costa County, 2005).

San Joaquin County Code. The Kasson Substation is located in the unincorporated San Joaquin County. San Joaquin County Code section 9-1025.9(c)(3) exempts noise from sources associated with construction from the noise ordinance, provided such activities do not take place before 6:00 a.m. or after 9:00 p.m. on any day (San Joaquin County, 2018).

Stanislaus County Noise Control Ordinance 10.46. Mount Oso microwave station is located in unincorporated Stanislaus County. Stanislaus County title 10, section 10.46.060, part (e) prohibits operation of construction equipment that would cause sound levels at the property line to exceed 75 dBA between the hours of 7:00 p.m. and 7:00 a.m. (Stanislaus County, 2020).

5.13.2 Applicant Proposed Measures

Pacific Gas & Electric Company (PG&E) proposes to implement the following Applicant Proposed Measures (APMs) for noise as part of the project.

APM NOI-1: Construction Schedule Limits. Construction hours within the project areas, which is industrially-zoned, will typically occur between the hours of 7:00 a.m. and 7:00 p.m., Monday through Friday, and between 9:00 a.m. and 7:00 p.m. Saturday. Nighttime work is not anticipated but may occur to take advantage of line clearances during off-peak hours, which would be short in duration. If nighttime

work is needed because of clearance restrictions on the existing power lines connected to Vierra Substation, PG&E would take appropriate measures to minimize disturbances to local residents, including contacting the nearby residences (within commercial/industrial zoned properties) within 500 feet of the activity to inform them of the work schedule and probable inconveniences.

APM NOI-2: Construction Equipment Noise Reduction Devices. Construction equipment will use noise reduction devices that are no less effective than those originally installed by the manufacturer.

APM NOI-3: Placement of Stationary Construction Equipment. Stationary equipment used during construction will be located as far as practical from sensitive noise receptors.

APM NOI-4: Minimization of Unnecessary Engine Idling. Construction crews will limit unnecessary engine idling. (See APM GHG-1.)

APM NOI-5: Use of "Quiet" Equipment. Where feasible, equipment will be used that is specifically designed for low-noise emissions or that is powered by electric or natural gas as opposed to diesel or gasoline.

APM NOI-6: Sensitive Receptor Notification. Sensitive receptors in areas of heavy construction noise, including helicopter usage, will be notified prior to commencing construction activities. Notification will include written notice and posting signs in appropriate locations, with a contact number to call with questions and concerns.

5.13.3 Environmental Impacts and Mitigation Measures

a. Would the project result in generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of applicable standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

Pursuant to CPUC General Order No. 131-D, the CPUC has exclusive jurisdiction over the siting and design of the project, and local discretionary land use regulations are preempted and would not apply to the proposed project. Thus, local noise ordinances and policies are only considered in this section to assist with CEQA review. Additionally, the Federal Transit Administration (FTA) has identified daytime and nighttime 8-hour Leq levels of 80 dBA and 70 dBA, respectively, as noise levels where adverse community reaction could occur at residential land uses (FTA, 2006). These noise levels are used here to assess whether daytime and nighttime construction-related noise levels would cause a substantial temporary or periodic increase in ambient noise levels at sensitive receptor locations.

Construction

Constructing the Vierra Substation expansion would take approximately 12 to 18 months to complete and would likely begin prior to construction of the new power line, which is expected to take approximately 3 to 4 months to complete. Construction at the remote substations would take approximately 2 weeks to complete for each substation, with the exception of at Howland Road Substation, which would take 4 to 6 weeks. The proposed telecommunications work at the Mount Oso and Highland Peak microwave stations would each take 1 week to complete. Construction work would typically occur between 7 a.m. to 7 p.m., Monday through Friday, and between 9:00 a.m. to 7:00 p.m. Saturday. Some Sunday work may also occur between 9:00 a.m. to 7:00 p.m. Nighttime construction work is not expected, except for certain construction procedures that cannot be

interrupted because of safety considerations or to take advantage of line clearances during off-peak hours.

Construction of the new power line and Vierra Substation expansion as well as the modifications at Howland Road Substation would occur in Lathrop, California. The Lathrop municipal code only restricts the hours of construction activities occurring within 500 feet of a residential zone. The new power line, Vierra Substation expansion, and Howland Road Substation are not within 500 feet of an area zoned residential. The residences on the south side of Vierra Road are within 500 feet of the project, but they are in a commercial zoned area. Construction activities at Manteca Substation would occur in the city of Manteca. The Manteca municipal code restricts the use of construction equipment to between the hours of 7:00 a.m. and 8:00 p.m. Construction activities at Tracy Substation would occur in the city of Tracy. The City of Tracy municipal code limits noise sources associated with construction to between the hours of 7:00 a.m. and 10:00 p.m. Construction activities at Kasson Substation would occur within unincorporated San Joaquin County. The San Joaquin County code restricts construction to between the hours of 6:00 a.m. to 9:00 p.m. on any day. Project construction activities at Ripon Cogen and Tesla substations would occur in the City of Ripon and Alameda County, respectively, and activities at the Mount Oso and Highland Peak microwave stations would occur in Stanislaus and Contra Costa counties, respectively; however, proposed construction activities at these sites would not involve loud construction equipment that would be subject to local regulations.

Typical project construction activities would not violate any of the local construction time-of-day restrictions; however, infrequent nighttime construction may be determined to be necessary to continue work until a safe stopping point is reached, or if planned electrical outages (clearances) are scheduled at night. To minimize potential impacts to nearby residences, APMs NOI-1 through NOI-6 would require: (1) restricting typical construction to daytime hours and notifying residences within 500 feet of any nighttime work; (2) use of equipment noise reduction devices; (3) placing stationary equipment as far away from sensitive receptors as practicable; (4) minimizing unnecessary engine idling; (5) using, when feasible, low-noise equipment; and (6) posting signs with contact numbers to call for questions and concerns. The implementation of APM NOI-1 through APM NOI-6 would minimize the impact on noise-sensitive receptors through the various noise controls identified in these APMs.

Increases in ambient noise levels in the project vicinity during construction would vary depending on the location of the noise-sensitive receptor. Noise-sensitive receptors located near the power line alignment; Kasson, Manteca, and Tracy substations, would be exposed to short-term, intermittent, and temporary construction noise of 2 weeks or less, while those located near the expanded Vierra Substation site and Howland Road Substation would be exposed to longer-term construction activities of up to 18 months and 6 weeks, respectively. Construction noise would occur during establishment of access and work areas, foundation work, reconductoring, conductoring, tower construction, and right-of-way cleanup.

Although there are no applicable local noise level standards available for construction activities, the FTA has identified daytime and nighttime 8-hour Leq levels of 80 dBA and 70 dBA, respectively, as noise levels where adverse community reaction could occur at noise sensitive receptors (FTA, 2006). These noise levels are used here to assess whether daytime and nighttime construction-related noise levels would cause a substantial temporary or periodic increase in ambient noise levels at sensitive receptor locations. Assuming a scenario under which multiple pieces of the loudest equipment are used, **Table 5.13-4** summarizes the maximum land-based construction equipment noise levels at

various distances from the ground disturbing activities during the different construction phases. These noise level thresholds are applicable to the review of construction activities associated with the proposed Vierra Substation expansion, new power line, and construction activities at the Howland Road, Kasson, Manteca, and Tracy substations. Construction activities at Ripon Cogen and Tesla substations and Mount Oso and Highland Peak microwave stations would not involve the use of load construction equipment.

TABLE 5.13-4 CONSTRUCTION Leq NOISE LEVELS (dBA) FOR ALL CONSTRUCTION ACTIVITIES BY PHASE OR DISTANCE

Distance from Construction Activity (feet)	Staging Areas	Establishing Access and Work Area	Foundation Work	Tower Installation	Conductor Installation	Cleanup
50	82	82	83	51	82	76
100	74	74	75	43	74	68
150	70	70	71	39	70	64
250	65	65	66	34	65	59
500	57	57	58	26	57	51
1,000	49	49	50	18	49	43
2,000	42	42	43	11	42	36
Construction Equipment	• Boom truck • Forklift • Generators • Water tender w/ pickup truck	• Boom Truck • Forklift • Tractor with mower • Light-duty pickup truck • Jackhammer	• Backhoe • Drill rig • Forklift • Skid steer • Concrete truck • Light-duty pickup truck • Concrete pump • Generator • Compressor • Construction digger	• Light-duty pickup truck • Line truck • Crane • Bucket truck	• Tensioner • Puller • Boom truck • Bucket truck • Man lift • Line truck w/ wire reel • Light helicopter (see Table 5.13-5)	• Dump truck • Skid steer • Light-duty pickup truck

Not all construction equipment would necessarily be used simultaneously. Noise levels beyond 50 feet were estimated based on the excess ground attenuation rate (7.5 dBA per doubling of distance) for absorptive ground surfaces, such as soft dirt, grass, or scattered bushes and trees
Sources: ESA, 2019b; PGE, 2017a; 2018a.

Table 5.13-5 presents the maximum noise levels from helicopter use at various distances. One small helicopter would be used to install the stringing rollers on the cross-arms at each tubular steel pole (TSP) and a pulling line between each TSP. The pulling line would be connected to the conductor and would pull the new conductor through the stringing rollers, to be clipped into the insulators.

The typical payload would be workers, small loads of materials, tools, and pulling of the sock line, and the helicopter would be used for approximately 4 hours per day, on 2 days in separate weeks. Helicopter refueling would take place at the helicopter landing zone carried out by a fuel truck provided by the helicopter company. The helicopter would follow a designated flight path to the project and along the alignment, to the extent possible, to avoid potential risk to the public. Helicopters that would carry equipment or construction materials would not pass over major highways, and they would pass near, but not directly over, a limited area containing habitable structures.

TABLE 5.13-5 MAXIMUM HELICOPTER NOISE LEVELS BY DISTANCE AND PHASE

Equipment Description/ Construction Activity	Flight Phase	Lmax at 100 feet (dBA)	Lmax at 250 feet (dBA)	Lmax at 500 feet (dBA)	Lmax at 1000 feet (dBA)	Lmax at 2,000 feet (dBA)
Light Helicopter (MD500)/ Conductor Installation	Take-off	88	80	74	68	62
	Landing	91	83	77	71	65
	Level Flight	87	79	73	67	61
	Hover	85	77	71	65	59

All distances are lateral distances from the noise source. Assuming a helicopter height of 100 feet above ground level, the actual distance from the helicopter to the receptor located 100 feet from project site (Vierra Substation, new Power Line) would be 141 feet. Source: PGE, 2017a

Residential Daytime Construction Noise

LESS THAN SIGNIFICANT IMPACT. The closest noise-sensitive receptors to the proposed Vierra Substation expansion site, new power line alignment, and remote substations construction activities are residences. The distances of these residences to the proposed construction work areas range from 100 feet to 1,000 feet away. Land-based construction noise at these noise-sensitive receptors could be as high as:

- Vierra Substation expansion, 75 dBA Leq 100 feet away;
- New power line, 75 dBA Leq 100 feet away;
- Howland Road Substation, 50 Leq 1,000 feet away;
- Kasson Substation, 58 dBA Leq 500 feet away;
- Manteca Substation, 66 dBA Leq 250 feet away; and
- Tracy Substation, 58 dBA Leq 500 feet away.

Thus, land-based daytime construction activities would not exceed the daytime construction significance threshold of 80 dBA Leq.

A small helicopter would be used to install the stringing rollers on the cross-arms at each TSP and a pulling line between each TSP. The helicopter would be used approximately 4 hours per day, on 2 days in separate weeks. The closest helicopter activities to residences and the longest period of time helicopter noise would occur at or near any given location would be during hovering when pulling the sock line and installing the stringing rollers. This activity could generate noise levels as high as 85 dBA Lmax at a distance of approximately 100 feet (**Table 5.13-5**).

When in use, the helicopter is anticipated to hover for several minutes above each pole location and after installation of the sock line and stringing rollers, it would promptly leave. It would not remain in the same place for the entire installation. Assuming the helicopter would hover approximately 100 feet above the ground surface at a lateral distance of 100 feet from the closest residence on Vierra Road for 15 minutes, that residence would be exposed to 8-hour average helicopter hover noise levels of approximately 67 dBA Leq[3]. Assuming the helicopter landing and takeoff zone would be as close as 150 feet of that same residence, and that there would be one landing and one takeoff on each of the

[3] With a 100 foot lateral distance from the project site and a 100 foot elevation for the helicopter, the actual distance from the helicopter to the receptor would be 141 feet (ESA, 2019b).

helicopter use days that would require 10 minutes of landing/takeoff flight phase, the 8-hour average helicopter landing/takeoff noise would be approximately 71 dBA Leq, which would not exceed the 8-hour average daytime construction significance threshold of 80 dBA Leq.

The daytime construction activity noise described above for Vierra Substation, the east end of the proposed power line alignment, Manteca Substation, and Tracy Substation would exceed the ambient noise levels at nearby residences, which range from 48 dBA to 58 dBA Leq (see **Table 5.13-3**); however, the daytime construction activities, including ground-based and helicopter activities, would not exceed the daytime 8-hour average construction significance threshold of 80 dBA Leq. Therefore, the project would not cause a substantial temporary increase in daytime ambient noise levels in the vicinity of the project, and the associated impact would be less than significant.

Mitigation Measures: None recommended.

Residential Nighttime Construction Noise

LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED. Some nighttime construction activities may be required to take advantage of line clearances during off-peak hours. Any nighttime work could potentially affect sleep; however, it would be infrequent and short-term (1 or 2 nights at a location). Nighttime work may involve tower installation or conductoring, resulting in a projected noise level up to 74 dBA Leq at the closest residential receptors at 100 feet (**Table 5.13-4**). This would exceed the estimated nighttime ambient noise level of 40 dBA at the residences, as well as the nighttime construction significance threshold of 70 dBA Leq, and thus would result in a significant impact that could potentially affect human health and sleeping patterns.

While APM NOI-1 through APM NOI-6 require notification of residents in the event of nighttime construction and use of noise reduction practices, these APMs do not provide adequate recommendations to minimize the impacts of nighttime noise to less-than-significant levels. To supplement APM NOI-1 through APM NOI-6, **Mitigation Measure** (**MM) 5.13-1** is recommended. Nighttime work would be short-term. Per the requirements of **MM 5.13-1**, all nighttime work within 250 feet of residential areas would be required to implement noise-reducing practices to limit nighttime noise. **MM 5.13-1** requires use of low-noise equipment barriers and acoustic blankets, and using smart back-up alarms. This mitigation measure is effective in reducing noise. For example, acoustic blankets alone can reduce noise by 5 to 10 dBA (FHWA, 1974). **MM 5.13-1** also describes a noise-complaint resolution process and provides for temporary relocation of affected residents. APM NOI-1 through APM NOI-6 and **MM 5.13-1** apply to the new power line and Vierra Substation expansion along Vierra Road.

MM 5.13-1: Nighttime Construction Noise Measures. In the event that any necessary nighttime (i.e., between 10:00 p.m. and 7:00 a.m.) construction activity is likely to create a noise complaint at any occupied residence within 250 feet of construction, PG&E shall:

- Limit all helicopter activity to daytime hours.
- Identify all residences within 250 feet of any potential nighttime construction activities, and notify and consult with the nearby residences, or make an attempt to do so, prior to the nighttime construction activities. Residents shall be provided with information regarding the nature of the work, its likely duration, and measures to reduce interior noise (such as shutting windows).

- If the above measures are not sufficient to reduce interior noise to below a level that could likely result in a complaint at any occupied dwelling within 250 feet of construction, PG&E shall take one or more of the following actions:
  - Install and maintain temporary sound barriers capable of reducing noise levels by 5 to 10 dBA. Temporary sound barriers shall consist of either sound blankets at the noise source or other sound barriers/techniques such as acoustic padding or acoustic walls placed near the noise source. Barriers shall be placed such that the line-of-sight between the construction equipment and adjacent sensitive land uses is blocked.
  - Relocate residents to a nearby hotel during nighttime construction that could result in a complaint.
- PG&E shall identify and provide a public liaison person before and during construction to respond to concerns of neighboring receptors, including residents, about noise construction disturbance. Contact information for reaching the public liaison officer via telephone or in person shall be included in the above notices and shall also be posted conspicuously at the construction site(s). PG&E shall address any nighttime construction work complaint within 24 hours of the filing of the complaint. If there are any complaints, PG&E shall provide monthly reports with records of complaints and responses to the CPUC. These reports shall be provided to CPUC within 15 days of the end of the month.

Mitigation Measures: Implement **MM 5.13-1**.

Significance after Mitigation: With the proposed measures outlined in APM NOI-1 through APM NOI-6 and **MM 5.13-1**, nighttime construction activities within 100 feet would be reduced by at least 5 dBA to 69 dBA Leq, which would be less than the nighttime construction significance threshold of 70 dBA Leq. Therefore, the project would not cause a substantial temporary increase in nighttime ambient noise levels in the vicinity of the project that would cause a significant impact. The nighttime noise impact would be mitigated to a less-than-significant level.

Operation and Maintenance

LESS THAN SIGNIFICANT IMPACT. Lathrop City Code restricts noise levels from the operation of mechanical devices to less than 5 dBA above ambient noise levels at the property line. The Vierra Substation expansion and Howland Road Substation upgrade sites are in the city of Lathrop. Large capacity transformers tend to be the primary source of noise associated with electric substations. The Vierra Substation would result in the installation of 19 new 115-kV coupling capacitor voltage transformers (CCVT) to step down high voltage (115 kV) signals to provide a low voltage signal for metering or operating a protective relay; however, the thermal burden on these transformers is low at 7.5 kilovolt ampere (kVA), which prevents them from generating audible noise (PGE, 2019a). The project would not include installation of new larger capacity transformers that produce noise, such as the two existing 45 megavolt ampere (MVA) transformers that currently exist at Vierra Substation. The project would not include the installation of new noise-producing equipment at Vierra Substation; therefore, there would be no operational increase in ambient noise in the vicinity of Vierra Substation. The impact would be less than significant.

The proposed project would include installation of a new voltage transformer rated at 12.47/115 kV and 12/16 MVA at the remote Howland Road Substation. PG&E has not identified a noise level associated with this new transformer, but based on the reported noise level (i.e., 65 dBA at 15 feet)

of a larger capacity transformer (i.e., 230/70 kV 200 MVA) for another PG&E substation (PGE, 2017b), the noise level associated with the new transformer at Howland Road Substation would be under 19 dBA Leq at the closest sensitive receptor location more than 1,000 feet away, which would result in no noticeable increase in noise under general operating conditions (PGE, 2017b).

Operation of the microwave dishes on the monopoles at Manteca, Kasson, and Tracy substations and the operation of the antenna and circuit switcher at Howland Road Substation would not generate any noise. Substation operation would not cause a permanent increase in ambient noise levels in the vicinity of the project including the remote substation locations. Therefore, there would be no impact.

No substantial temporary or periodic noise impacts would result from operation and maintenance of the expanded Vierra Substation and remote substation modification sites. Routine inspection and maintenance activities currently performed at the substations would continue and would include all new project components. Maintenance activities would continue to occur over short timeframes each year and generate minimal noise. Operation of the substations would not change from existing conditions and there would be no substantial temporary or periodic increase in ambient noise levels above existing levels. Therefore, there would be no impact.

Operation of high-voltage transmission lines during foggy or rainy weather can result in crackling, hissing, or humming noises known as corona noise. Audible noise levels from the reconfigured and new power lines are expected to be relatively low, generally less than 34 dBA Leq directly below the conductor in rainy conditions. The corona noise generated by the new power lines would be similar to the existing power lines and would be below the existing ambient noise levels at noise-sensitive receptor locations, which range from 55 dBA to 58 dBA during the day, and as low as 40 dBA to 43 dBA during the night. In addition, the proposed new and relocated power lines would be set back approximately 100 feet and 40 feet, respectively, farther from the existing residences compared to the existing power lines to be removed, which would reduce proposed project corona noise levels at nearby residences to below existing levels. The project would not cause a substantial permanent increase in daytime ambient noise levels in the vicinity of the project, and the associated impact would be less than significant.

Mitigation Measures: None recommended.

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b. Would the project result in generation of excessive ground-borne vibration or ground-borne noise levels?

Construction

LESS THAN SIGNIFICANT IMPACT. Construction activities, such as drilling and movement of heavy construction equipment, may generate localized ground-borne vibration and noise. Some types of construction equipment can produce vibration levels that can cause architectural damage to structures and be annoying to nearby sensitive receptors. Vibration levels generated during construction of the project would vary during the construction period, depending upon the construction activity and the types of construction equipment used. Typical vibration levels for the construction equipment types that would generally result in the highest vibration levels (e.g., drill rig, large bulldozers) are presented in **Table 5.13-6**.

TABLE 5.13-6 VIBRATION SOURCE LEVELS FROM CONSTRUCTION EQUIPMENT

Distance (feet)	Peak Particle Velocity (in/sec) Drill Rig, Large Bulldozer
50	0.031
75	0.017
100	0.011
150	0.006

Source: FTA, 2006

This analysis relies on the PPV threshold identified by Caltrans to determine the significance of vibration impacts related to adverse human reaction and risk of architectural damage to buildings. The threshold of human response begins at a PPV of 0.16 in/sec. Caltrans characterizes this as a "distinctly perceptible" event (Caltrans, 2013). The PPV level of 0.20 in/sec has been found to be annoying to people in buildings and can pose a risk of architectural damage to buildings.

As shown in **Table 5.13-6,** during the removal of existing poles and installation of the new poles and during the construction work at Vierra Substation and the remote substations, the PPV would be up to 0.011 in/sec at 100 feet, which is the distance to the nearest residential receptor. A 0.011 in/sec PPV value is far less than the threshold of 0.16 in/sec for human response. At the remote substations, the PPV would be below 0.006 in/sec, still much less than the 0.16 in/sec threshold for human response.

Vibration of building components can take the form of an audible low-frequency rumbling noise, which is referred to as ground-borne noise. Ground-borne noise is usually only a problem when the originating vibration spectrum is dominated by frequencies in the upper end of the range (60 to 200 hertz [Hz]), or when the structure and the source of vibration are connected by foundations or utilities, such as sewer and water pipes. There is a direct correlation between ground-borne vibration and ground-borne noise, and similar to vibration, the severity of vibration-induced noise is determined using the corresponding PPV level. The only potential source of ground-borne noise related to the project would be the construction equipment dominated by frequencies in the range of 60 to 200 Hz, specifically, the drill rig and large bulldozer. But as shown in Table 5.13-6 and described above, their PPV levels would be significantly below the threshold for human response, or 0.16 in/sec, at the nearest residential buildings.

Therefore, heavy equipment operation used during construction of the project is not anticipated to result in excessive ground-borne vibration or ground-borne noise levels. The impact would be less than significant.

Mitigation Measures: None recommended.

Operation and Maintenance

NO IMPACT. Equipment used during operation and maintenance of the project would not change from current practices and would similarly produce no ground-borne vibration or ground-borne noise. No impact would occur.

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c. For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?

Construction, Operation and Maintenance

NO IMPACT. The project is not located within the vicinity of a private airstrip or an airport land use plan, or within two miles of a pubic airport or public use airport. Therefore, no impact would occur.

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5.14 Population and Housing

This section describes the environmental and regulatory setting and discusses the impacts associated with the construction and operation and maintenance of the project with respect to population and housing.

Equipment upgrades at the Tesla and Ripon Cogen substations would occur within existing control rooms. The construction workforce needed for these project components would be minimal and of short duration. Therefore, these project components are not discussed further in this section. Analysis of impacts is limited to the construction, operation and maintenance of the new power line, Vierra Substation expansion, and microwave towers and telecommunications equipment at the Howland Road, Manteca, and Tracy substations, as well as the microwave dish at the Highland Peak and Mount Oso microwave stations.

POPULATION AND HOUSING Would the project:	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less than Significant Impact	No Impact
a. Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	☐	☐	☐	☒
b. Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒

Environmental checklist established by California Environmental Quality Act Guidelines, Appendix G.

5.14.1 Setting

The project would be located in the cities of Lathrop, Manteca, and Tracy, and counties of Contra Costa, San Joaquin, and Stanislaus. The new power line alignment, Vierra Substation expansion, and modifications at the Howland Road Substation are proposed in the city of Lathrop. The new power line would traverse predominantly industrial, commercial, and agricultural areas and the expanded Vierra Substation would be constructed on agricultural land (see Section 5.11, *Land Use and Planning*). Modifications at Howland Road Substation and the other remote substations are proposed on existing developed industrial land. The Manteca, Tracy, and Kasson substations are located in the cities of Manteca and Tracy, and San Joaquin County, respectively. The microwave stations where a new microwave dish would be added to an existing telecommunications tower are located in Contra Costa and Stanislaus counties.

Population

The City of Lathrop General Plan estimated a population of 30,000 by 2010 (Lathrop, 2004). **Table 5.14-1** summarizes the 2010 population census count and 2020 population estimates for cities and counties located within the project study area. As shown in the table, the population in these areas are expected to increase from 2010 to 2020.

TABLE 5.14-1 POPULATION ESTIMATES

Area	Population, Census 2010	Population Estimate Year 2019
City of Lathrop	18,023	26,833
City of Manteca	67,096	84,800
City of Tracy	82,922	95,931
City of Ripon	14,297	15,930
Alameda County	1,510,271	1,670,834
Contra Costa County	1,049,025	1,153,561
San Joaquin County	685,306	773,632
Stanislaus County	514,453	557,709

Sources: US Census, 2010; CA DOF, 2020

Employment

Table 5.14-2 presents the projected employment growth for the geographical area in which the project components are proposed.

TABLE 5.14-2 PROJECTED CONSTRUCTION EMPLOYMENT GROWTH

Area	Year 2016	Year 2026	Annual Average Percent Change
Stockton-Lodi MSA (San Joaquin County)	11,100	14,200	2.8%
Oakland-Hayward-Berkeley MD (Alameda and Contra Costa Counties)	67,900	82,200	2.1%
Modesto MSA (Stanislaus County)[1]	9,000	10,300	1.4%

Source: CA EDD, 2016

Housing

Table 5.14-3 presents housing supply data for the cities and counties where project components are located. A housing vacancy rate of five percent is an industry accepted indication that there is sufficient housing available for occupancy (Virginia Tech, 2006).

[1] This calculation contains a total of mining, logging, and construction.

Table 5.14-3 HOUSING SUPPLY ESTIMATES IN THE PROJECT AREA

Housing Supply		2019	
		Total	Vacant
City of Lathrop	Number	7,284	390
	Percent	100%	5.4%
City of Manteca	Number	27,667	1,157
	Percent	100%	4.2%
City of Tracy	Number	27,843	562
	Percent	100%	5.8%
City of Ripon	Number	5,568	324
	Percent	100%	2.0%
Alameda County	Number	611,752	32,694
	Percent	100%	5.3%
Contra Costa County	Number	418,409	22,310
	Percent	100%	5.3%
San Joaquin County	Number	249,058	14,292
	Percent	100%	5.7%
Stanislaus County	Number	183,068	9,117
	Percent	100%	5.0%

Source: CA DOF, 2020.

Regulatory Background

No federal, state, or local regulations related to population and housing would apply to the project.

5.14.2 Applicant Proposed Measures

Pacific Gas and Electric (PG&E) does not propose to implement any applicant proposed measures (APMs) for population and housing as part of the project.

5.14.3 Environmental Impacts and Mitigation Measures

a. Would the project induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?

Construction

NO IMPACT. The project would not directly induce substantial unplanned population growth as it does not propose new homes, businesses, or land use changes that would induce population growth in the area. The City of Lathrop's General Plan planned growth projections for the year 2010 have not been exceeded, according to 2020 population estimates. The purpose of the project is to strengthen the existing power infrastructure by reducing the loading on the existing four transmission paths from Tesla Substation, which would better serve existing customers in the area by preventing service interruptions (PGE, 2018a).

During the approximate 18 to 22-month construction period, the new power line and substation expansion would employ up to 19 construction workers in several different crews concurrently at various project locations. Modifications to the remote substations and telecommunication tower upgrades would require approximately 8-10 of the anticipated 19 construction workers. As shown in **Table 5.14-2**, there were approximately 11,100 individuals employed in the construction industry in

San Joaquin County in 2016 and 67,900 in Alameda and Contra Costa counties; therefore, there would be a sufficiently large labor pool from which the project could draw. Project construction workers are likely to be a mix of PG&E employees and general construction workers residing in either San Joaquin, Contra Costa, and/or Alameda counties. As there is a large supply of construction workers in the local project area, the project would not likely require workers sourced from outside the project study area who could temporarily relocate closer to the project. Therefore, the project would not directly or indirectly induce substantial unplanned population growth during construction. No impact would occur.

Operation and Maintenance

NO IMPACT. Operation of the new power line and expanded Vierra Substation would be conducted remotely from PG&E's Grid Control Center. Inspection and maintenance activities by existing PG&E staff would occur monthly for the expanded substation and annually for the new power line, or as needed for an event such as an emergency. These activities would occur temporarily and on occasion, therefore, operation and maintenance of the project would not result in personnel permanently relocating to the area or an increase in unplanned population growth in the area. Operation of the facilities for the other project components would not change from current practices. The improved power infrastructure would not lead to unplanned growth as it is proposed to increase service reliability to electricity customers due to the growing load (demand) in and around the cities of Lathrop and Manteca. Furthermore, the improved power infrastructure is located within city boundaries and urbanized communities where land has been planned for development based on the general plan and other local planning documents. No impact would occur.

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b. Would the project displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?

Construction

NO IMPACT. Project construction does not require removal of any existing housing developments and would not displace substantial numbers of people or housing that would require the construction of replacement housing elsewhere. The new power line between Vierra Substation and the existing Tesla Stockton Cogen Junction 115 kV Power line would not traverse or cross through any residentially used land or result in the removal of existing housing. See **Figure 4-1** in Section 4, *Project Description*, to review the new power line route. The Vierra Substation expansion would convert agricultural land and would not require displacement of any existing people and/or housing. Construction of all other project components, such as the remote substation modifications and remote telecommunication tower upgrades would take place on existing developed properties that would not require any additional expansions resulting in displacement of residences in the surrounding study area. No impact would occur.

Operation and Maintenance

NO IMPACT. Operation of the new power line and Vierra Substation would be conducted remotely from PG&E's Grid Control Center. Inspection and maintenance activities by existing PG&E staff would occur monthly for the expanded substation and annually for the new power line, or as needed for an event such as an emergency. These activities would not displace people or housing; no replacement housing

would need to be constructed elsewhere. Operation of the facilities for the other project components would not change from current practices. No impact would occur.

5.14.4 References

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5.15 Public Services

This section describes the environmental and regulatory setting and discusses impacts associated with the construction, operation, and maintenance of the project with respect to Public Services.

As part of the proposed project, Pacific Gas and Electric (PG&E) would upgrade automation equipment, microwave towers and microwave tower/telecommunication equipment at surrounding substations and tower locations (PGE, 2018a). Approximately 8 workers would be needed for 2 weeks for the remote substations (10 workers for 4-6 weeks at Howland Road Substation) and 3 workers for two days for the telecommunication towers (PGE, 2018b; and 2019a). The construction and operation of these upgrades would not require new or altered governmental facilities or services because of the minimal level and short duration of activity required for installation, and because operation and maintenance of the upgraded equipment would be comparable to existing activities. Therefore, the remote upgrades are not discussed further in this section. Analysis of impacts is limited to the construction, operation and maintenance of the new power line and Vierra Substation expansion project components.

PUBLIC SERVICES Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less than Significant Impact	No Impact
a. Fire protection?	☐	☐	☐	☒
b. Police protection?	☐	☐	☐	☒
c. Schools?	☐	☐	☐	☒
d. Parks?	☐	☐	☐	☒
e. Other public facilities?	☐	☐	☐	☒

Environmental checklist established by California Environmental Quality Act Guidelines, Appendix G.

For an impact to be considered significant under these thresholds the project components would have to result in adverse physical impacts to the environment not already addressed in the other individual resource sections of this document.

5.15.1 Setting

Fire Protection

Lathrop-Manteca Fire Protection District

The new power line and Vierra Substation expansion components of the project would be located in the jurisdiction of the Lathrop-Manteca Fire Protection District (LMFPD). The district covers 100 square miles, serving approximately 30,000 people living in the City of Lathrop and the City of Manteca. LMFPD currently staffs four fire stations: Station 31, Station 32, Station 33, Station 34, and Station 35. LMFPD has a combined total of 33 uniformed firefighters and three office employees. A reserve firefighter roster of 25 members is maintained to augment the district's staffing needs. All stations are equipped with a Type 1 fire engine; City Stations 31 and 34 are staffed with three personnel each, Stations 32 and 33 are staffed with two personnel each, and Station 35 is staffed with three personnel (CEC, 2018a). Station 34 is the

closest station to the new power line alignment and Vierra Substation, approximately 1.2 miles to the northwest. Annually, the district responds to over 2,900 emergencies, with approximately 76 percent of the calls for emergency medical incidents (CEC, 2018a). The district has an official service standard of one fire personnel for every 1,000 residents and the response time standard is consistent with the National Fire Protection Association (NFPA) Standard 1710 for emergencies within the City of Lathrop and NFPA Standard 1720 for emergencies in the surrounding rural area. If a fire emergency occurred at the substation or along the new power line, LMFPD would respond to the emergency within 5 minutes. This response time would be consistent with the district's standards (CEC, 2018a).

Police Protection

The new power line and Vierra Substation expansion would be located in the jurisdiction of the Lathrop Police Department (LPD), a division of the San Joaquin County Sheriff Department. LPD has one station located 1.5 miles north of the new power line alignment and Vierra Substation expansion site. The department has a total of 25 sworn officers. The department has an average response time of approximately 6.4 minutes for priority one emergency calls and does not have an official service standard; however, with 25 officers the department staffing ratio is 1.09 officers for every 1,000 residents (CEC, 2018b).

Schools

The new power line and Vierra Substation expansion would be located in the Manteca Unified School District. The district is approximately 113 square miles and is located in the southern portion of San Joaquin County. This district serves the cities of Stockton, Lathrop, French Camp, and Manteca, as well as unincorporated areas of San Joaquin County. The Manteca Unified School District had an enrollment of 23,834 students in the 2019/2020 year (CDE, 2020). The district includes one adult school, five comprehensive high schools, one dependent charter high school, three alternative high schools, 20 kindergarten through 8th grade schools, and 33 pre-school classes (MUSD, 2018). The nearest school, Mossdale Elementary School, is approximately 0.85-mile west of where the new power line would terminate along Nestle Way.

Parks

The new power line and Vierra Substation expansion are located in the City of Lathrop. Lathrop has 18 parks (CEC, 2018c). Included in the park and recreation areas are tennis courts, dog parks, softball diamonds, picnic areas, playgrounds, soccer fields, skate parks, splash parks, and open space (Lathrop, 2018a). Lathrop has a Neighborhood Park recreational dedication/in lieu standard of 2.0 acres per 1,000 residents and a Community Park dedication/in lieu standard of 3.0 acres per 1,000 residents (Lathrop, 2004). The current 2020 population estimate for Lathrop is 26,833, translating to a need for approximately 80.5 acres of parkland to meet the city's most restrictive standard of 3.0 acres per 1,000 population (CA DOF, 2020). At 83.82 acres, Lathrop has approximately 3.36 acres per 1,000 residents, which meets the city's park standards (CEC, 2018c).

Libby Lane Park is located 1 mile north of the project components and is the nearest neighborhood park. This park provides a play structure and picnic tables and is maintained by the city.

Manuel Valverde Park is a community park and is located 1.6 miles north of the project components. This park provides a water play feature, basketball courts, bocce ball court, baseball fields, play structure, concessions, and restrooms. This park is maintained by the city.

The Mossdale Crossing Regional Park is located 1 mile southwest of the project components. The park has boat ramp access, restrooms, and picnic tables with barbecues (SJCP, 2018). This regional park is located in the City of Lathrop, but is maintained by San Joaquin County Parks.

Other Public Facilities

Lathrop has one library, the Lathrop Branch Library, located approximately 2.4 miles north of the new power line alignment and Vierra Substation expansion site. This branch is a part of the Stockton-San Joaquin Public Library system (SJCL, 2018).

Regulatory Background

Federal

No federal regulations related to public services apply to the project.

State

No state regulations related to public services apply to the project.

Local

The project is not subject to local discretionary regulations because the CPUC has exclusive jurisdiction over the siting, design, and construction of the project under CPUC General Order No. 131-D. Local ordinances, policies, and requirements are summarized here for informational purposes.

City of Lathrop. The City of Lathrop general plan has the following park-related standards (Lathrop, 2004):

- **Community-Wide Park Standard.** At the community park level, an overall standard of 3.0 acres/1,000 population of developed parkland is needed to meet the needs of the future population of the entire city.
- **Neighborhood Park Standard.** At the neighborhood level, an overall standard of 2.0 acres/1,000 population of developed parkland is needed to meet the needs of the future population.

5.15.2 Applicant Proposed Measures

PG&E does not propose to implement any applicant proposed measures (APMs) for public services.

5.15.3 Environmental Impacts and Mitigation Measures

Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the public services:

a. Fire protection?

Construction

NO IMPACT. Construction of the new power line would require approximately 15 workers and the Vierra Substation expansion would require a maximum of 19 workers during the 18 to 22-month

construction period. Construction workers would commute from surrounding areas or be drawn from the local and/or regional labor pool (PGE, 2018a). Construction activities that could pose a risk for fire or the need for fire protection response due to heated exhaust or sparks, include helicopter operation and use of grinders, cranes, excavation equipment, vehicles, and bulldozers. Other construction activities with a potential fire risk due to heat sources or open flames could include use of torches or welding. See Section 5.19, *Wildfire* for a discussion of impacts related to construction, operation and maintenance of the project with respect to wildfires.

While there may be a slightly increased chance that fire protection response may be needed during project construction and a minimal number of workers are needed for the construction of the project, the demand for fire protection would not be increased to the point where increases in staffing levels or the provision of new or physically altered governmental facilities like fire stations is necessary. LMFPD would have adequate and acceptable service ratios, response times, and/or performance objectives to serve the project. Also, LMFPD indicated that in the event of a fire or medical emergency at the project site, emergency response time would be within the District's response standards (CEC, 2018a). No impact would occur.

Operation and Maintenance

NO IMPACT. Operation of the expanded Vierra Substation would be conducted remotely from PG&E's Grid Control Center. Inspection and maintenance activities would occur monthly for the expanded substation and annually for the new power line, or as needed in an event such as an emergency by existing PG&E staff. During operation and maintenance of the project, no additional workforce would be hired or relocated closer to the project site so there would be no increase in population that would result in a need for a new or physically altered fire protection facility. No impact would occur.

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b. Police Protection?

Construction

NO IMPACT. As discussed above for fire protection, no construction workers would relocate closer to the project site that could increase the demand for emergency response services, including police protection. Construction areas without existing fencing would be secured with temporary chain-link fencing and security gates (PGE, 2018a). Therefore, between the existing fencing and temporary fencing around staging areas, theft or vandalism would be adequately deterred. The short construction period would not pose a high demand for police protection response from the Lathrop Police Department. Lathrop Police Department indicated the response time to the project site would be consistent with the department's average emergency response time of 6.4 minutes (CEC, 2018b). The response goals for the police department would not be significantly affected by the project. The project would not require the construction of new or physically altered governmental facilities, such as police stations that could result in significant environmental impacts. No impact would occur.

Operation and Maintenance

NO IMPACT. Operation of the expanded Vierra Substation would be conducted remotely from PG&E's Grid Control Center. Inspection and maintenance activities by existing PG&E staff would occur monthly for the expanded substation and annually for the new power line, or as needed in the event

of an emergency. No workforce would be hired or relocate closer to the project site. No impact would occur.

C. Schools?

Construction

NO IMPACT. During construction, the project would have approximately 19 construction workers on-site at any given time. Construction workers would commute from surrounding areas and would be drawn from the local and/or regional labor pool (PGE, 2018a). The project would not require an influx of new workers and would be met by the existing workforce from neighboring cities. Therefore, the project would not cause local population growth, and it would not have indirect impacts related to schools, parks, and/or other public facilities, such as libraries. See Section 5.14, *Population and Housing,* for more information regarding population growth. Since no population growth is anticipated from construction of the project, no substantial physical impacts would occur to any of the existing schools, parks, and/or libraries such that a new or physically altered governmental facility would be required. No impact would occur.

Operation and Maintenance

NO IMPACT. Operation of the expanded Vierra Substation would be conducted remotely from PG&E's Grid Control Center. Inspection and maintenance activities by existing PG&E staff would occur monthly for the expanded substation and annually for the new power line, or as needed in the event of an emergency. Maintenance activities for the new power line and expanded substation would be consistent with current PG&E power line maintenance practices. All operation and maintenance activities would be temporary, and no workforce would be required to be relocated closer to the project site. No impact would occur.

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d. Parks?

Construction

NO IMPACT. The project components would have approximately 19 construction workers on-site at any time during construction. Construction workers would commute from surrounding areas and would be drawn from the local and/or regional labor pool (PGE, 2018a). The construction needs of the project components would not require an influx of new workers and would be met by workforce from neighboring cities. Therefore, the project components would not affect the park standards or increase the demand for park facilities. No impact would occur.

Operation and Maintenance

NO IMPACT. Operation of the new power line and expanded Vierra Substation would be conducted remotely from PG&E's Grid Control Center. Inspection and maintenance activities by existing PG&E staff would occur monthly for the expanded substation and annually for the new power line, or as needed in the event of an emergency. No workforce would be hired or relocate closer to the project site. No impact would occur.

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e. Other Public Facilities?

Construction

NO IMPACT. As discussed under question "d" for park facilities, construction workers would commute from surrounding areas and would be drawn from the local and/or regional labor pool. Therefore, the project components would not increase the demand for library facilities. No impact would occur.

Operation and Maintenance

NO IMPACT. Operation of the expanded Vierra Substation would be conducted remotely from PG&E's Grid Control Center. Inspection and maintenance activities would occur monthly for the expanded substation and annually for the new power line, or as needed in an event such as an emergency by existing PG&E staff. No workforce would be hired or relocate closer to the project components site. No impact would occur.

5.15.4 References

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5.16 Recreation

This section describes the environmental and regulatory setting and discusses impacts associated with the construction, operation, and maintenance of the project with respect to recreational resources in the project's vicinity.

As part of the proposed project, Pacific Gas and Electric (PG&E) would upgrade automation equipment, microwave towers and microwave tower/telecommunication equipment at surrounding substations and tower locations (PGE, 2018a). Approximately 8 workers would be needed for 2 weeks for the remote substations (10 workers for 4-6 weeks at Howland Road Substation) and 3 workers for 2 days for the telecommunication towers (PGE, 2018b; 2019a). Workers would be drawn from the local and/or regional labor pool and commute from surrounding areas (PGE, 2018a). The minimal duration of work and few workers required to complete equipment upgrades would not increase the use of existing recreational facilities, such that a substantial physical impact would occur. Furthermore, these project components would be constructed within existing substation properties or on existing structures and none of the project components include recreation facilities; therefore, these project components would have no impact on recreational resources and are not discussed further in this section. Analysis of impacts is limited to the construction, operation and maintenance of the new power line and Vierra Substation expansion.

RECREATION	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less than Significant Impact	No Impact
a. Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☐	☒
b. Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	☐	☐	☐	☒

Environmental checklist established by California Environmental Quality Act Guidelines, Appendix G.

5.16.1 Setting

The project's proposed new power line and Vierra Substation expansion would be located within the City of Lathrop on property zoned as General Industrial. The project would not cross or directly intersect with any parks or other recreational facilities. The closest recreational facilities include three parks within one mile of the Vierra Substation: Big League Dreams Sports Park, to the southeast; Mossdale Crossing Regional Park, to the southwest; and Libby Lane Park to the north of Vierra Substation.

Big League Dreams Sports Park, located in the City of Manteca, is a privately-owned park that includes an indoor soccer field, batting cages, six baseball replica fields, a park, a stadium club restaurant, and hosts a variety of sport leagues (BLD, 2018). Mossdale Crossing Regional Park, one mile southwest of the Vierra Substation expansion site is located on the San Joaquin River in the City of Lathrop. This park is maintained by San Joaquin County Parks and offers boat access, restrooms, fishing access, picnic tables, and barbecues (SJCP, 2018). Libby Lane Park is a neighborhood park maintained by the City of Lathrop and offers picnic tables and a play structure (Lathrop, 2018).

Regulatory Background

No federal, state or local regulations related to recreational resources would apply to the project.

5.16.2 Applicant Proposed Measures

PG&E does not propose to implement any applicant proposed measures (APMs) for recreation as part of the project.

5.16.3 Environmental Impacts and Mitigation Measures

a. Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?

Construction

NO IMPACT. Construction of the new power line and Vierra Substation expansion would require a maximum of 19 construction workers (15 workers for the new power line and 19 workers for the Vierra Substation expansion). Construction workers are expected to commute from the surrounding areas and be drawn from the local and/or regional labor pool (PGE, 2018a). Workers commuting from the local or regional labor pool generally do not relocate closer to the project site but rather return to their primary residences after each workday. As discussed in Section 5.14, *Population and Housing*, construction of the project would not generate increases in population. Construction workers from neighboring cities would not be expected to temporarily relocate closer to the project site or utilize the nearby parks. Therefore, the project would not substantially increase the use of existing parks or recreational facilities. No impact would occur.

Operation and Maintenance

NO IMPACT. Operation of the new power line and expanded Vierra Substation would be conducted remotely from PG&E's Grid Control Center. Inspection and maintenance activities by existing PG&E staff would occur monthly for the expanded substation and annually for the new power line, or as needed in the event of an emergency. Therefore, the project would not substantially increase population such that the use or physical deterioration of existing parks and recreational facilities would occur. No impact would occur.

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b. Does the project include recreational facilities or require the construction or expansion of recreational facilities, which might have an adverse physical effect on the environment?

Construction

NO IMPACT. The project does not include or require the construction or expansion of recreational facilities. The construction of the project would not require an influx of new workers or increase population, as the workforce would be drawn from the existing local and/or regional labor pool. Therefore, no construction or expansion of existing recreational facilities would be required or included as part of the proposed project. With no new recreational facilities, no corresponding adverse physical effects would occur. No impact would occur.

Operation and Maintenance

NO IMPACT. Operation of the new power line and expanded Vierra Substation would be conducted remotely from PG&E's Grid Control Center. Inspection and maintenance activities would occur monthly for the expanded substation and annually for the new power line, or as needed in the event of an emergency. Existing PG&E staff would maintain the project; no additional workers would be required. Thus, operation and maintenance of the project would not increase population or include residential development requiring the construction or expansion of any new recreational facilities. No impact would occur.

5.16.4 References

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5.17 Transportation

This section describes the environmental and regulatory setting of the project with respect to transportation, and analyzes potential transportation impacts of construction and operation of the project.

Analysis of impacts is limited to the new power line and Vierra Substation expansion project components. Work at the Ripon Cogen and Tesla remote substations would consist of modifications to automation equipment in the existing control room and require very few construction workers. The construction workforce needed for the remote substation modifications at the Kasson, Manteca, and Tracy substations would be approximately 8 workers for 2 weeks. The Howland Road Substation modifications would require up to 10 workers for approximately 4-6 weeks and approximately 41 truck roundtrips to haul 1,020 cubic yards of material (PGE, 2019a). The remote telecommunication tower upgrades at Mount Oso and Highland Peak would require 3 workers for less than a week. The minimal workforce for the remote substation modifications and telecommunication tower upgrades is expected to be drawn from the local and/or regional labor pool and commute from surrounding areas. Vehicle miles traveled (VMT) generated by the workforce and trucks exporting soil would be minimal and well under the Governor's Office of Planning and Research's significance threshold. Construction activities would occur entirely on sites already developed with electrical infrastructure, and would therefore not obstruct any nearby roads, railroad tracks, bike facilities, pedestrian infrastructure, or mass transit. No upgrades involving new monopoles or modifications to telecommunications towers are within 20,000 feet of an airport or above 200 feet in height. Therefore, no Federal Aviation Administration (FAA) notification for structure heights is required under Title 14, Part 77, section 77.9 of the Code of Federal Regulations, and structure heights would not cause impacts to aircraft. Operations-related vehicular trips would be minimal and limited to occasional trips necessary for maintenance, and would not differ from existing conditions. For these reasons, the remote substation modifications and remote telecommunication tower upgrades would generate no impacts to the transportation system and are not discussed further in this section.

TRANSPORTATION Would the project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less than Significant Impact	No Impact
a. Conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?	☐	☐	☐	☒
b. Conflict or be inconsistent with CEQA Guidelines Section 15064.3(b)?	☐	☐	☒	☐
c. Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☒	☐	☐
d. Result in inadequate emergency access?	☐	☒	☐	☐

Environmental checklist established by California Environmental Quality Act Guidelines, Appendix G

5.17.1 Setting

Figure 5.17-1 shows the network of roadways and transportation infrastructure that constitutes the setting in the new power line and Vierra Substation expansion area. A description of this transportation setting is provided below.

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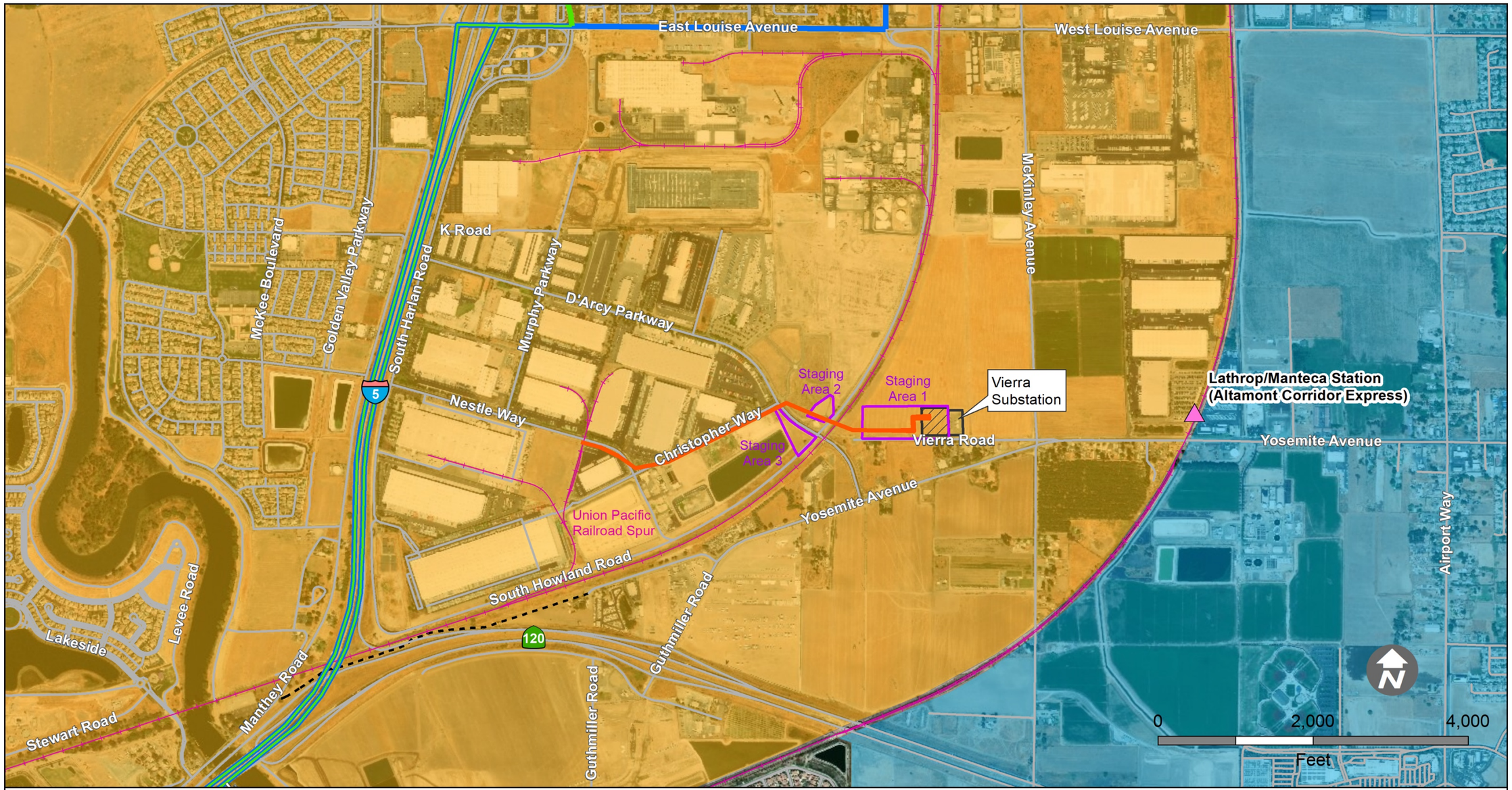

Figure 5.17-1
Local Traffic and Transportation Setting

Sources: PGE; CALTRANS; OpenStreetMap; California Energy Commission; US Census Bureau; ESRI

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Highways

Regional access to the new power line and Vierra Substation expansion work sites would be from Interstate-5 (I-5) and State Route 120 (SR-120). I-5 is a major north-south highway that generally has three lanes on each side in the area. From I-5, the closest exit to the new power line and Vierra Substation expansion sites is East Louise Avenue. SR-120 stretches from its juncture with I-5 in Lathrop to its eastern terminus at U.S. Route 6 in Mono County.

Near the new power line and Vierra Substation expansion sites, SR-120 is divided by a wide center median of vegetation, with two lanes in each direction. The exits nearest the sites from SR-120 are Guthmiller Road (which shortly thereafter becomes Yosemite Avenue) and South Airport Way. Both I-5 and SR-120 are maintained by Caltrans. These roads are included in the 2018 San Joaquin County Regional Congestion Management Program (CMP), administered by San Joaquin Council of Governments (SJCOG) (SJCOG, 2018).

Arterial, Collector, and Local Roads

Several arterial roads provide both direct and indirect access to the new power line and Vierra Substation expansion sites. These include Airport Way, Guthmiller Road/Yosemite Avenue, McKinley Avenue, Louise Avenue, Harlan Road, and South Howland Road (which the proposed new power line would cross). Collector roads also provide access to these sites, including D'Arcy Parkway, Christopher Way, and Nestle Way (all three of which would be crossed by the proposed new power line). Vierra Road is a local road, which provides direct access to the Vierra Substation expansion site.

The arterial, collector, and local roads are under the jurisdiction of the City of Lathrop in the area of the new power line and Vierra Substation expansion sites, with the exception of Airport Way, a CMP road located in the City of Manteca (SJCOG, 2018).

Mass Transit

The new power line would not cross any mass transit routes. However, two of the San Joaquin Regional Transit District's bus routes (Route 90 and 97) use some of the same roads that would be used to access the new power line and Vierra Substation expansion sites, including Louise Road and I-5 (SJRTD, 2018). The Altamont Corridor Express (ACE) Lathrop-Manteca station is also located nearby, approximately 0.5 mile east of the Vierra Substation expansion.

Parking

There are no public parking facilities near the new power line or Vierra Substation expansion sites. Temporary staging areas for construction would be used for construction vehicle and worker parking (PGE, 2018a). These staging areas would consist of:

- An area up to 6 acres in size west of the proposed Vierra Substation expansion;
- A 1.6-acre area on the north side of South Howland Road, east of D'Arcy Parkway; and
- A 2.5-acre area on the west side of D'Arcy Parkway, north of South Howland Road.

Pedestrian Facilities

There are no pedestrian facilities near the new power line or Vierra Substation expansion sites, which are located in an industrial area.

Bicycle

The only existing bikeway near the new power line and Vierra Substation expansion sites is a Class 1 multi-use bikeway[1] between Manthey Road and Yosemite Avenue just south of the Union Pacific Railroad (UPRR) tracks, approximately 0.5 mile south of the nearest part of the new power line alignment (SJCOG, 2012). There are no existing bikeways within the immediate vicinity of the new power line and Vierra Substation expansion sites.

The City of Lathrop Bicycle Plan identifies the following streets as potential future Class 2 bikeways[2]: Harlan Road, D'Arcy Parkway, Nestle Way, Howland Road, McKinley Avenue, Yosemite Avenue, and Louise Avenue (Lathrop, 1995). The SJCOG Regional Bicycle, Pedestrian, and Safe Routes to School Master Plan (SJCOG, 2012) also identifies these streets as potential future Class 2 bikeways, with the exception of Nestle Way, which is not included as a future bikeway.

Rail

UPRR tracks and a privately used rail spur are located in the area of the new power line and Vierra Substation expansion. The new 115 kV line would run from the Vierra Substation east along the north side of Vierra Road, crossing the UPRR tracks south of Howland Road and to the east of D'Arcy Parkway. The new 115 kV line would also cross the rail spur at a location just south of Nestle Way, where it would tie into the existing Tesla-Stockton Cogen Junction 115 kV Power Line located on the west side of the spur. The spur serves an industrial park called the Crossroads Commerce Center (PGE, 2018a). Two businesses in the industrial park are currently using the rail spur: Berry Plastics on the north side of Nestle Way and Del Monte Foods on the south side of Nestle Way (PGE, 2018b).

Air Transportation

There are no operational airports near the new power line or Vierra Substation expansion sites. The closest airport is Stockton Metropolitan, located approximately 7 miles northeast of the Vierra Substation expansion.

Regulatory Background

Federal

Federal Aviation Administration. Title 14, Part 77, section 77.9 of the Code of Federal Regulations requires notification of the FAA of any construction or alterations exceeding 200 feet above ground level. This regulation also requires FAA notification of any construction or alteration of greater height than an imaginary surface extending outward and upward at a slope of 100 to 1 for a horizontal distance of 20,000 feet from the nearest point of the nearest runway of a public or military airport with at least one runway more than 3,200 feet in length.

Department of Transportation Hazardous Materials Regulations. Title 49, Code of Federal Regulations, sections 171-177 and 350-399 require proper handling and storage of hazardous materials during transportation.

[1] A Class 1 multi-use bikeway is an off-street paved path for the exclusive use of bicycles and pedestrians that is physically separated from streets or highways.

[2] A Class 2 bikeway is an on-street bike lane for exclusive use of bicycles, separated from vehicular traffic by striping.

State

California Department of Transportation. Caltrans is the lead agency responsible for overseeing state highways in California. Caltrans has the discretionary authority to issue special permits for the movement of vehicles or loads exceeding statutory limitations on the size, weight, and loading of vehicles described in Chapters 1–5 of Division 15 of the California Vehicle Code ("Size, Weight, and Load").

Local

The project is not subject to local discretionary regulations because the CPUC has exclusive jurisdiction over the siting, design, and construction of the project under CPUC General Order No. 131-D. However, a discussion of local regulations is included below for informational purposes. Any discussion of level of service (LOS) below is purely informational and not relevant to potential transportation-related California Environmental Quality Act (CEQA) impacts[3]. (See Pub. Res. Code § 21099(b)(2).)

San Joaquin Council of Governments. SJCOG's CMP sets the LOS standard for CMP roads and intersections as LOS D or better (SJCOG, 2018). If a CMP road or intersection operates at LOS E or lower, the city or county in which the deficient portion is located must prepare a deficiency plan. Certain trips are exempted when evaluating CMP LOS deficiencies, including interregional trips and trips generated by construction activity (SJCOG, 2018). The CMP requires that any project generating 125 or more net new vehicle trips during weekday a.m. or p.m. peak hours or 500 or more net new daily vehicle trips on any day of the week be reviewed for quantitative impacts to the regional transportation system (SJCOG, 2018). The project would not meet the thresholds for triggering a review of impacts to the regional transportation system.

City of Lathrop. The Comprehensive General Plan for the City of Lathrop states that arterial streets should be operating at LOS C or better, and interchange ramps should be operating at LOS D or better (Lathrop, 2004). It also states that other than streets where local truck deliveries are required, truck routes are to be limited to arterial streets that serve commercial and industrial areas close to freeway interchanges, such as Roth Road, Lathrop Road, and Louise Avenue (Lathrop, 2004). The City of Lathrop also has authority for issuing encroachment permits for all work within city boundaries in utility easements or the street right-of-way, according to Chapter 12.08 of the City Code.

City of Manteca. The City of Manteca General Plan 2023 Policy Document, Circulation Element, Policy C-P-2, states that to the extent feasible, the city shall strive for a vehicular LOS of D or better at all streets and intersections not located in the downtown area (Manteca, 2013).

Table 5.17-1 (below) summarizes the characteristics of selected roadway segments and intersections, or study locations, near the new power line and Vierra Substation expansion sites. If available, existing a.m. and p.m. peak hour LOS information is included in the table. The a.m. and p.m. peak hours reflect the highest 1-hour traffic volumes during typical commute hours (7:00 to 9:00 a.m. and 4:00 to 6:00 p.m.).

[3] The concept of LOS is intended to characterize traffic flow on roadways using a grading system that takes into account traffic volumes and roadway capacity. Grades range from LOS A to LOS F, with LOS A representing free flow conditions with little to no vehicle delay and LOS F representing stop-and-go conditions with extensive vehicle delay.

TABLE 5.17-1 ROADWAY SEGMENTS AND INTERSECTIONS

Number	Roadway Segment or Intersection	Physical Relationship to Power Line	Classification	Agency or Agencies with Jurisdiction	a.m. Peak LOS	p.m. Peak LOS
1	I-5 northbound between I-205 and SR-120	Access Road	Freeway Segment	Caltrans, SJCOG, City of Lathrop	D	F
2	I-5 southbound between 1-205 and SR-120	Access Road	Freeway Segment	Caltrans, SJCOG, City of Lathrop	F	D
3	SR-120 eastbound between I-5 and Yosemite Avenue	Access Road	Freeway Segment	Caltrans, SJCOG, City of Lathrop	D	E
4	SR-120 westbound between I-5 and Yosemite Avenue	Access Road	Freeway Segment	Caltrans, SJCOG, City of Lathrop	D	C
5	I-5 northbound ramps and Louise Avenue	Access Road	Arterial Intersection	Caltrans, SJCOG, City of Lathrop	B	F
6	I-5 southbound ramps and Louise Avenue	Access Road	Arterial Intersection	Caltrans, SJCOG, City of Lathrop	D	C
7	Airport Way and Yosemite Avenue	Access Road	Arterial Intersection	Caltrans, SJCOG, City of Manteca	D	D
8	South Howland Road	Crosses Alignment	Arterial	City of Lathrop	-	-
9	D'Arcy Parkway	Crosses Alignment	Collector	City of Lathrop	-	-
10	Christopher Way	Within power line alignment and crosses alignment	Collector	City of Lathrop	-	-
11	Nestle Way	Within power line alignment and crosses alignment	Collector	City of Lathrop	-	-
12	Vierra Road	Access Road	Minor	City of Lathrop	-	-

Note: A dash means that no LOS data for this road is available.
Source: SJCOG, 2017

The project would be consistent with all local LOS regulations. The reasons for this are discussed below only for informational purposes, as compliance with local LOS regulations is not relevant to the project's potential transportation impacts under CEQA Guidelines section 15064.3 and Senate Bill 743 (Steinberg, 2013).

Construction of the Vierra Substation expansion would take approximately 12 to 18 months and require up to 19 workers. It would probably begin before the new power line construction portion of the project, which would take approximately 3 to 4 months and require approximately 15 workers working at adjacent pole sites in a rolling fashion. The peak construction traffic period would take place over approximately four weeks during delivery of approximately 10,000 cubic yards of fill for the Vierra Substation expansion. PG&E anticipates that the fill would likely be sourced from a location within 10 miles of the new power line and Vierra Substation expansion site. A belly dump truck would hold approximately 25 cubic yards of fill, meaning that approximately 400 total truck trips would be needed to import fill to the Vierra Substation expansion site, resulting in 20 daily truck roundtrips (or 40 daily one-way truck trips) (PGE,

2018c; 2018d). Truck trips would begin at 8:00 am and be distributed throughout the day, with approximately 10 percent of truck trips coinciding with the morning peak commute hour for local traffic and 10 percent of truck trips coinciding with the evening peak commute hour. In addition, during peak construction, there would be approximately 10 worker roundtrips per day, all of which would occur during the morning and evening peak hours (PGE, 2018d).

The number of construction trips would not cause conflicts with local LOS policies included in SJCOG's CMP, the City of Lathrop's General Plan, and the City of Manteca's General Plan. The reasons for this are as follows: most truck trips would not occur during the peak commute hours and would be distributed throughout the day; worker trips, while occurring during peak hours, would be minimal; construction trips would be temporary; and typical daily construction trips would be extremely low (generated mainly by the up to 19 construction workers on-site during an average day) and distributed across various local roadways to the different staging sites. Furthermore, the low number of construction traffic trips generated, even during the peak construction period of fill importation, would not trigger SJCOG's requirement for a quantitative LOS analysis for project effects to CMP roads; SJCOG exempts construction traffic from evaluations of LOS deficiencies and does not require a quantitative LOS analysis for any project generating less than 125 net new vehicle trips during weekday AM or PM peak hours and less than 500 net new daily vehicle trips (SJCOG, 2018). Therefore, the number of construction trips would not cause existing roadway LOS to degrade, and would not conflict with any plans governing traffic LOS.

5.17.2 Applicant Proposed Measures

PG&E proposes, as part of the project, to implement the following Applicant Proposed Measures (APMs) to avoid or reduce anticipated impacts to transportation.

APM TRA-1: Temporary traffic controls. PG&E will obtain any necessary transportation and/or encroachment permits, including those for transport of oversized loads and certain materials, and will comply with permit requirements designed to prevent excessive congestion or traffic hazards during lane closures. PG&E will develop lane closure/width reduction or traffic diversion plans, as required by the encroachment permits. Construction activities that are in, along, or cross local roadways and rail lines will follow best management practices (BMPs) to minimize impacts on traffic and transportation in the project area.

APM TRA-2: Air transit and neighborhood coordination. PG&E will implement the following protocols that pertain to helicopter use and air traffic during construction:

- PG&E will comply with all applicable FAA regulations regarding air traffic within 2 miles of the project alignment.
- PG&E's helicopter operator will coordinate all project helicopter operation with the local airport before and during project construction.

APM TRA-3: Crossroads Commerce Center coordination. Prior to the start of construction, PG&E will consult with the Crossroads Commerce Center regarding the schedule of rail traffic using the private rail spur that crosses Nestle Way to reduce potential interruption of rail services serving the industrial park.

5.17.3 Environmental Impacts and Mitigation Measures

a. Would the project conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?

Construction

NO IMPACT. APM TRA-1 requires that PG&E obtain any necessary transportation and/or encroachment permits for construction activities, which would ensure compliance with Caltrans regulations regarding oversized loads and City of Lathrop regulations regarding encroachment, such as lane closures. Obtaining encroachment permits and complying with any permit requirements would also ensure that construction truck trips comply with the City of Lathrop's limitations on truck routes.

Construction of the new power line and Vierra Substation expansion would not affect pedestrian, bicycle, or transit facilities, due to the location of the construction sites in an industrial area not immediately served by any of these facilities. There would be no conflicts with any related programs, plans, ordinances, or policies. Although the UPRR tracks and private rail spur are located within the vicinity of construction activities, there are no rail-related programs, plans, ordinances, or policies with which construction of the new power line and Vierra substation expansion would conflict.

Project construction would not conflict with any program, plan, ordinance, or policy addressing the circulation system, and would therefore have no impact.

Operation and Maintenance

NO IMPACT. With regard to transportation impacts, the new power line and Vierra Substation expansion would not cause conditions under operation to differ from existing conditions. A negligible number of occasional trips related to inspection and maintenance would be required during operation, but because PG&E already occasionally performs inspection and maintenance on the existing Vierra Substation and existing lines adjacent to the new power line, no new trips would be expected. Also, the new power line and Vierra Substation expansion and their operational activities would not obstruct any road, rail line, or bicycle or pedestrian infrastructure. Operation and maintenance of the new power line and Vierra Substation expansion would have no impacts with regard to conflicts with a program, plan, ordinance, or policy addressing the circulation system.

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b. Would the project conflict or be inconsistent with CEQA Guidelines Section 15064.3(b)?

Construction

LESS THAN SIGNIFICANT IMPACT. CEQA Guidelines section 15064.3, subdivision (b), states that generally VMT is the most appropriate measure of transportation impacts. VMT refers to the amount and distance of automobile travel attributable to a project. Increased VMT exceeding an applicable threshold could constitute a significant impact. If existing models or methods are not available to estimate the VMT for the particular project being considered, a lead agency may analyze the project's VMT qualitatively, evaluating factors such as the availability of transit or proximity to other destinations. For construction traffic, a qualitative analysis of VMT impacts (instead of a more detailed quantitative analysis) is often appropriate (CANRA, 2018; see also, CEQA Guidelines section 15064.3, subdivision (b)(3)).

The CEQA Guidelines also state that projects within 0.5 mile of either an existing major transit stop or a stop along an existing high quality transit corridor should be regarded as having less than significant impacts with regard to VMT (CANRA, 2018). Further, according to technical guidance by the Governor's Office of Planning and Research, absent substantial evidence indicating that a project would generate a potentially significant level of VMT or inconsistency with a Sustainable Communities Strategy or general plan, projects that generate fewer than 110 trips per day generally may be assumed to cause a less than significant transportation impact (OPR, 2018).

Taking the information discussed above into account, the new power line and Vierra Substation expansion would not conflict with or be inconsistent with CEQA Guidelines section 15064.3(b) during construction. Construction-generated trips would be temporary and would result in fewer than 110 trips per day during the peak construction traffic period (when there would be approximately 40 one-way truck trips and 20 one-way worker trips per day). Furthermore, the ACE Lathrop-Manteca train station is also located nearby, approximately 0.5 mile east of the Vierra Substation expansion. For these reasons, VMT generated by the new power line and Vierra Substation expansion construction would be less than significant, and no mitigation is required.

Mitigation Measures: None recommended.

Operation and Maintenance

NO IMPACT. A negligible number of occasional trips related to inspection and maintenance would be required during operation, but because PG&E already occasionally performs inspection and maintenance on the existing Vierra Substation and existing lines adjacent to the new power line, no new trips would be expected. Furthermore, the ACE Lathrop-Manteca train station is also located nearby, approximately 0.5-mile east of the Vierra Substation expansion. For these reasons, there would be no impacts related to VMT generated by operation and maintenance of the new power line and Vierra Substation expansion.

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c. Would the project substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?

Construction

LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED. Construction of the new power line would require two days of helicopter activity to install stringing rollers at each tubular steel pole and a pulling line between each tubular steel pole (PGE, 2018a). The helicopter would operate from one of the proposed staging areas along the new power line or from a nearby airport. PG&E stated that to avoid risks to the public, the helicopter would fly a designated flight path to the project and along the new power line alignment as much as possible, and when carrying construction equipment or materials, would not pass over major highways or directly over habitable structures (PGE, 2018a).

APM TRA-2 would require that during construction, PG&E: comply with all applicable FAA regulations regarding air traffic within 2 miles of the project alignment; and coordinate all project helicopter operations with the local airport before and during project construction. However, construction-related helicopter activity should comply with all applicable FAA regulations regardless of its distance from the project alignment in order to ensure that impacts from helicopter operations would be less

than significant. **Mitigation Measure (MM) 5.17-2** would supersede APM TRA-2 and eliminate the language that only requires compliance with FAA regulations within 2 miles of the alignment.

In addition, conflicts between construction activity and the railroad could cause significant hazards to construction workers and train operators. The new 115 kV line would cross the UPRR tracks at a point south of Howland Road and to the east of D'Arcy Parkway. It would also cross a privately used rail spur at a location just south of Nestle Way, where it would tie into the existing Tesla-Stockton Cogen Junction 115 kV Power Line located on the west side of the private spur (PGE, 2018a). APM TRA-1 requires construction activities near rail lines to follow BMPs, but no details are provided about the methods that would be used to reduce the potential for conflicts between construction and the rail line. To ensure safety around rail lines, **MM 5.17-1** would supersede APM TRA-1 and require that PG&E submit and implement a Railroad Safety Plan for construction activities to address foot traffic, construction-related vehicles, and the transport of heavy/oversized loads over the UPRR and spur railroad tracks, as well as safety measures to be employed during construction near the railroad tracks. **MM 5.17-1** also states that construction activities crossing or adjacent to rail lines shall follow BMPs, including compliance with the California Manual on Uniform Traffic Control Devices (MUTCD) (Caltrans, 2019) to minimize impacts to rail, and specifically lists encroachment permits from UPRR as a requirement for the Transportation Management Plan.

In addition, APM TRA-3 would require PG&E to consult with the Crossroads Commerce Center prior to construction regarding the schedule of rail traffic using the private rail spur to reduce potential interruption of rail services serving the industrial park. Avoiding construction during rail use would also reduce the risk of hazards to construction workers and train operators.

With implementation of **MM 5.17-1**, **MM 5.17-2**, and APM TRA-3, construction-related impacts of the new power line and Vierra Substation expansion related to an incompatible use or increased hazards would be reduced to less-than-significant levels.

> **MM 5.17-1**: **Transportation Plans**. (Supersedes APM TRA-1). Pacific Gas and Electric Company (PG&E) shall obtain any necessary transportation and/or encroachment permits, including those for transport of oversized loads and hazardous materials, lane closures, and construction near railroad tracks, and shall comply with permit requirements designed to minimize hazards, impacts to emergency services, and impacts to rail service. Construction activities that are in, along, or cross local roadways and rail lines must follow best management practices (BMPs), including compliance with the California Manual on Uniform Traffic Control Devices (MUTCD) 2014 Edition, Revision 4.
>
> PG&E shall:
>
> - Prepare and implement a Railroad Safety Plan, if required by encroachment permit(s) obtained from Union Pacific Railroad (UPRR), for its construction activities to address the transport of heavy/oversized loads over the railroad tracks or spur, as well as safety measures to be employed during construction near the railroad tracks;
> - Prepare and implement Transportation Management Plans (TMPs), or lane closure/width reduction and/or traffic diversion plans, as required by any necessary transportation and/or encroachment permits, including plans for maintaining emergency vehicle access during lane or full roadway closures (e.g., if needed for helicopter travel over Nestle Way, Christopher Way, and D'Arcy Parkway).

MM 5.17-2: **Air transit and neighborhood coordination.** (Supersedes APM TRA-2). Pacific Gas and Electric Company (PG&E) will implement the following protocols that pertain to helicopter use and air traffic during construction:

- PG&E will comply with all applicable Federal Aviation Administration regulations regarding air traffic.
- PG&E's helicopter operator will coordinate all project helicopter operation with the local airport before and during project construction.

Significance after Mitigation: Less than Significant.

Operation and Maintenance

LESS THAN SIGNIFICANT IMPACT. Tall structures could pose hazards to occupants of aircraft, depending on the heights of the structures and their proximity to air traffic. Title 14, Part 77.9 of the Code of Federal Regulations requires FAA notification for structures or objects exceeding a height of 200 feet above ground level (AGL) in any location. FAA notification is also required for any construction or alteration exceeding the height of an imaginary surface extending outward and upward at a slope of 100 to 1 for a horizontal distance of 20,000 feet from the nearest point of the nearest runway of a public or military airport with at least one runway more than 3,200 feet in length.

The tallest proposed structure would be the 120-foot-tall microwave tower at the Vierra Substation expansion site. It would not exceed the FAA's threshold height of 200 feet AGL for a new structure in any location. Also, no structures, including the microwave tower, would be within 20,000 feet of an airport runway. Therefore, FAA notification would not be required, and the new power line and Vierra Substation expansion would not pose significant hazards to aircraft.

UPRR is generally concerned about potential impacts from equipment installed near its railroad infrastructure. UPRR submitted a comment letter stating its policies on new transmission lines near and over railroad right-of-way. UPRR stated that it would only permit crossings of its right-of-way at an angle of 90 degrees, or as close to 90 degrees as possible, in order to minimize the potential for inductive interference to disrupt the signal system on the track (UPRR, 2018). The project involves one crossing of the UPRR tracks near the intersection of South Howland Road and D'Arcy Parkway, and this crossing is at a 73-degree angle. In response to UPRR's comment letter, PG&E stated that this crossing is at 73 degrees because a 90-degree crossing would require relocation of a pole into the percolation pond, and would also require a larger pole and foundation (PGE, 2018b). To avoid these additional impacts that would result if a 90-degree crossing were to be required, CPUC staff has determined that the proposed 73-degree railroad crossing is as close to 90 degrees as is feasibly possible, and so, for the purposes of this analysis, complies with UPRR's policies.

UPRR also stated its objection to any transmission line route running parallel to and within 300 feet of its track, measured from the centerline of the track, in order to minimize possible impacts to railroad signals (UPRR, 2018). The section of the new power line running parallel to the track (south of Christopher Way) would be approximately 1,000 feet from the track. Therefore, no sections of the new power line parallel to the track would be located within 300 feet of the track, and the project complies with UPRR's policy.

Finally, UPRR stated in its letter that other adverse effects on railroad equipment may come from ground fault events, which can cause energy to flow through the ground from the power company's

towers and/or substations, through the rails, and directly into the company's signal equipment, possibly destroying railroad equipment (UPRR, 2018). However, these adverse impacts would not occur because the project must comply with CPUC General Order 95 (GO-95), Rules for Overhead Electric Line Construction, CPUC General Order 128 (GO-128), Rules for Construction of Underground Electric Supply and Communications Systems, and The National Electric Safety Code, 1999.

For these reasons, operation of the new power line and Vierra Substation expansion would result in a less-than-significant impact related to an incompatible use or increased hazards.

Mitigation Measures: None recommended.

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d. Would the project result in inadequate emergency access?

Construction

LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED. Construction of the new power line would involve several 5-minute-long closures on Nestle Way, Christopher Way, and D'Arcy Parkway over the course of one to two days for helicopter activity, as well as possible lane closures at pull sites for staging activities. APM TRA-1 does not include details about how emergency access would be maintained. Without mitigation, this could result in significant impacts to emergency access. **MM 5.17-1** would require PG&E to prepare a Transportation Management Plan that would include a lane closure/width reduction or traffic diversion plan, as required by local encroachment permits. **MM 5.17-1** would also require PG&E to include in the Transportation Management Plan its plans for maintaining emergency vehicle access during lane closures. Finally, by requiring PG&E to obtain all the necessary transportation and/or encroachment permits (such as for transportation of oversized loads), **MM 5.17-1** would minimize service delays and hazards that could impede emergency vehicles. Implementation of **MM 5.17-1** would ensure that potential impacts to emergency access would be less than significant.

Mitigation Measure: Implement **MM 5.17-1**.

Significance after Mitigation: Less than Significant.

Operation and Maintenance

NO IMPACT. No temporary road or lane closures are planned during operation or maintenance, so there would be no impacts to emergency access during operation.

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5.18 Utilities and Service Systems

This section describes the environmental and regulatory setting and discusses impacts associated with the construction, operation, and maintenance of the project with respect to utilities and service systems.

Analysis of impacts to utilities and service systems was limited to project components where ground disturbance and construction of new facilities would occur. These project components include the new power line, Vierra Substation expansion, and remote substation modifications at Howland Road, Manteca, Kasson, and Tracy substations. The proposed modifications at other remote facilities including the Tesla and Ripon Cogen substations and the Mount Oso and Highland Peak microwave stations involve modifications to existing structures or systems where there would be no ground disturbance or other activities. These project components would not require the relocation or construction of water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunication facilities. These project components would not affect water supply, wastewater discharge, or solid waste generation. These project components would comply with regulations related to solid waste. Therefore, there would be no impact on utilities and services systems and these project components are not discussed further in this section.

UTILITIES AND SERVICE SYSTEMS Would the project:	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less than Significant Impact	No Impact
a. Require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunication facilities, the construction or relocation of which could cause significant environmental effects?	☐	☐	☒	☐
b. Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?	☐	☐	☒	☐
c. Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	☒	☐
d. Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?	☐	☐	☒	☐
e. Comply with federal, state, and local statutes and management and reduction regulations related to solid waste?	☐	☐	☐	☒

Environmental criteria established by California Environmental Quality Act Guidelines, Appendix G.

5.18.1 Setting

As described in Section 5.10, *Hydrology and Water Quality*, the city of Lathrop overlies two groundwater subbasins of the San Joaquin Valley Basin – the Tracy Subbasin (DWR 5-022.15) and the Eastern San Joaquin (ESJ) Subbasin (DWR 5-022.01). The shared border of the two subbasins is currently delineated along the San Joaquin River, which is treated as a natural hydrologic divide. Basins that are designated as high or medium priority are subject to the requirements of Sustainable Groundwater Management Act. The ESJ Subbasin is designated as high priority, while the Tracy Subbasin is designated as medium priority. All of the city's groundwater production wells are located in the ESJ Subbasin. Groundwater recharge from

landscape irrigation and recycled water discharge carried out by the city occurs in both the ESJ and Tracy Subbasins.

Wastewater Service

Wastewater services in the city of Lathrop are provided by the City of Lathrop's Department of Public Works, Utilities Division. Wastewater from areas east of State Route 5 in the city of Lathrop is sent for treatment at the Manteca-Lathrop Water Quality Control Facility (WQCF), which is located in the city of Lathrop and co-owned by the cities of Lathrop and Manteca. Wastewater in the area where the new power line and Vierra Substation expansion, and Howland Road Substation modifications are proposed, is conveyed and treated at the Lathrop Consolidated Treatment Facility (CTF), formerly known as Water Recycling Plant No. 1, which is solely owned by the City of Lathrop. The CTF treats about 0.75 million gallons per day (MGD) of raw sewage. The CTF produces tertiary treated recycled water that meets Title 22 standards that is utilized for a variety of purposes, including landscape irrigation and farming activities for fodder crops. The City of Lathrop has plans to expand the facility to a treatment capacity of about 10 million gallons per day (Lathrop, 2017).

Wastewater services in the city of Manteca where Manteca Substation is located, are provided using a network of approximately 250 miles of sanitary sewer mains owned and operated by the city of Manteca's Department of Public Works, Sewer Division. Similar to the city of Lathrop, collected wastewater is discharged to WQCF. The WQCF discharges disinfected tertiary treated wastewater to the San Joaquin River, provides disinfected tertiary treated recycled water for construction purposes and uses non-disinfected secondary treated wastewater for fodder crop irrigation. The WQCF treats up to 6.5 MGD of wastewater and is permitted to treat up to 9.87 MGD (Manteca, 2018).

In the city of Tracy, where Tracy Substation is located, wastewater collection service is provided by the city of Tracy's Department of Public Works. The city collects the wastewater in a system of sewer mains and pump stations and transports it to the city's wastewater treatment plant (WWTP) located on Holly Drive. Treated effluent is discharged to the Old River. Because the WWTP and some portions of the sewer network are approaching their design capacities, the city is embarking on a wastewater upgrade plan to install some additional sewer mains and expand the WWTP to a capacity of about 21 MGD (Tracy, 2012a).

Water Supply

Potable water in Lathrop is provided by the city of Lathrop's Department of Public Works, Utilities Division. The majority of potable water supply in the city comes from groundwater using six city-owned wells, while the remaining demand is met with surface water from the Stanislaus River supplied by the South San Joaquin Irrigation District (SSJID) through the South County Water Supply Project (SCWSP). SCWSP is a collaborative partnership between SSJID and the cities of Lathrop, Manteca, Escalon, and Tracy.

The city of Lathrop's reliance on surface water has been decreasing over the past several years in favor of groundwater due to high costs of surface water compared to groundwater. According to the 2015 Urban Water Management Plan, surface water supplies have been declining from about 28 percent in 2011 to only 7 percent in 2016 with plans to move completely to groundwater (Lathrop, 2017). The city currently has an allocation of 6,887 AFY from SCWSP, which greatly exceeds the 7 percent surface water portion of the city's total water demand in a normal water year. The city's allocation is planned to increase to 10,671 AFY, but it is unknown when that increase will take effect.

The city of Manteca's water comes from two sources: groundwater (about 40 percent) and surface water (about 60 percent). Groundwater is pumped from 14 wells located throughout the city. The second source is treated surface water purchased from SSJID. The majority of the city's customers receive a mixture of groundwater and surface water, and the mixture changes throughout the year (Manteca, 2017).

The city of Tracy's water supply comes from the Stanislaus River, the Delta-Mendota Canal, and groundwater. In 2017, 68 percent of the water supply (about 11,400 AF) came from the Stanislaus River. Water from the Delta-Mendota Canal comprised about 30 percent of the total water supply (about 5,200 AF), while the remaining 2 percent (about 300 AF) was met with groundwater supply (Tracy, 2017).

Storm Water Drainage

The cities of Lathrop, Manteca, and Tracy are partners with others (see also *Regulatory Background*) in regulating storm water in accordance with federal requirements implemented by the state. The partner agencies are required to develop or update post-construction standards to address storm water quality for regulated new development and redevelopment projects. To comply with the requirements, the partnership developed the Multi-Agency Post-Construction Stormwater Manual, which provides design criteria for management of storm water.

Storm water drainage in the city of Lathrop is managed by the city's Department of Public Works, Utilities Division. The city's storm water runoff is collected in detention basins for ultimate discharge to the San Joaquin River through pipes or pump stations. Storm drain inlets are located along D'Arcy Parkway, Christopher Way, and Nestle Way (Lathrop, 2017b).

Storm water drainage in the city of Manteca is managed by the Manteca Public Works Department. The storm drainage system consists of approximately 170 miles of pipeline, 36 pump stations, and 35 detention basins. Storm water runoff flows through this system, into SSJID drains and laterals, and eventually into the San Joaquin River (Manteca, 2018).

Similar to the cities of Lathrop and Manteca, the city of Tracy Public Works Department collects storm water using a system of drains and pump stations. Storm water collected by the city of Tracy is discharged to Old River, which is part of the San Joaquin River system (Tracy, 2012b).

Waste Disposal

Two categories of wastes are addressed: hazardous wastes and nonhazardous waste. Primarily nonhazardous waste and minor amounts of hazardous wastes would be generated during construction. Hazardous wastes are not expected from project operations, while solid, nonhazardous wastes would be expected in measurable amounts. Hazardous materials and related wastes are also addressed in Section 5.9, *Hazards and Hazardous Materials*. The expected solid, nonhazardous wastes would be disposed of in Class III landfills. Landfills are regulated against groundwater contamination. Landfills are also regulated to control the volume available for disposal.

Nonhazardous Waste

Since only solid nonhazardous wastes are expected in significant amounts, availability of adequate disposal space is important. Local regulations are aimed at minimizing the amount disposed of in any given disposal facility. Solid waste from the city of Lathrop is collected by Republic Services, who also provides service to the new power line, Vierra Substation expansion, and Howland Road Substation project area. Republic Services hauls the solid wastes collected from the city of Lathrop to the Vasco Road landfill facility

located in Alameda County near Livermore, California. The Vasco Road landfill is a 246-acre landfill with a daily intake of 2,218 tons of garbage, has a permitted lifetime of 33 million cubic yards and is scheduled to cease accepting waste and initiate closures in 2031 (Alameda County, 2017 and Cal EPA, 2017). In addition to the Vasco Road landfill, there are other landfills in the area that can be utilized to dispose solid waste from the Howland Road, Manteca, Kasson, Tracy and Vierra substations. Other landfills include the Forward Inc. Landfill located in Manteca and owned and operated by Republic Services, and the North County Recycling Center and Sanitary Landfill in Lodi, which is owned by San Joaquin County. The Forward Inc. Landfill, which now incorporates what used to be known as the Austin Road Landfill, has a remaining capacity of 23.8 million cubic yards and the closure date is expected to be 2036 (San Joaquin County, 2018a). The North County Recycling Center and Sanitary Landfill has a permitted capacity of 1,200 tons per day. It has been receiving an average of 541 tons per day and closure date is expected to be 2046 (San Joaquin County, 2018b).

Hazardous Waste

Although liquid hazardous waste would not be generated in significant amounts in the construction, operational, and maintenance phases, hazardous soils and groundwater may be present due to previous land uses in the project area. Construction activities such as excavation and drilling for installation of the microwave tower, monopoles, and tubular steel poles (TSPs) could generate hazardous waste that must be managed in accordance with applicable regulatory permits. Management of hazardous waste during project construction, operation, and maintenance is discussed in Section 5.9, *Hazards and Hazardous Materials*.

Regulatory Background

Federal

Clean Water Act. The Clean Water Act (CWA) (33 U.S.C. § 1251 et seq.), formerly the Federal Water Pollution Control Act of 1972, was enacted with the intent of restoring and maintaining the chemical, physical, and biological integrity of the waters of the United States. The CWA requires states to set standards to protect, maintain, and restore water quality through the regulation of point source and certain non-point source discharges to surface water. Those discharges are regulated by the National Pollutant Discharge Elimination System (NPDES) permit process (CWA section 402).

The cities of Lathrop, Lodi, Manteca, Patterson, and Tracy, and other portions of San Joaquin County are each classified as Phase II MS4 communities. In 2013, the State Water Regional Control Board (SWRCB) adopted a NPDES general permit, Water Quality Order No. 2013-0001-DWQ, for Phase II MS4 communities to regulate storm water and non-storm water discharges from MS4s to waters of the United States. As part of the Phase II general permit, the agencies are required to develop or update post-construction standards to address storm water quality for regulated new development and redevelopment projects (Provision E.12). To comply with the Phase II general permit, San Joaquin County and the cities of Lathrop, Lodi, Manteca, Patterson, and Tracy formed a partnership and developed the Multi-Agency Post-Construction Stormwater Manual.

State

National Pollutant Discharge Elimination System. The California Legislature has assigned the primary responsibility to administer and enforce statutes for the protection and enhancement of water quality under the NPDES framework to the SWRCB and its nine Regional Water Quality Control Boards (RWQCBs). The SWRCB and nine RWQCBs are also responsible for the regulation and enforcement of the water

quality protection requirements of the state's Porter-Cologne Water Quality Control Act. The NPDES is the permitting program that allows point source dischargers to comply with the CWA and Porter-Cologne laws. This regulatory framework protects the beneficial uses of the state's surface and groundwater resources for public benefit and environmental protection. Protection of water quality could be achieved by the project by complying with applicable NPDES permits from the SWRCB or the Central Valley RWQCB. The city of Lathrop's CTF complies with the CWA through its current NPDES Wastewater Discharge Requirements, which were issued by the Central Valley RWQCB in February of 2015 (Order No. R5-2015-0006). The RWQCB can also issue site specific clean up orders where there is a threat or known contamination of soil and groundwater.

Integrated Waste Management Act. The Integrated Waste Management Act of 1989 requires cities and counties to reduce, by 50 percent, the amount of solid waste disposed of in landfills by the year 2000 and beyond. To comply with the Integrated Waste Management Act, counties adopt regulations and policies to fulfill the requirements of the Act. The Republic Services Vasco Road Landfill, where solid waste from the project area would be disposed, is located in Alameda County. Alameda County adopted an Integrated Waste Management Plan that was last updated in 2017 (Alameda County, 2017). In 2009, the San Joaquin County Board of Supervisors adopted Ordinance 4370, also known as the Construction, Demolition and Landscaping Debris Recycling and Diversion Ordinance. See the Local subsection under Regulatory Background for more information.

Local

The project is not subject to local discretionary regulations because the CPUC has exclusive jurisdiction over the siting, design, and construction of the project under CPUC General Order No. 131-D. Local ordinance policies and requirements are summarized here for information purposes.

Alameda County Waste Management Authority Mandatory Recycling Ordinance 2012-01. This ordinance requires that businesses, institutions, and multi-family properties with five or more units take actions to reduce landfilling of recyclable and organic solid wastes. It requires entities to sort their recyclables from their trash. Multi-family property owners as well as businesses and institutions that generate food waste, such as restaurants and grocery stores, must also sort compostable wastes from their trash (Alameda County, 2012).

San Joaquin County Ordinance 4370 Construction, Demolition, and Landscaping Debris Recycling and Diversion Ordinance. This ordinance requires all applicable projects to divert 50 percent of all construction and demolition debris excluding inert and organic material and 90 percent of inert and organic materials from the landfill through reuse and recycling (San Joaquin County, 2018c). The ordinance requires that documentation including a diversion plan be undertaken prior to construction. Per the ordinance, a diversion report is also required to be submitted to San Joaquin County within thirty days of project completion and should include receipts and/or other documentation showing material description, weight, and contact information for the facilities where materials are recycled.

5.18.2 Applicant Proposed Measures

Pacific Gas and Electric Company (PG&E) does not propose to implement any specific Applicant Proposed Measures (APMs) for utilities and service systems as part of the project; however, APMs HM-4 and HYD-1 would ensure that a SWPPP would be prepared and implemented and soil and groundwater testing and

disposal would occur. See Section 5.9, *Hazards and Hazardous Materials,* and Section 5.10, *Hydrology and Water Quality*, for a full description of these APMs listed above.

5.18.3 Environmental Impacts and Mitigation Measures

a. Would the project require, or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunication facilities, the construction or relocation of which could cause significant environmental effects?

Construction

LESS THAN SIGNIFICANT IMPACT. Water would be needed for sanitary and construction purposes. Water needed for the small number of construction personnel (maximum of 19) would be negligible and limited to possible uses for drinking and hand washing (PGE, 2018a). Sanitation service would be provided by portable toilets that would be serviced off site, therefore no water would be needed for this purpose. For construction of the project components, water would be used for dust suppression and soil compaction.

The project owner obtained a letter of commitment from the city of Lathrop showing the city's approval to supply the project with about 2 AF of water during construction (PGE, 2018b). Independent analysis of water demand which included water needed for dust control, fill compaction, and power pole construction indicates that 2 AF is a reasonable estimate for project construction. As discussed in Section 5.10, *Hydrology and Water Quality*, this proportion of water used for the limited duration of construction would not appreciably increase demand, relative to overall ongoing municipal use in the City of Lathrop. The city's existing water supply system would be sufficient to serve the additional temporary construction demand and no new water supply facilities or expansions would be required. Therefore, impact on water supply facilities would be less than significant.

Two streams of wastewater would be generated by the project components: sanitary and construction wastewater. Sanitary wastewater service for the small workforce (maximum of 19) would be temporary and short-term, and would be met using portable restroom facilities and hand-washing stations. Sanitary wastewater would be collected in portable toilets and disposed of off-site in accordance with applicable regulations.

Construction wastewater sources might include used bentonite slurry. If bentonite is used for foundation drilling, the spent bentonite would be collected in containers and hauled off-site to a licensed facility. In addition, groundwater might be encountered during excavation for TSP, microwave tower or monopole foundations, or trench excavations. If water is encountered during excavation, the water would be pumped out and tested before disposal. If not contaminated, the water would either be pumped to the storm water basin at the Vierra Substation or discharged to the ground surface for infiltration. If uncontaminated water is encountered for construction of the microwave monopole foundations or trenches at the remote substations, the water would likely be discharged to the ground surface for infiltration. If the water is found to be contaminated, it would be collected in tanks and hauled off-site to a licensed facility or disposed of in accordance with APM HM-4. No construction or sanitary wastewater would be discharged to the area's wastewater treatment facilities, and as such it would not contribute to loading of the facilities. Therefore, no new facilities or expansions would be needed for wastewater treatment.

Wastewater would be handled in accordance with applicable regulations and permits. Any wastewater generated from construction of the new power line, Vierra Substation expansion, and remote substation modifications at Howland Road, Kasson, Manteca, and Tracy substations, would be disposed at appropriately licensed off-site facilities. Any water from dewatering during TSP, monopole, tower foundation, or trench construction would be contained and handled in accordance with the SWPPP prepared in accordance with the conditions and requirements of the NPDES construction general permit and noted in APM HYD-1. Through implementation of the management practices in the SWPPP, impacts would be less than significant.

The project would not discharge storm water offsite. The majority of construction activities would occur at the new power line, Vierra Substation expansion, and Howland Road Substation. Implementation of APM HYD-1 would ensure that storm water runoff during construction is managed on site using temporary measures in accordance with a SWPPP. The SWPPP would address potential water quality concerns related to construction. The SWPPP would specify measures for each activity that has the potential to degrade water quality through erosion, sediment runoff, and the discharge of other pollutants. Storm water management measures would be temporary and would ensure there would be no significant impacts.

Construction activities for the modifications at the remote Howland Road, Kasson, Manteca, and Tracy substations would occur in mainly paved or graveled areas. Those locations have storm water management systems that would be adequate to handle the small amount of runoff that would result from the new modifications. Installation of telecommunications facility upgrades would not require soil disturbing activities. The project would not generate capacity exceedances such that new storm water drainage facilities to manage storm water runoff from construction activities would be required. Therefore, the project would not result in changes to existing storm water facilities or require the construction of new facilities. The impact would be less than significant.

The project would not use natural gas during construction. In accordance with state regulations, an underground utility search would be conducted prior to ground disturbing activities to pre-locate and avoid potential conflicts pertaining to underground facilities. Therefore, natural gas supply facilities would not be impacted. The project would include minor alterations to existing telecommunications facilities that would not result in relocation of the lines, towers, or antennae at the remote substations (as described in Section 4, *Project Description*). Service interruptions could occur, but would not persist beyond the estimated 1-week time frame for the installation of microwave components upon the existing towers. All work would occur within the existing fence line surrounding the existing towers. Both towers would be accessed by existing roads. The project component installation would comply with all regulations pertaining to solid waste disposal and recycling. Following construction, telecommunications service would be restored. Impacts pertaining to temporary interruptions of service during construction would be less than significant.

Mitigation Measures: None recommended.

Operation and Maintenance

NO IMPACT. Operation of the expanded Vierra Substation would be conducted remotely from PG&E's Grid Control Center. Maintenance activities for the new power line, expanded Vierra Substation, and the monopoles, antenna, circuit switcher and voltage transformer at the remote substations would be consistent with current PG&E maintenance practices. As the project would not add operations employees, no additional water supply would be needed and no additional wastewater would be

generated by the project. Therefore, the operations phase of the project would not require new or expanded water or wastewater treatment facilities. Therefore, no new or expanded water or wastewater treatment or storm water drainage facilities which could cause significant environmental effects would be required. Also, the project would not use natural gas, therefore, natural gas supply facilities would not be impacted. No impact would occur.

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b*. *Would the project have sufficient water supplies available to serve the Proposed Project and reasonably foreseeable future development during normal, dry, and multiple dry years from existing entitlements and resources, or would new or expanded entitlements be needed?

Construction

LESS THAN SIGNIFICANT IMPACT. The project would use approximately 2 AF of water. Primary uses would be for engineered fill placement and compaction and dust control at Vierra Substation expansion and Howland Road Substation. Water needed for construction at Kasson, Manteca, and Tracy substations would be limited to dust control at the small areas of construction and for sanitary uses and would be negligible. Installation of telecommunications facility upgrades would not include soil disturbing activities or require any water use.

Concrete for the foundations would be ready-mix concrete that would be delivered to the construction sites. Water for concrete mixing would come from existing entitlements of the concrete provider. Therefore, no additional water would be needed for concrete mixing.

The construction water needs of the new power line, Vierra Substation expansion, and the trench at the Howland Road Substation would be met with potable water from the City of Lathrop obtained from fire hydrants in the project vicinity. PG&E also proposes to use recycled water if available in the area. Water for sanitary purposes would be delivered to the project components by construction vehicles. The small amount of water needed for the Kasson, Manteca, and Tracy substations would likely be brought in by trucks from the same source as the water for the Vierra Substation expansion construction or, if necessary, the respective local jurisdiction.

PG&E obtained a letter of commitment from the City of Lathrop that the city has sufficient supplies of water to supply an estimated amount of 640,000 gallons or about 2 AF to the project during construction (PGE, 2018b). According to the City of Lathrop's commitment letter, there is sufficient water supply available to serve the project from existing entitlements and resources in a normal water year, and no new or expanded entitlements would be needed.

If groundwater pumping were limited or restricted during a dry year or multiple dry years, the SCWSP (which includes the City of Lathrop) would meet demand using surface water in accordance with their current agreement with SSJID. In a single dry year, SCWSP's allocation would be curtailed by about 26 percent. In a 3-year multiple dry year scenario, SSJID projects that SCWSP allocations would be curtailed by up to 15 percent in the first year, 12 percent in the second year, and 17 percent in the third year. However, because of the low reliance of the city of Lathrop on surface water from SSJID, the city's water supplies would still exceed demands in the city. For example, in 2014, SCWSP's surface water deliveries were curtailed by 20 percent, yet the city's allocation was only reduced by 15 percent. In addition, in 2014 and 2015 the city was able to meet all of its water needs primarily from groundwater and needed to purchase less than its full dry year allocation. In the unlikely event that

the city's water supplies are curtailed to below demands, the city has in place a Water Shortage Contingency Plan that it would implement to mitigate potential shortages in water supplies in single or multiple dry year scenarios (Lathrop 2017). Given the limited amount of water needed for the project and the short-term use for construction, the impact to the city's water supplies would be less than significant during a dry year or multiple dry years, and the city would have sufficient supplies to meet demands for this project and other reasonably foreseeable development.

Mitigation Measures: None recommended.

Operation and Maintenance

NO IMPACT. Operation of the expanded Vierra Substation would be conducted remotely from PG&E's Grid Control Center. Maintenance activities for the new power line, expanded Vierra Substation, and the monopoles, antenna, circuit switcher and voltage transformer at the remote substations would be consistent with current PG&E maintenance practices. Therefore, the operations phase of the project would not impact existing water supplies during normal, single, or multiple dry years, or require new or expanded water supply entitlements. No impact would occur.

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c. Would the project result in a determination by the wastewater treatment provider that serves or may serve the Proposed Project that it has adequate capacity to serve the Proposed Project's projected demand in addition to the provider's existing commitments?

Construction

LESS THAN SIGNIFICANT IMPACT. Sanitary needs of the small number of workers (estimated to be a maximum of 19 at the peak of construction) would be served using portable toilets. As discussed in detail in checklist item a., above, construction wastewater would be disposed of in accordance with the terms of the construction general permit and management practices in the SWPPP. If testing determines that water contains contaminants, it would be collected in tanks for disposal through a licensed facility in accordance with APM HM-4 and applicable water quality regulations**.** The sanitary waste generated would be disposed of off-site through licensed facilities with adequate capacity to accommodate project needs. Given the small workforce and the limited duration of construction, the accommodation for sanitary wastes generated from the temporary uses of portable toilets during construction would not place demands that would exceed wastewater treatment capacities. Therefore, the project would have a less than significant impact on the capacity of wastewater treatment facilities as a result of project construction.

Mitigation Measures: None recommended.

Operation and Maintenance

NO IMPACT. As discussed in Section 4, *Project Description*, no increases in permanent staff would be required to operate or maintain the project's facilities. Operation of the expanded Vierra Substation would be conducted remotely from PG&E's Grid Control Center. Maintenance activities for the new power line, expanded Vierra Substation, and the monopoles, antenna, circuit switcher and voltage transformer at the remote substations would be consistent with current PG&E maintenance practices. The project would not require or include any expansion of wastewater treatment facilities. Therefore,

there would be no change in wastewater volumes or quality that would affect a wastewater treatment provider as a result of the project's implementation. No impact would occur.

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d. Would the project generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?

Construction

LESS THAN SIGNIFICANT IMPACT. 30-cubic yard containers would be used to haul solid waste off-site and the containers would be emptied about twice a month on average. For a construction period of 18 months, the total amount of solid waste would be approximately 1,000 cubic yards. This is a conservative estimate since smaller amounts of solid waste would normally be generated towards the end of construction compared to the early construction stages when more solid waste is generated. The relatively small volume of solid waste would consist of wrappers from construction materials and inert glass, metal, and wood debris that could not be recycled.

Construction waste from the new power line and Vierra Substation expansion would be taken to the Republic Services Vasco Road Landfill in Alameda County near Livermore, or other facilities determined by PG&E at the time of construction, which have sufficient capacity to accept the relatively small amount of waste that would be generated. There is more than adequate capacity at the Vasco Road Landfill to accept the small volume of waste that would be generated by the construction of the substation expansion and connected lines and poles, including the monopoles at the Manteca, Kasson, and Tracy substations, and trenching for the conduit and piers for the circuit switcher and voltage transformer at the Howland Road Substation. In addition, the Forward Inc. Landfill located in Manteca and the North County Recycling Center & Sanitary Landfill in Lodi also have available capacity and could be utilized for waste disposal in the event that the Vasco Road Landfill becomes unavailable for some reason. Therefore, the impact on capacity of local landfills from the project construction solid waste disposal would be less than significant. Furthermore, all landfills in the region have adopted approved solid waste reduction plans to achieve stated reduction goals. The project's small amounts of solid waste would not interfere with the attainment of the solid waste reduction plans of the landfills that serve the project area.

Mitigation Measures: None recommended.

Operation and Maintenance

NO IMPACT. Operation of the expanded Vierra Substation would be conducted remotely from PG&E's Grid Control Center. Maintenance activities for the new power line, expanded Vierra Substation, and the monopoles, antenna, circuit switcher, and voltage transformer at the remote substations would be consistent with current PG&E maintenance practices. Therefore, there would be no change in waste volume that would affect the capacity of solid waste disposal facilities, nor would the project operation interfere with attainment of solid waste reduction goals of the landfills in the area. No impact would occur.

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e. Would the project comply with federal, state, and local statutes and management and reduction regulations related to solid waste?

Construction

NO IMPACT. The California Integrated Waste Management Act of 1989 (Assembly Bill 939) requires local jurisdictions in California to reduce, by 50 percent, the amount of solid waste disposed of in landfills by the year 2000 and beyond. During construction, PG&E would collect and haul construction debris off-site for recycling or disposal in local jurisdictions that comply with this state requirement and have programs in place to ensure disposal of solid waste meets these requirements. PG&E would comply with these state requirements along with all diversion, planning, documentation, and reporting requirements stated in the San Joaquin County Construction, Demolition, and Landscaping Debris Recycling Ordinance.

The project would not result in an impact on solid waste collection and would comply with management and reduction regulations. There are no special or unique wastes that would not allow the project to comply with federal, state, and local statutes or solid waste management and reduction regulations. Management of hazardous waste and applicable federal regulations are discussed in Section 5.9, *Hazards and Hazardous Materials*.

Operation and Maintenance

NO IMPACT. Operation of the expanded Vierra Substation would be conducted remotely from PG&E's Grid Control Center. Maintenance activities for the new power line, expanded Vierra Substation, and the monopoles, antenna, circuit switcher, and voltage transformer at the remote substations would be consistent with current PG&E maintenance practices. The project would comply with federal, state, and local statutes and regulations related to solid waste. There would be no change in compliance with federal, state, or local statutes and regulations related to solid waste management and reduction during operation and maintenance. No impact would occur.

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5.19 Wildfire

This section describes the environmental and regulatory setting and discusses impacts associated with the construction and operation of the project with respect to wildfires.

WILDFIRE If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less than Significant Impact	No Impact
a. Substantially impair an adopted emergency response plan or emergency evacuation plan?	☐	☐	☒	☐
b. Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?	☐	☒	☐	☐
c. Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?	☐	☐	☐	☒
d. Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?	☐	☐	☐	☒

Environmental criteria established by California Environmental Quality Act Guidelines, Appendix G.

5.19.1 Setting

Fire Protection Services

Section 5.15, *Public Services*, describes the fire protection services provided by a number of different local entities, including the fire departments of the cities of Lathrop, Manteca, Tracy, and Ripon, as well as the counties of Alameda, Contra Costa, San Joaquin, and Stanislaus. These agencies would have responsibility for responding to fires in the project area. California Department of Forestry and Fire Protection (Cal Fire) would have jurisdiction over project components located within a State Responsibility Area (SRA) and/or designated under contract with local governments.

Cal Fire-Designated Wildfire Hazard Zones

Cal Fire has published Draft Fire Hazard Severity Zones for both Local Responsibility Areas (LRAs) and SRAs. SRAs are the official boundaries where the State of California (through Cal Fire) has the primary legal and financial responsibility for the prevention and suppression of wildland fires. These maps give fire hazards either a "moderate," "high," or "very high" rating classification. Project components that are located in SRAs labeled as a high Fire Hazard Severity Zone are the Mount Oso microwave station and the Highland Peak microwave station. Tesla Substation is located in a moderate Fire Hazard Severity Zone (Cal Fire, 2007a; 2007b). Project components that are designated within a SRA (i.e., the microwave stations and Tesla Remote Substation) are located within the jurisdictions of Stanislaus County, Contra Costa County, and Alameda County. Further discussion of these three jurisdictions and their fire climates are discussed below.

LRAs include incorporated cities and densely populated areas. Fire protection within these areas is typically provided by city fire departments, fire protection districts, counties, and by Cal Fire under

contract to local governments. All other project components (i.e., the new and relocated power lines, Vierra Substation expansion, and remote substation modifications minus Tesla Substation) are located within LRAs (Cal Fire, 2007c; 2007d).

CPUC-Designated Wildfire Hazard Zones

In response to the California Public Utility Commission's (CPUC's) Fire Safety Rulemaking, the CPUC mapped high fire threat areas where more stringent requirements would be implemented due to the elevated risk for power line fires. The CPUC High Fire Threat District Map identifies three tiers of elevated risk for fires associated with utilities. Tier 1 consists of High Hazard Zones (HHZ) on the United States Forest Service (USFS-Cal Fire) joint map of Tree Mortality HHZs. This tier represents areas where tree mortality directly coincides with critical infrastructure such as communities, roads, and utility lines, and are a direct threat to public safety. Tier 2 consists of areas where there is an elevated risk (including likelihood and potential impacts on people and property) from wildfires associated with overhead utility power lines or overhead utility power-line facilities also supporting communication facilities. Tier 3 consists of areas where there is an extreme risk (including likelihood and potential impacts on people and property) from wildfires associated with overhead utility power lines or overhead utility power line facilities also supporting communication facilities. According to the CPUC High Fire Threat District Map, only the Highland Peak microwave station site is located within a CPUC Tier 3 high fire threat area.

Fire Environment

Contra Costa County

In Contra Costa County, average annual rainfall ranges from 13 inches in Antioch to 23.84 inches at Mount Diablo Junction. Temperatures usually range in July from 71 degrees Fahrenheit (°F) in Richmond to 91 °F in Antioch. During the winter months, the temperature ranges from 37 to 43 °F from Antioch to Richmond, respectively. Analysis of long-term precipitation records indicate that a wetter and drier cycle that lasts several years is common in the region (Contra Costa County, 2017). A large portion of the county is mountainous with steep and rugged topography. Another environment type is a combination of aeolian dune and river delta deposits in the San Joaquin Valley in eastern Contra Costa County (Contra Costa, 2018).

Stanislaus County

Stanislaus County has a Mediterranean type of climate with cool, wet winters and hot, dry summers. Wildfire season for the County of Stanislaus generally occurs during the months of May to October of each year. In Stanislaus County, rainfall averages approximately 12 inches a year and experiences a range of precipitation throughout each season. Temperatures typically range from a low 38 °F in the winter, to an average high of 85 °F during the spring and fall, and to average highs in the 90's °F during the summer months. Vegetation throughout Stanislaus ranges, but primarily consist of chaparral and grasslands. The hot, dry summers in Stanislaus County produce large areas of extremely dry vegetation often located on topography which enhance the spread of flames and prohibits access of firefighting equipment (Stanislaus County, 2017).

Alameda County

In Alameda County, the warm season lasts from June to October, with an average daily high temperature of approximately 71 °F. The cool season lasts from December to February, with an average daily high

temperature below 59 °F. Alameda experiences seasonal variation in monthly rainfall, ranging from 0 inches in the summer months to approximately 7 inches in the winter months (Weather Spark, 2019).

Regulatory Background

Federal

No federal regulations related to wildfires apply to the project.

State

California Public Utilities Code Section 702. This code section states that "Every public utility shall obey and comply with every order, decision, direction, or rule made or prescribed by the [CPUC] … in any way relating to or affecting its business as a public utility, and shall do everything necessary or proper to secure compliance therewith by all of its officers, agents, and employees."

California Public Utilities Commission General Orders.

- **CPUC General Order 95.** CPUC General Order 95 applies to construction and reconstruction of overhead electric lines in California. The replacement of poles, towers, or other structures is considered reconstruction and requires adherence to all strength and clearance requirements of this order. The CPUC has promulgated various rules to implement the fire safety requirements of General Order 95, including:
    - Rule 18A, which requires utility companies to take appropriate corrective action to remedy Safety Hazards and General Order 95 nonconformances. Additionally, this rule requires that each utility company establish an auditable maintenance program.
    - Rules 31.2, which requires that lines be inspected frequently and thoroughly as well as vegetation management activities to be performed in order to establish necessary and reasonable clearances. These requirements apply to all overhead electrical supply and communication facilities that are covered by this General Order, including facilities on lands owned and maintained by California state and local agencies.
    - Rule 38, which establishes minimum vertical, horizontal, and radial clearances of wires from other wires.
    - Rule 43.2.A.2, which requires that for lines located within Tier 2 or Tier 3 zones, the wind loads required in Rule 43.2.A.1 be multiplied by a wind load factor of 1.1 (CPUC, 2018).
- **CPUC General Order 165.** General Order 165 establishes requirements for the inspection of electric distribution and transmission facilities that are not contained within a substation. Utilities must perform "Patrol" inspections, defined as a simple visual inspection of utility equipment and structures that is designed to identify obvious structural problems and hazards, at least once per year for each piece of equipment and structure. "Detailed" inspections, where individual pieces of equipment and structures are carefully examined, are required every 5 years for all overhead conductor and cables, transformers, switching/protective devices, and regulators/capacitors. By July 1st of each year, each utility subject to this General Order must submit an annual report of its inspections for the previous year under penalty of perjury (CPUC, 2017b).
- **CPUC General Order 166.** General Order 166 Standard 1.E requires that investor-owned utilities (IOUs) develop a Fire Prevention Plan, which describes measures that the electric utility will implement to mitigate the threat of power-line fires generally. Additionally, this standard requires

that IOUs outline a plan to mitigate power line fires when wind conditions exceed the structural design standards of the line during a Red Flag Warning[3] in a high fire threat area. Fire Prevention Plans created by IOUs are required to identify specific parts of the utility's service territory where the conditions described above may occur simultaneously. Standard 11 requires that utilities report annually to the CPUC regarding compliance with General Order 166 (CPUC, 2017c).

Fire Protection in California Fire Code and Public Resources Code. The California Fire Code is contained within Title 24, Chapter 9 of the California Code of Regulations. Based on the International Fire Code, the California Fire Code is created by the California Buildings Standards Commission and regulates the use, handling, and storage requirements for hazardous materials at fixed facilities. Similar to the International Fire Code, the California Fire Code and the California Building Code (CBC) use a hazards classification system to determine the appropriate measures to incorporate to protect life and property.

The California Public Resources Code includes fire safety provisions that apply to the SRAs during the time of year designated as having hazardous fire conditions. The purpose is to provide for the classification of lands within SRAs in accordance with the severity of fire hazard present and identify measures to be taken to retard the rate of spreading and to reduce the potential intensity of uncontrolled fires that threaten to destroy resources, life, or property (Pub. Resources Code, §§ 4201-4204*)*. Additional codes such as Section 4291-4299 states that the purpose is to maintain a defensible space of 100 feet around the structure, but not beyond the property line (Pub. Resources Code, §§ 4291-4299).

California Emergency Response Plan. Pursuant to the Emergency Services Act (Gov't Code §8550 et seq.), California has developed an Emergency Plan to coordinate emergency services provided by federal, State, and local governmental agencies and private persons. Response to hazardous materials incidents is one part of this plan. The plan is administered by the State Office of Emergency Services (OES). The OES coordinates the responses of other agencies, including the United States Environmental Protection Agency (U.S. EPA), California Highway Patrol (CHP), California Department of Fish and Wildlife (CDFW), the Regional Water Quality Control Boards, the local air districts, and local agencies. The State Emergency Plan defines the "policies, concepts, and general protocols" for the proper implementation of the California Standardized Emergency Management System (SEMS). The SEMS is an emergency management protocol that agencies within the State of California must follow during multi-agency response efforts whenever state agencies are involved.

Local

Contra Costa County Hazard Mitigation Plan Update Volume 1: Planning-Area-Wide Elements. Contra Costa County and a partnership of local governments within the County have developed a hazard mitigation plan to reduce risks from natural disasters in the Contra Costa County Operational Area – defined as the unincorporated county and incorporated jurisdictions within the geographical boundaries of the county. The plan complies with federal and state hazard mitigation planning requirements to establish eligibility for funding under Federal Emergency Management Agency (FEMA) grant programs (Contra Costa, 2018). The Contra Costa Hazard Mitigation Plan includes a wildfire risk assessment that identifies the natural hazards and risks that could impact the Contra Costa County community based on past events, estimates of the potential frequency, severity, and warning time of a wildfire, and assess

[3] A Red Flag Warning is issued by the National Weather Service to alert fire departments of the onset, or possible onset, of critical weather and dry conditions that could lead to rapid or dramatic increases in wildfire activity.

potential losses to life and property. The plan also includes developed mitigation goals and objectives as part of a strategy for mitigating wildfire-related losses.

Stanislaus County Local Hazard Mitigation Plan. The Stanislaus County Office of Emergency Services completed an update to the Stanislaus County Local Hazard Mitigation Plan (LHMP) in July 2017. The LHMP 2017 recognizes several local natural hazards, including wildfire risks and how to prevent and minimize damages based on the location, probability of future events, likelihood of new occurrences, and assessing the vulnerability overview. The plan also includes developed mitigation goals and objectives as part of a strategy for mitigating wildfire-related losses.

Alameda County Local Hazard Mitigation Plan. The Alameda County 2016 Local Hazard Mitigation Plan was adopted by the County Board of Supervisors in January 2016, and was approved by the FEMA in October 2016. The purpose of this plan, a requirement of FEMA, is to identify the natural hazards in Alameda County, determine how they will impact our community, and develop strategies to lessen the effect of those hazards, including wildfire, and create a more disaster resilient Alameda County.

Pacific Gas & Electric Company's (PG&E's) Plans.

- **PG&E Wildfire Safety Plan. PG&E's Wildfire Safety Plan**. PG&E's Wildfire Safety Plan (WSP), approved by the CPUC on May 3, 2019, was created pursuant to SB 901, which required all electric utilities in California that are regulated by the CPUC to prepare plans to minimize the risk of catastrophic wildfire. The WSP describes PG&E's approach to mitigate wildfire risk and is accompanied by the expansion of its Public Safety Power Shutoff program. The objective of this plan is to address differentiated fire risks across the state of California and reduce ignition drivers and risk-event frequency associated with overhead electric facilities (PGE, 2019a).
- **PG&E Company Emergency Response Plan.** PG&E's Company Emergency Response Plan (CERP) describes and formalizes PG&E's in-place plans and protocols for response to emergencies. The CERP identifies potential hazards, available resources to respond to emergencies, internal communication protocols, and operational structure. Additionally, PG&E's Wildfire Safety Operations Center operates 24 hours a day during wildfire season (PGE, 2019b).

5.19.2 Applicant Proposed Measures

PG&E does not propose to implement any Applicant Proposed Measures (APMs) for wildfires as part of the project.

5.19.3 Environmental Impacts and Mitigation Measures

a. Would the project substantially impair an adopted emergency response plan or emergency evacuation plan?

Construction

LESS THAN SIGNIFICANT IMPACT. As described in Section 5.9, *Hazards and Hazardous Materials* subsection 5.9.3, under question **"**f**"**, the project would have a less-than-significant impact on emergency response and evacuation plans during construction and operation. A review of the Contra Costa, Alameda, and Stanislaus County's Local Hazard Mitigation Plans for the two microwave stations and Tesla substation revealed no specific mapping or delineation of emergency evacuation, access routes, plans, standards, goals, or policies relevant to the project. Therefore, the project would not conflict

with the implementation of the Contra Costa, Stanislaus, and Alameda counties LHMPs. PG&E's CERP would apply to the project in an emergency situation and would guide PG&E operations and response in the event of an emergency. The project would not conflict or impact the implementation of PG&E's CERP. Therefore, no emergency response plan or emergency evacuation plan would be impaired and the impact would be less than significant.

Mitigation Measures: None recommended.

Operation and Maintenance

NO IMPACT. After construction, no lane closures would be needed, and no impact on a response plan or emergency evacuation plan would occur.

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b. Would the project due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?

Construction

LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED. Project construction at the Tesla Substation would consist of updating automation equipment in the control room. Therefore, factors such as slope, prevailing winds, and an increased risk in wildfires would not be exacerbated by construction activities at Tesla Substation as no work would be at risk of significant exposure to these elements. All work would occur within the control room and the impact associated with the risk of an uncontrollable spread of wildfire is less than significant.

The greatest danger from an uncontrolled spread of a wildfire would be from installation-related activities of the new microwave dishes on the Mount Oso and Highland Peak microwave stations. Both of the microwave stations reside within or are near a very high fire hazard severity zone found on a Cal Fire map. In addition, Highland Peak microwave station is located within a CPUC Tier 3 high fire threat area, while the Mount Oso microwave station is located within a CPUC Tier 1 high fire threat area. Absent mitigation, construction activities associated with installation of microwave dishes would increase fire risk and could result in a significant impact. These activities include vehicle and equipment use (e.g., vehicle engine starting or idling in a vegetated area), worker activities (e.g., workers smoking in a vegetated area), and any other activities that could ignite a fire in the nearby vegetation surrounding both tower sites. Implementation of **Mitigation Measure** (**MM) 5.9-1**, see Section 5.9, *Hazards and Hazardous Materials*, for reference, would ensure that PG&E would prepare and implements fire hazard reduction measures to minimize the risk of fire and to address impacts should a fire occur. The fire hazard reduction measures would include worker training for reporting, controlling, and extinguishing incipient fires, providing access to fire extinguishers, and prohibiting certain activities that could pose a fire hazard. All of the items outlined above would ensure that construction workers are aware of the danger and with worker training, take the necessary steps to prevent a fire from occurring. Through the implementation of **MM 5.9-1**, potential impacts associated with wildfire would be less than significant with mitigation.

Mitigation Measures: Implement **MM 5.9-1**.

Significance after Mitigation: Less than Significant.

Operation and Maintenance

NO IMPACT. Operation and maintenance activities at the Highland Peak and Mount Oso microwave stations and Tesla Substation would not significantly increase or change as a result of installing the new microwave dishes or automation equipment. The microwave station and substation are unstaffed so no project occupants would be exposed to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire. Therefore, there would be no impact from wildfires.

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c. Would the project require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?

Construction

NO IMPACT. No infrastructure related to roads, fuel breaks, emergency water sources, power lines, or other utilities would be installed at the remote Tesla substation. Therefore, the only relevant project components in high fire hazard severity zones would be the installation of new microwave dishes on the two existing telecommunication towers at Mount Oso and Highland Peak via bolts (i.e., no welding would occur). Both stations would be accessed by existing roads during construction. Besides the use of vehicles on existing access roads, no construction activities would generate a spark, which would increase wildfire risk during the installation of the microwave dishes. In addition, no new roads, fuel breaks, or emergency water sources would be required for the project. Therefore, there would be no impact on fire risk to the environment from the construction activities.

Operation and Maintenance

NO IMPACT. Operation and maintenance activities at the Highland Peak and Mount Oso microwave stations and Tesla Substation would not increase or change as a result of installing the new microwave dishes on the two telecommunication towers and installation of the automation equipment at the Tesla Substation. No infrastructure that might exacerbate fire risk would need to be operated or maintained because of the project. Therefore, there would be no impact.

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d. Would the project expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?

Construction

NO IMPACT. The relevant project components would include installation of new microwave dishes on the Mount Oso and Highland Peak telecommunication towers and installation of automation equipment at Tesla Substation. There would be no subsurface or ground-disturbing work that would lead to any drainage changes at the existing sites. Therefore, the project would not expose people or structures to significant risks of downstream flooding or landslides and there would be no impact.

Operation and Maintenance

NO IMPACT. Operation and maintenance activities at the Highland Peak and Mount Oso microwave stations and at Tesla Substation would not increase or change as a result of the project and would not expose people or structures to significant risks of downstream flooding or landslides. Therefore, there would be no impact.

5.19.4 References

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5.20 Mandatory Findings of Significance

MANDATORY FINDINGS OF SIGNIFICANCE	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less than Significant Impact	No Impact
a. Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of an endangered, rare or threatened plant or species, or eliminate important examples of the major periods of California history or prehistory?	☐	☒	☐	☐
b. Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?	☐	☒	☐	☐
c. Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☒	☐	☐

Environmental checklist established by California Environmental Quality Act Guidelines, Appendix G.

a. Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of an endangered, rare or threatened plant or species, or eliminate important examples of the major periods of California history or prehistory?

LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED

Biological Resources

With mitigation incorporated, the project would not substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, or substantially reduce the number or restrict the range of an endangered, rare, or threatened species.

The project is located predominately along existing roadways and industrial areas; yet it is composed primarily of agricultural and natural lands habitat, as mapped within local plans (San Joaquin Multi Species Habitat and Conservation Open Space Plan (SJMSCP) (San Joaquin County, 2000) and the PG&E Operations and Maintenance Habitat and Conservation Plan (PG&E O&M HCP, 2007; PG&E, 2007). Therefore, the potential to degrade environmental quality is moderate, as loss of foraging or potential nesting habitat for the Swainson's hawk, white-tailed kite, and burrowing owl may be considered significant without mitigation. Construction activities may have minor, short-term effects on species habitat, as well as permanent effects from the conversion of existing habitat to industrial/developed uses. No wetlands, watercourses, riparian habitats, or sensitive natural communities are present within the project area. The project site and surrounding area are highly developed, few opportunities for wildlife movement are present, and the new power line and

expanded substation would not fragment the natural landscape or interfere substantially with the movement of fish or wildlife. PG&E will implement the following measures (**Mitigation Measure** or **MM**):

- **MM 5.4-1** (Supersedes APM BIO-1), which requires a robust Worker Environmental Awareness Program (WEAP) and construction site best management practices;
- **MM 5.4-2** (Supersedes APM BIO-1), which would minimize construction-related impacts on special status plants;
- **APM BIO-2**, which requires nesting bird pre-construction surveys and implementation of appropriate nest buffers;
- **MM 5.4-3** (Supersedes APM BIO-3), which requires pre-construction surveys and construction avoidance measures for burrowing owl and Swainson's hawk; and
- **APM BIO-4**, which provides compensatory mitigation for permanent impacts to burrowing owl, Swainson's hawk and white-tailed kite foraging habitat, in the total amount of 2.63 acres.

Implementation of these measures will further ensure that species habitats, populations, and communities will not be substantially reduced.

The project would not substantially reduce the range of an endangered, rare, or threated species. Twenty-seven special-status wildlife species have potential to occur in the project area (as summarized in **Table 5.4-2** in Section 5.4, *Biological Resources*). Of these, 24 species are absent or are unlikely to occur in or near the project area because the project area is outside of the species' known ranges or there is no suitable habitat in the project area. Raptors and migratory birds, including white-tailed kite and Swainson's hawk, have the potential to forage and/or nest in or near the project area, and burrowing owl have the potential to nest in or near the project area, and also forage within the project and/or general vicinity. Implementation of **MM 5.4-1** and **MM 5.4-3** would reduce the potential for adverse effects to these and other breeding migratory birds. Adherence to APM BIO-2 during the nesting season and APM BIO-4 for permanent habitat loss, would further avoid and mitigate impacts. Twenty-five special-status plant species have potential to occur in the project area (as summarized in **Table 5.4-2**). However, surveys for special-status plants were conducted, and all 25 species were determined to be absent from or unlikely to occur in the project area. Implementation of **MM 5.4-1** and **MM 5.4-2** would reduce impacts to a less than significant level if rare plants were to establish in work areas prior to construction.

California History and Prehistory

Historical resources, as defined by the California Environmental Quality Act (CEQA), could be present in the project footprint. APM CUL-1, APM CUL-2, APM CUL-3, and **MM 5.5-1** would prevent significant impacts to as-yet unknown, buried historical resources. In addition, the ground-disturbing aspects of the proposed project affect a small geographic area and do not require any mass-grading. The proposed project therefore is unlikely to eliminate important examples of major periods of California history or prehistory.

Tribal cultural resources, as defined by CEQA, have not been identified in the project footprint. APM CUL-4 and **MM 5.5-1** would prevent significant impacts to as-yet unknown, buried tribal cultural resources. The ground-disturbing aspects of the proposed project affect a small geographic area and do not require any mass-grading. The proposed project therefore is unlikely to eliminate important examples of major periods of California history or prehistory.

b. Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?

LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED. A project may result in significant adverse cumulative impacts when its effects are cumulatively considerable; that is, the incremental effects of an individual project are significant when viewed in connection with the effects of past projects, other current projects, and probable future projects (Cal. Code Regs., tit. 14, § 15065(a)(3)). Thresholds serve as the benchmark for determining if a project will result in a significant adverse impact when evaluated against existing conditions (e.g., "baseline" conditions).

Approach to Cumulative Impact Analysis

Under CEQA, there are two acceptable and commonly used methodologies for establishing the cumulative impact setting or scenario: the "list approach" and the "projections approach." The first approach would use a "list of past, present, and probable future projects producing related or cumulative impacts." (Cal. Code Regs., tit. 14, § 15130(b)(1)(A)). The second approach is to use a "summary of projections contained in an adopted general plan or related planning document, or in a prior environmental document which has been adopted or certified, which described or evaluated regional or area wide conditions contributing to the cumulative impact." (Cal. Code Regs., tit. 14, § 15130(b)(1)(B)). This analysis uses a hybrid approach where a list of probable future projects is considered in combination with the baseline conditions, agency projections, and adopted planning documents. The cumulative analysis considers, but does not exclusively rely on, planning documents to establish the cumulative scenario for the analysis.

This analysis evaluates the cumulative impacts of each resource area based on the following three steps:

- Define the geographic scope of cumulative impact analysis for each discipline based on the potential area within which impacts of the project could combine with those of other projects.
- Evaluate the effects of the project in combination with past and present (existing) projects within the area of geographic effect defined for each discipline.
- Evaluate the effects of the project with foreseeable future projects that occur within the area of geographic effect defined for each discipline.

All projects used in the cumulative impacts analysis are listed in **Table 5.20-1**, and the approximate locations are shown on **Figure 5.20-1**.

TABLE 5.20-1 CUMULATIVE PROJECT LIST

Map Id No./Type	Project Name	Project Description	Location	Distance from Project Component at Nearest Point [1]	Current Status/ Construction Info
New Power Line and Vierra Substation Expansion					
1/area	Crossroads Wastewater Treatment Facility (WWTF) Decommissioning Project	Water originally treated by the Crossroads WWTF is now diverted to Consolidated Treatment Facility. Order R5-2015-0006 is rescinded and replaced with new requirements.	18800 Christopher Way, Lathrop	0	Completed.
2/area	Lathrop Gateway Business Park Specific Plan	Total of 385 acres. 57 acres of commercial office use, 168 acres of limited industrial uses, 83 acres of service commercial uses and 77 acres dedicated to roads and public facilities sites.	South of Vierra Rd. and north of SR-120, Lathrop	0	Final Environmental Impact Report (FEIR), January 2011, Approved/ Unknown
3/linear	PG&E Central Bundle 8	Installation of Supervisory Control and Data Acquisition switches at the Tesla Motors 115 kilovolt (kV) Tap on the Tesla - Stockton Cogen Junction 115 kV Line.	Murphy Parkway, Lathrop	0.2	Unknown
4/point	ACE Forward-Pedestrian Path and New Surface Parking Area on West Lot 2 (Fig. 2-37)	Near-term and long-term improvements to the Altamont Corridor Express (ACE). Improvements include expansion of the surface parking lot (constructed in near-term), providing 495 parking spaces. Project does not include the extension to Modesto in the parking counts.	17800 Shideler Parkway, Lathrop	0.3	Unknown status of near-term improvements.
5/linear	ACE Forward-SR 120 Crossover (Fig. 2-24) Tracy to Lathrop Segment	Near-term improvement Alternative TL-4a for the Tracy to Lathrop Segment: Downtown alignment with Midway crossover and State Route (SR) 120 crossover. From Oakland Milepost 82.18 to Tracy Milepost 78.78	Parallel to and north of SR 120, Manteca and Lathrop	0.4	Construction scheduled for Fall 2019 for 22-week period. End of construction estimated Jan. 31, 2020./Unknown.

TABLE 5.20-1 CUMULATIVE PROJECT LIST

Map Id No./Type	Project Name	Project Description	Location	Distance from Project Component at Nearest Point [1]	Current Status/ Construction Info
6/linear	SR 120 and Yosemite Ave./Guthmiller Rd. Interchange Project	At SR-120, widen Yosemite Ave. Bridge, Guthmiller Rd. and eastbound and westbound off-ramps. Signalize ramp intersections; Install an intelligent transportation system for emergency vehicle access as required by the South Lathrop Specific Plan Project transportation mitigation requirements	SR 120 and Guthmiller Rd., Lathrop	0.4	Construction tentatively scheduled to begin at the end of 2020.
7/area	North Crossroads Business Park	1.07 million sq. ft. warehouse, product fulfillment and limited office on 58 acres.	500 East Louise Ave., Lathrop	0.4	Approved/unknown.
8/point	ACE Forward-Relocated Lathrop-Manteca Station (Fig. 2-36)	The relocated Lathrop-Manteca station would be constructed with three near-term parking improvement variations that are considered (near-term variant 1, 2a, and 2b). Additionally, two longer-term parking variants are proposed (longer-term variant 2a and 2b).	South of McKinley Ave., north of SR-120, Lathrop	0.5	12-20 months construction.
9/area	South Lathrop Specific Plan	10 acres of commercial office uses, 246 acres of limited industrial uses, 31 acres of open space/roads and 11 acres for public facility sites.	South of SR 120, east of I-5 and north of Chiavari Way, Lathrop	0.5	Construction status unknown.
10/area	Manteca Family Entertainment Zone	210-acre mixed use development located near Big League Dreams in Manteca. 25 acres of fields to expand Big League Dreams, 62 acres indoor and outdoor entertainment/recreational uses, 33 acres of commercial shopping, 29-acre hotel/lodge, convention center, indoor water park, and 33 acres of public infrastructure.	North of Daniels St. west of Big League Dreams Park, Manteca	0.5	EIR and Master Plan Approved/Lodge (Great Wolf Resort) Construction status unknown.
11/area	Manteca WQCF Alternative Energy Programs Project	Three alternative energy programs- solar photovoltaic array, biogas/clean natural gas refueling station (with truck refueling expansion area, and food waste receiving facility).	Daniels St. extension, south of West Yosemite Ave. and east of UPRR, Manteca	0.5	MND, January 2016/Approved, Unknown.

TABLE 5.20-1 CUMULATIVE PROJECT LIST

Map Id No./Type	Project Name	Project Description	Location	Distance from Project Component at Nearest Point [1]	Current Status/ Construction Info
12/linear	North Trunk Sewer Zone 22 Project	Installation of the North Manteca Trunk Sewer recycled water systems which include 24-inch recycled water pipeline and 54-inch sanitary sewer pipeline.	Extends northeast from the Manteca WQCF to South Airport Way, Manteca	0.8	IS/MND, September 2018, Approved/Unknown.
13/area	Villa Ticino West Development Project	Proposed development includes 760 single-family residential lots, 310 multi-family units, 18.55-acre commercial area, 0.78-acre fire station and 25.5 acres of parks.	Airport Way and Louise Ave., Manteca	0.8	FEIR, October 2004/Approved, letter of intent signed with developer to encourage conversion to industrial development/ Unknown.
14/linear	State Route 120/McKinley Ave. Interchange Project	The approved project alternative is a partial cloverleaf interchange that includes on- and off-ramps, two new ramp bridges, auxiliary lanes on SR-120, ramp metering and roadway improvements on McKinley Ave. including a Class 1 bike path.	Located along SR120 between Yosemite Ave. and Airport Ave., Manteca and San Joaquin County	0.8	Approved, right-of-way acquisition stage/Construction scheduled to start in 2020.
15/area	Oakwood Trails Subdivision	Project site consists of 207 acres and proposes the construction of 676 single family housing units, 20 acres of general commercial areas, 11 acres of industrial park and 15 acres of park/basin areas.	Bounded by Rapallo Way to the north and Woodward Ave. to the south, Manteca	1.0	FEIR, October 2015/Tentative map approved./Unknown.

TABLE 5.20-1 CUMULATIVE PROJECT LIST

Map Id No./Type	Project Name	Project Description	Location	Distance from Project Component at Nearest Point [1]	Current Status/ Construction Info
16/area	River Islands/West Lathrop Specific Plan Amendment	Master planned community on 5,000 acres with up to 11,000 residential units, 260 acres of parks, 7-8 elementary and middle schools, 45-acre town center, 1,200 acres of lakes and open space. 20-year buildout	West of I-5 and North of I-205, Lathrop	1.0	Phase 1 currently under construction. Notice of Preparation for Subsequent Environmental Impact Report for project Phase 2.
17/area	Oakwood Landing-Cerri and Denali Subdivisions	The development of 258 acres to include 290 high density residential units, 975 low density residential units, 13 acres commercial uses, 16 acres of park use and 6 acres of open space.	South of Bronzan Rd. and McKinley Ave., Manteca	1.2	Draft EIR (DEIR), July 2017, Tentative map approved/Unknown.
18/area	Trails of Manteca Project	Project includes 1,178 single-family units, 192 townhomes and 280 apartments with 12 miles of trails and 75 acres of linear parks on approximately 477 acres of land.	South of Oakwood Lake, Manteca	1.4	FEIR, January 2011, Tentative map approved/Unknown.
19/area	Terra Ranch Subdivision	Project includes 209 single-family lots, 200-unit apartment complex, 5.5-acre park and a 2.8-acre green belt park on approximately 74.5 acres.	South of Woodward Ave. and McKinley Ave., Manteca	1.6	FEIR, March 2011/ Construction status unknown.
20/point	PA-1700204	Expand an existing propane storage and processing facility to include the construction of a 17,693 sq. ft. warehouse building for storage, processing and office space.	12715 S Manthey Rd., Lathrop	2.9	Approved/Unknown.
21/point	Pilot Flying J Travel Center	Development of fueling facilities, traveler amenities and parking facilities on 9.17 acres of a 24.5-acre site.	Roth Rd. to the south and S McKinley Ave. to the East, French Camp	3.9	Approved/Unknown.
22/point	PA-1700109	Expand an existing truck parking facility to a maximum of 24 trucks and 114 trailers. Includes the construction of a 1,800 sq. ft. building for truck maintenance.	11168 S McKinley Ave., French Camp	3.9	Approved/Unknown.

TABLE 5.20-1 CUMULATIVE PROJECT LIST

Map Id No./Type	Project Name	Project Description	Location	Distance from Project Component at Nearest Point [1]	Current Status/ Construction Info
23/point	PA-1600046	Expansion of an existing truck parking operation to include construction of a 4,200 sq. ft. office building and a 3,500 sq. ft. warehouse.	865 E Roth Rd., French Camp	4.0	Approved/Unknown.
Manteca Substation					
24/area	North Main Commons Subdivision Project	The development of 158 single family residential lots, 1 park/basin lot and a surveyed designated remainder lot on a total of 30.17 acres.	Southwest of SR-99 and East of North Main Street, Manteca	1.1	IS/MND, March 2018, Tentative map approved/unknown.
25/area	Shadowbrook Manteca Project	Project involves modifications to an approved project. The modifications affect an approved Planned Development Overlay, a Development Agreement, and Tentative Subdivision Map on 122 acres and a new General Plan Amendment to adjust the location of a park site. Changes include a reduction of five units and the elimination of an age restriction for residents.	1031 E Louise Avenue, Manteca	1.3	IS/MND, November 2015/Construction unknown.
26/area	Griffin Park Master Plan annexation of	Proposes 334 acres of land to Manteca. Project development would include a total of 1,592 residential units, 5 acres neighborhood service commercial and 26.46 acres of parks and open space.	West of South Main St. and south of Sedan Road, Manteca	1.6	FEIR, July 2017, Status of tentative map review unknown.
27/linear	PG&E Ripon Substation New 115 kV Line	Installation of approximately 5 miles of new 115 kV power line by replacing existing utility line facilities	Extends from Manteca to Ripon	2.4	Unknown.
28/area	North Pointe Specific Plan	Project includes the development of 1,050 new single- and multi-family residential units and a projected 1.7 million sq. ft. of new commercial/non-residential development.	Immediately north of SR 99 and within the North Pointe Planning District, Ripon	5.0	FEIR, June 2015/ Unknown.
Kasson Substation					
29/linear	Grant Line Road Corridor Project	Project includes the construction of 1.6 miles of new road (Grant Line Rd.) to bypass the community of Banta. Total construction area includes 24 acres. Four	Begins at the intersection of Grant Line Rd. and Chabot Ct. and	0.2	DEIR, April 2018/ Construction projected to begin May 2021 and last

TABLE 5.20-1 CUMULATIVE PROJECT LIST

Map Id No./Type	Project Name	Project Description	Location	Distance from Project Component at Nearest Point [1]	Current Status/ Construction Info
		phases of construction include: grubbing, grading, drainage/utilities/sub-grading and paving.	terminates at the intersection of 11th St. and Bird Rd., Tracy and San Joaquin County.		approximately 13 months.
30/point	PA-1700258	Parking facility for a maximum of 40 trucks and 143 trailers. The project includes the construction of a 3,000 sq. ft. maintenance and repair building and a 400 sq. ft. office and restroom building	3566 W Eleventh St., Tracy	0.5	Approved/Unknown.
31/point	PA 10000	Expansion of an existing private water ski club. Project includes a new restroom and storage building, hospitality room and an office, storage, and concession area.	San Joaquin County; Lorenzen and Kasson	2.2	Unknown
Tracy Substation					
32/point	The Tracy Integrated Campus: Renewable Ethanol From Sugar Beet	Design, build, and operate an over 15 million diesel gallon equivalent per year ethanol facility, located at a developing integrated renewable energy and water management campus	N Tracy Blvd., north of I-205	1.5	Unknown
33/area	Tracy Village Development Project	Proposed age-restricted community consisting of 600 single-family detached residential lots, 3 man-made lakes on 10.5 acres, a recreation center and a 3.2-acre park.	South side of West Valpico Rd. east of Corral Hollow Rd., San Joaquin County	3.0	FEIR, 2018/ Annexation status unknown
34/area	Tracy Gateway Project	Proposed development of a 538-acre site. The Project includes a mix of office, retail and open space land uses. The project would 1. Amend the city's general plan designation from Residential low to commercial open space. 2. Detach project site from the North Schulte Community Area. 3. Pre-Zone site to Planned Unit Development. 4. Annex into Tracy's corporate	I-205 to the north, Lammers Rd. to the east and West Side Irrigation District's upper main canal to the west, Tracy	3.4	Pending approval/City initiated zoning revisal status unknown.

TABLE 5.20-1 CUMULATIVE PROJECT LIST

Map Id No./Type	Project Name	Project Description	Location	Distance from Project Component at Nearest Point [1]	Current Status/ Construction Info
		boundaries, and 5. Amend the City's Roadway Master Plan to include a Concept Development Plan.			
35/area	Avenues Specific Plan	The project proposes the creation of a residential village on 95 acres. Uses include a maximum of 480 residential units, accessory dwelling units and a neighborhood park.	Located between Lammers Rd. and Corral Hollow Rd. along the southern side of Valpico Rd., Tracy	3.5	IS, 2018/ Annexation status unknown.
36/area	Ellis Specific Plan	The project proposes a maximum of 2,250 residential units, 180,000 sq. ft. of commercial uses, a 16-acre swim center and parks.	Located between Lammers Rd. and Corral Hollow Rd. along the north side of the Union Pacific Railroad, Tracy	3.7	Approved/Phase 1, 2, and 3 status unknown.
37/area	Cordes Ranch Specific Plan	Annexation of 1,796 acres to city of Tracy; mix of commercial, office, business park industrial uses and park and recreational uses	Adjacent to and south of I-205 near Mountain House Parkway and northeast of I-580, San Joaquin County	4.4	Approved, extent of construction unknown.
Highland Peak Telecommunication Tower					
38/area	Collier Canyon Mitigation Bank (CCMB)	The project requests approval of a land use permit to establish the CCMB. Mitigation bank would include the creation and rehabilitation of habitats for special-status wildlife and plant species on188.8 acres of land. The proposed grading activities to establish the CCMB consist of an estimated 23,027 cubic yards of cut and 18,804 cubic yards of fill. Planting, irrigation and access improvements are proposed with this project.	Three continuous parcels straddling the Alameda/Contra Costa County line, 8540 Manning Rd., Livermore	3.5	Approved August 2018/grading permit unknown.

TABLE 5.20-1 CUMULATIVE PROJECT LIST

Map Id No./Type	Project Name	Project Description	Location	Distance from Project Component at Nearest Point [1]	Current Status/ Construction Info
39/linear	Addendum to Initial MND-Phillips 66 Line 200 Anomaly Investigation and Repair, Winter 2018	The Phillips 66 pipeline transports crude oil from Kern County to a refinery in Rodeo. The project proposes to conduct anomaly investigation and repairs at 27 seven distinct dig locations to address 42 anomalies along Pipeline 200. The addendum revised the project by relocating a single dig site 6-feet down stream (north) of the previously proposed site.	Utility multiple areas along pipeline, eastern Contra Costa County	4.1	MND, 2018/ Unknown.
40/linear	R649, R700, and R707 Natural Gas Transmission Pipeline 131 Replacement Projects Draft IS/MND	PG&E proposes to replace 5 miles of natural gas transmission pipeline. The project is composed of three separate pipeline segments, all of which are located in the same area and require replacement. The three segments are 1) R649 - would replace two short segments of L131, 2) R700 would replace an approximately 4-mile segment of L131, and 3) R707 would replace an approximately 1-mile segment of L131.	Pipeline replacement area is located between I-580, immediately east of Isabel Ave. and extends northeast to Vasco Rd., Alameda County	5.3	Approved/Unknown completion of construction.

[1] Distance from project components. Note that project components where no impacts to all resource areas are not considered. No cumulative projects were found near Howland Road Substation or Mount Oso microwave stations.

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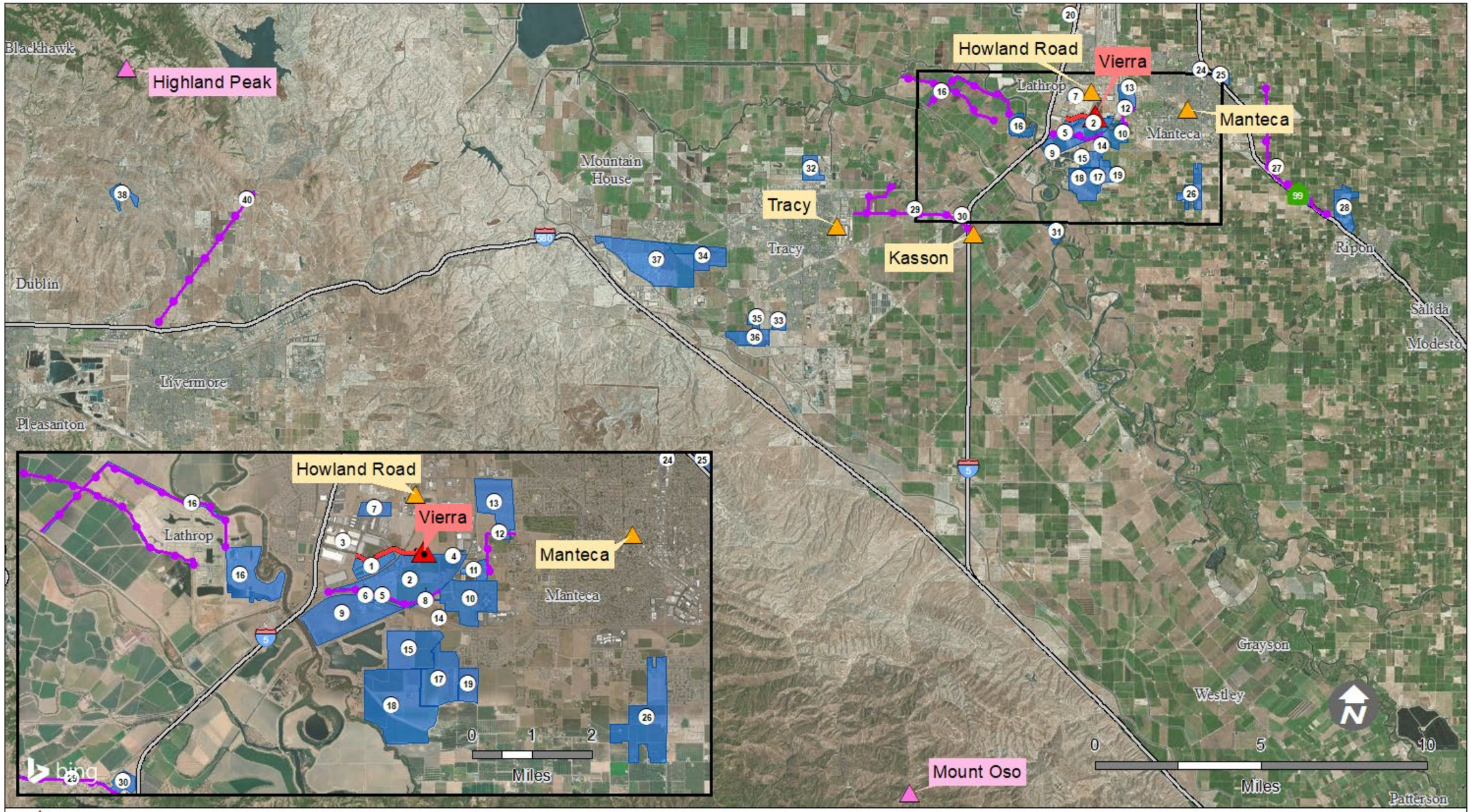

Figure 5.20-1
Cumulative Projects

Sources: Bing Imagery, CALTRANS, US Census Bureau, USDHS, PG&E, California Energy Commission

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Environmental Factors with No Impacts

The project would have no impact on, and therefore not contribute to a cumulative impact on the following environmental factors:

- Land Use and Planning
- Mineral Resources
- Population and Housing
- Public Services
- Recreation

These environmental factors are not discussed further.

Aesthetics

Geographic Extent

The geographic extent is the visible area from a location where the public has a legal and physical right of access to real property (public view) within one-mile of the new power line, Vierra Substation expansion, and modifications at Kasson, Manteca, and Tracy substations.

Potential Cumulative Impacts

Scenic Vista. As discussed in Section 5.1, *Aesthetics*, review of the general plans of Lathrop, Manteca, Tracy, and San Joaquin County and aerial and street view imagery indicate cumulative projects within the geographic extent are not within a designated scenic vista.

Also the aesthetics analysis used as the definition for a scenic vista "a distant view of high pictorial quality perceived through and along a corridor or opening." Review of aerial and street view imagery concluded cumulative projects within the geographic extent are located on a relatively unenclosed plain, the San Joaquin Valley floor, and are not within a scenic vista as defined.

Construction, operation, and maintenance activities of the project in combination with the cumulative projects would not create a substantial adverse effect on a scenic vista. The cumulative impact would be less than significant.

Scenic Resources. A scenic resource may be explained in general as a widely recognized natural or man-made feature tangible in the landscape. Review of the general plans of Lathrop, Manteca, Tracy, and San Joaquin County, and aerial and street view imagery indicate cumulative projects within the geographic extent are not near a scenic resource. Construction, operation, and maintenance activities of the project in combination with the cumulative projects would not eliminate or obstruct the public view of a scenic resource and would not change the visual aspect of a scenic resource by being different or in sharp contrast; therefore, would not substantially damage a scenic resource. The cumulative impact would be less than significant.

In a non-urbanized area degrade the existing visual character or quality of public views, or in an urbanized area conflict with regulations governing scenic quality. As discussed in Section 5.1, *Aesthetics*, the City of Lathrop and the contiguous City of Manteca are an urbanized area as defined

by Public Resources Code section 21071. The relevant permitting agencies for the cumulative projects, including the City of Lathrop and City of Manteca, would ensure that construction, operation and maintenance activities of the cumulative projects within the geographic extent are consistent with applicable zoning and other regulations governing scenic quality. As concluded in Section 5.1, *Aesthetics*, the project would not conflict with applicable zoning and other regulations governing scenic quality in this urbanized area. Therefore, construction, operation and maintenance activities of the project in combination with the cumulative projects would not result in cumulatively considerable impacts with regard to conflicts with zoning and other regulations governing scenic quality within this urbanized area and the impact would be less than significant.

Cumulative projects numbered 29, 30, and 32 in **Table 5.20-1** are within the geographic extent in a non-urbanized area. Review of aerial and street view imagery indicate these cumulative projects would not substantially degrade the existing visual character or quality of public views of the site and its surroundings. Within the landscapes of these cumulative projects are agricultural fields, industrial and commercial development, undeveloped land, clusters of mature trees, and a small number of single-family residences. Aboveground buildings, structures, earthwork, trees, and vegetation in many cases surround the projects making the public view of them limited, and not substantially degrading. Therefore, construction, operation and maintenance of the project in combination with the cumulative projects would not substantially degrade the existing visual character or quality of public views of the site and its surroundings within these non-urbanized areas and the impact less than significant.

Light or Glare. Cumulative projects within the geographic extent may contribute to light trespass, glare, sky glow, and reflectivity affecting night and daytime views in the area. As discussed in Section 5.1, *Aesthetics*, nighttime construction is not anticipated for the project. Outdoor lighting is limited to safety and security purposes. Outdoor light fixtures would be non-reflective, hooded, and directional to prevent light trespass, glare, and reflectivity exiting a construction site or the operation. No lighting is to be installed along the new power line or the modifications at Manteca, Tracy, and Kasson substations. Cumulative projects within the geographic extent would have to be in conformance with the particular city or county regulations pertaining to light, glare, and reflectivity in their permitting. Aboveground buildings, structures, earthwork, trees, and vegetation in many cases surround the projects. Consequently, construction, operation and maintenance of the project in combination with the cumulative projects would be less than significant.

Agriculture and Forestry Resources

Geographic Extent

The geographic extent for the analysis of cumulative impacts associated with agriculture includes San Joaquin County. This geographic extent accounts for regional cumulative impacts to agriculture, which is appropriate because agricultural production is a regional resource.

Potential Cumulative Impacts

Conversion of Farmland. From 2014 to 2016 the total agricultural land in San Joaquin County was reduced from 747,944 acres to 744,835 acres, representing a net loss of approximately 0.4 percent. There was a net loss of 1,245 acres of Prime Farmland and net gain of 346 acres of Farmland of Statewide Importance (CDOC, 2016b).

As discussed in Section 5.2, *Agriculture and Forestry Resources*, the new power line and Vierra Substation expansion would convert approximately 2.47 acres of Farmland of Statewide Importance to non-agricultural use. The project would not contribute to the conversion of Prime Farmland. An analysis using the California Department of Conservation's Land Evaluation and Site Assessment (LESA) Model was conducted to determine the potential significance of the conversion of approximately 2.47 acres of Farmland of Statewide Importance to non-agricultural use. The calculated LESA score for the project is 49.5 and is not considered significant according to the LESA Model Scoring Thresholds. Further, the City of Lathrop General Plan has designated the subject properties for future General Industrial uses, not agricultural. Therefore, the amount of Farmland of Statewide Importance that would be converted for the project would not be cumulatively considerable, even when viewed in connection with the other projects identified in **Table 5.20-1**.

Construction of the new power line and Vierra Substation expansion would temporarily impact 11.9 acres of farmland, of which 0.40 acre would be Prime Farmland and 9.72 acres would be Farmland of Statewide Importance. APM AGR-1 would require PG&E to coordinate with the landowner or tenant in advance of construction activities to minimize impacts on agricultural operations. Construction activities would be temporary and the land would be returned to its former use. The other projects identified in **Table 5.20-1** would not impact the same Farmland as the project and the project's operation and maintenance would not conflict with agricultural use on adjacent properties. Therefore, with implementation of APM AGR-1**,** the project would not result in cumulatively considerable impacts involving other changes in the existing environment that could result in conversion of Farmland. For these reasons, cumulative impacts related to the conversion of farmland would be less than significant.

Air Quality

Geographic Extent

Air quality is a regional resource and is neither defined nor limited by jurisdictional boundaries, political boundaries, or project boundaries. The cumulative study area for air quality primarily encompasses activities within the same air basins as the project, specifically the San Joaquin Valley Air Basin (SJVAB) and San Francisco Bay Area Air Basin (SFBAAB). For localized air quality impacts, the geographic extent for exposure of receptors to substantial pollutant concentrations is 1,000 feet due to eventual dispersion of most diesel particulate matter at that distance from concentration of trucks (CARB, 2005). The geographic extent for odor impacts is 36 feet, given that is the maximum distance at which perception of diesel exhaust emissions can be perceived (Colucci and Barnes, 1970).

Potential Cumulative Impacts

Construction

Regional Air Quality. The project would be located in SJVAB and SFBAAB. Both SJVAB and SFBAAB are in nonattainment for state and federal ozone and fine particulate matter less than 2.5 microns (PM2.5) standards and nonattainment for state particulate matter less than 10 microns (PM10) standards.

To characterize regional air quality impacts in SJVAB, this analysis used a comparison to significance thresholds adopted by the San Joaquin Valley Air Pollution Control District (SJVAPCD), per the projections approach. The SJVAPCD has adopted several attainment plans that outline long-term

strategies designed to achieve compliance with National Ambient Air Quality Standards and California Ambient Air Quality Standards. The SJVAPCD Guidance for Assessing and Mitigating Air Quality Impacts (SJVAPCD, 2015) states that projects with emissions below these significance thresholds for criteria pollutants would be determined to "Not conflict or obstruct implementation of the District's air quality plan".

Emissions generated during construction of the project within SJVAB would not exceed the SJVAPCD thresholds of significance for criteria air pollutants (refer to Section 5.3, *Air Quality*, questions "a" and "b"). Therefore, construction of the project would not conflict with or obstruct implementation of the applicable air quality plans of SJVAPCD. Construction of the project in SJVAB would not contribute considerably to a significant cumulative air quality impact in SJVAB.

For the remote upgrade work within SFBAAB, cumulative impacts on regional air quality are addressed by the BAAQMD thresholds of significance for emissions in the SFBAAB because Bay Area Air Quality Management District (BAAQMD) considered all past, present, and probable future projects when they set their thresholds of significance. The thresholds represent the levels at which a project's individual combustion emissions of criteria air pollutants and precursors would result in a cumulatively considerable contribution to the existing nonattainment designation. BAAQMD does not set numerical thresholds for fugitive dust. Instead, BAAQMD CEQA Guidelines (BAAQMD, 2017) recommend following the current BMPs approach which has been a pragmatic and effective approach to the control of fugitive dust emissions. If a project's emissions exceed the numerical thresholds in the SFBAAB, or if the project generates uncontrolled fugitive dust, the project would be contributing to the cumulatively significant air quality impact in the air basin.

Emissions generated from combustion during construction of the project in SFBAAB would not exceed the BAAQMD thresholds of significance for criteria air pollutants (refer to Section 5.3, *Air Quality,* questions "a" and "b"). BAAQMD CEQA Guidelines (BAAQMD, 2017) require implementation of fugitive dust control BMPs to consider impacts from fugitive dust emissions less than significant. PG&E would implement APM AIR-1 and APM GHG-1, which would be consistent with the BAAQMD recommended BMPs. Impacts from construction work within SFBAAB would not conflict with or obstruct implementation of the applicable BAAQMD air quality plan and impacts would be less than significant with Proposed Measures (APMs). Construction of the project in SFBAAB would not contribute considerably to a significant cumulative air quality impact in SFBAAB.

Local Air Quality. The list approach was used to determine localized air quality impacts. The geographic extent for exposure of receptors to substantial pollutant concentrations is 1,000 feet due to eventual dispersion of most diesel particulate matter at that distance from truck exhausts (CARB 2005). There are two cumulative projects within 1,000 feet of project components: Lathrop Gateway Business Park Specific Plan (#2/area) (close to the Vierra Substation expansion and the new transmission line) and the Grant Line Road Corridor Project (#29/linear) (close to the Kasson Substation). The construction for the Grant Line Road Corridor Project is projected to begin May 2021 and last approximately 13 months. The schedules for the other project is currently unknown. It is also unknown whether construction of the Vierra Substation expansion would overlap with construction of the Lathrop Gateway Business Park Specific Plan. The 2-week construction period at the Kasson Substation may or may not overlap with the construction of the Grant Line Road Corridor Project depending on when the construction of the Vierra Substation expansion actually starts (Fall 2021 at the earliest).

Vehicles and equipment used during construction of these cumulative projects would generate localized diesel and fugitive dust emissions near sensitive receptors. While the project would temporarily contribute additional emissions, any potential adverse cumulative air quality impacts would be short-term (lasting only the duration of construction). Furthermore, these emissions are not significant individually when compared to SJVAPCD or BAAQMD significance thresholds (refer to Section 5.3, *Air Quality*, questions "a" and "b"). These emissions would be further reduced through the implementation of APM AIR-1 and APM GHG-1 and would cease after construction. Therefore, the incremental impact of the project's construction emissions on local air quality would not be cumulatively considerable.

Regarding localized carbon monoxide (CO) impacts, SJVAPCD established that if neither of the following criteria are met at all intersections affected by the developmental project, the project has no potential to create a violation of the CO standard:

- A traffic study for the project indicates that the Level of Service (LOS) on one or more streets or at one or more intersections in the project vicinity will be reduced to LOS E or F; or
- A traffic study indicates that the project will substantially worsen an already existing LOS F on one or more streets or intersections in the project vicinity.

If either of the above criteria can be associated with any intersection affected by the project, the applicant/consultant would need to conduct a CO analysis to determine a project's significance (SJVAPCD, 2015).

BAAQMD screening guidance indicates that a project would not exceed the CO significance threshold if a project's traffic projections indicate traffic levels would not increase at any affected intersection to more than 44,000 vehicles per hour.

Project construction would be temporary, and the highest number of trips would occur during hauling of fill to the Vierra substation site. It is estimated there would be 20 truckloads per day (40 one-way trips). As discussed in more detail in Section 5.17, *Transportation*, the low number of construction traffic trips generated, even during the peak construction period of fill importation, would not trigger San Jose Council of Governments' (SJCOGs') requirements for a quantitative LOS analysis for project effects to Congestion Management Plan roads. Also, SJCOG exempts construction traffic from evaluations of LOS deficiencies and does not require a quantitative LOS analysis for any project generating less than 125 net new vehicle trips during weekday AM or PM peak hours and less than 500 net new daily vehicle trips (SJCOG, 2018). Therefore, the number of construction trips would not cause existing roadway LOS to degrade, and would not conflict with any plans governing traffic LOS. The project would not result in significant localized CO impacts in SJVAB or SFBAAB. The project would not contribute significantly to the CO emissions associated with the construction of other projects planned in the area and are not cumulatively considerable.

Regarding localized odor impacts, there is one cumulative project that has not completed construction within 36 feet of the Vierra Substation expansion and the new power line, the Lathrop Gateway Business Park Specific Plan. As mentioned in Section 5.3, *Air Quality*, question "d", there would be no significant sources of odor during construction of the Vierra project. Diesel engine emissions might cause temporary odor. However, all potential sources of odors would be spatially diverse and there are relatively few people near the project area. Construction emissions would be short term. Therefore, impacts related to odor generated during construction of the project would be less than

significant. The incremental impact of the project's construction on odor would not be cumulatively considerable.

Operation and Maintenance

As mentioned in Section 5.3, *Air Quality*, the operation and maintenance activities of the project would not differ substantially from baseline conditions in the area. Therefore, operation and maintenance of the project would not result in a material increase in emissions that would conflict with applicable air quality plans. The project would not contribute to a cumulatively considerable air quality impact during operation and maintenance. The cumulative impact would be less than significant.

Biological Resources

Geographic Extent

The geographic extent for the biological resources cumulative analysis includes all similar habitats within 2 miles of the project components, including the substation expansion, power line alignment, and remote-substation modifications. This includes the entire extent of all vegetation and wildlife communities and special-status species habitats and ranges that could be directly and indirectly affected by construction, operation, and maintenance of the project. This accounts for the cumulative degradation, or loss of a particular vegetation community or special-status species population, from cumulative projects that have impacted or would impact sensitive plant communities or special-status species, and result in cumulative habitat degradation or fragmentation.

Potential Cumulative Impacts

Cumulative projects in the area of analysis with the potential to affect biological resources are listed in **Table 5.20-1**. Cumulative projects listed in the Table that might specifically impact biological resources are as follows: numbers 1, 2, 4-20, 26-28, 31, and 32. The largest and closest of these projects include the Lathrop Gateway Business Park Specific Plan (#2 on the Table), the North Crossroads Business Center (#7), the South Lathrop Specific Plan (#9), and the River Islands/West Lathrop Specific Plan Amendment (#16). For CEQA compliance, individual project-specific EIRs were certified for the Lathrop Gateway Business Center (Lathrop, 2011), the South Lathrop Specific Plan (Lathrop, 2015), and the River Islands/West Lathrop Specific Plan Amendment (Lathrop, 2003a; 2003b), and a Mitigated Negative Declaration was adopted for the North Crossroads Business Center (Lathrop, 2018b). The CEQA documents for these projects concluded that each could result in significant direct and cumulatively considerable adverse impacts to sensitive special-status plant and wildlife species. However, the environmental analyses for each project further concluded that potential direct and cumulative impacts of each project on special-status plant and wildlife species would be reduced to less-than-significant levels with the incorporation of mitigation measures contained in the SJMSCP. The SJMSCP is a multi-species, multi-habitat, multi-purpose open space management program that provides for protection of resources in a regional manner. It identifies mitigation steps that are consistent with the state and federal Endangered Species acts. Similarly, the PG&E Operation & Maintenance Habitat Conservation Plan (PG&E O&M HCP) outlines mitigation for projects within the region. Cumulative projects would generally be expected to comply with these plans or with equivalent measures. These measures include incidental take avoidance and minimization measures for special-status species, and compensatory mitigation required for loss of

habitat for special-status species through payment of fees, land dedication, or participation in an approved habitat bank (San Joaquin County, 2000). For the proposed project, equivalent PG&E O&M HCP measures are included as mitigation in **MM 5.4-3** and APM BIO-4.

Construction of the project and other cumulative projects in the area affecting the same sensitive habitats and species may contribute to cumulative impacts through permanent and/or temporary effects to special-status plants and wildlife. However, with incorporation of the MMs discussed in Section 5.4, *Biological Resources*, the project's contribution to cumulative impacts to special-status plant and wildlife would be less than significant. The proposed project is located in a highly disturbed and predominately industrial area. Round-leaved filaree, a special-status plant, has the potential to occur in one of the project staging areas. Although no round-leaved filaree individuals were discovered during rare plant surveys performed at the site, these surveys were conducted in 2017. Should this plant species populate the staging area in the future, **MM 5.4-1** and **MM 5.4-2** would reduce project impacts to special-status plants to a less-than-significant level. Raptors and migratory birds, including white-tailed kite and Swainson's hawk, have the potential to forage in or near the project area, and potential nesting habitat is available as well; burrowing owl have the potential also to both nest and forage in or near the project area. Implementation of **MM 5.4-1** and **MM 5.4-3**, and adherence to APM BIO-2 during the nesting season, would reduce the potential for adverse effects to these and other breeding migratory birds to less than significant levels. Additionally, the compensatory mitigation provided pursuant to APM BIO-4 would further reduce foraging habitat impacts to less than significant levels. Although habitat loss and impacts to species may continue under CEQA review and restrictions and requirements imposed by the PG&E O&M HCP and the SJMSCP, lead agencies can require developers to comply with these conservation plans or equivalent plans, and impose mitigation measures to ensure that development in San Joaquin County proceeds in a manner that minimizes the effects on biological resources. Therefore, the project's impacts would not be cumulatively considerable, even if other projects occur in the project vicinity.

Cultural and Tribal Cultural Resources

Geographic Extent

The geographic extent for cumulative cultural and tribal cultural resource impacts includes the vicinity of the proposed Vierra substation expansion and new power line, as well as the Kasson, Tracy, Manteca, and Howland Road substation modification areas.

Potential Cumulative Impacts

The cumulative impacts analysis for cultural resources considers the impacts of 17 past, current, and reasonably foreseeable projects within and adjacent to the proposed Vierra Substation expansion and transmission line, and the Kasson, Tracy, Manteca, and Howland Road remote substations. Of these projects, five had environmental impact assessments available for review (Caltrans 2014; Denovo, 2015; Denovo, 2018; ICF, 2017; Insite, 2011). The environmental impact assessments for the identified eligible cultural or tribal cultural resources in their respective project areas were assessed to have no impacts, less-than-significant impacts, or less-than-significant impacts with mitigation measures incorporated in the respective projects. These cumulative projects and the proposed Vierra Substation expansion, new power line, and remote substation upgrades all propose measures to reduce the impact of inadvertent cultural resource discoveries during construction (see APMs CUL-1 to 4 and **MM 5.5-1**). With mitigation, it is not expected that any incremental impacts of the proposed

project on cultural resources would be cumulatively considerable when viewed in conjunction with other projects.

Energy

Geographic Extent

The geographic extent of potential cumulative effects with respect to energy includes the electric grid to which the project subtransmission would contribute and areas from which fuels and services would be provided or obtained.

Potential Cumulative Impacts

Construction

As analyzed in Section 5.6, *Energy*, construction of the project would result in less-than-significant incremental impact with respect to energy consumption. The project, in combination with the cumulative projects listed in **Table 5.20-1**, would require the use of non-renewable diesel and gasoline fuels during construction. However, construction of the project would be short-term and would not result in permanent increased use of non-renewable energy resources. In addition, implementation of APM GHG-1 as described in Section 5.8, *Greenhouse Gas Emissions*, would further ensure that fuel energy consumed during construction would not be wasted through unnecessary idling or through the operation of poorly maintained equipment. Construction of the project would not result in cumulatively considerable environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources.

Operation and Maintenance

Operation and maintenance activities for the expanded Vierra Substation, remote substations and telecommunication towers would not change substantially in long-term energy consumption from vehicles or equipment. Annual inspection and maintenance of the new power line would have a negligible increase in energy consumption due to limited and infrequent use of vehicles and helicopters and the current ongoing inspections of nearby lines. Operation and maintenance of the project would not result in significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources. The project's less-than-significant incremental impact on energy consumption is not expected to combine with the incremental impacts of other projects to cause an adverse cumulative impact.

Geology and Soils

Geographic Extent

The geographic extent for the analysis of cumulative impacts associated with geology, soil, and paleontological resources includes cumulative projects listed in **Table 5.20-1** and shown **in Figure 5.20-1**. These nearby cumulative projects could contribute to slope instability, geologic hazards, or they could overly the same geologic units with low to moderate paleontological sensitivity that also underlie the new power line, Vierra Substation expansion, and the Howland Road, Kasson, Manteca, and Tracy Substations. The specific geologic units of concern include the Modesto Formation (Qm), Quaternary Alluvial Fan deposits (Qf), and Quaternary Dos Palos Alluvium (Qdp).

The geographic extent of geologic units is an appropriate demarcation because contiguous geologic formations could contain similar paleontological resources where the original depositional environments were similar. Thus, these units would contain the same research potential as resources found within the project study area. This would also apply to the interpretation of whether there are unique or special paleontological resources that should be preserved or protected.

Potential Cumulative Impacts

The cumulative projects listed in **Table 5.20-1** are all located in areas of flat terrain. Although active faults are located in the region, the risk of seismic hazards to the public would be localized and would not combine cumulatively. The seismic risk is an existing risk, and none of the cumulative projects would substantially increase the risk to either people or structures over baseline conditions.

None of the construction activities for any of the cumulative projects considered would involve extensive recontouring or excavation that would be geotechnically contiguous to the Vierra Substation or other project components. Based on our current understanding of the projects listed in **Table 5.20-1**, none of these projects would result in substantial soil erosion or loss that could be cumulatively significant. Due to the flat terrain, destabilization of soils or geologic units is unlikely. The cumulative impacts would be less than significant.

Of the cumulative projects listed in **Table 5.20-1**, 25 of the 27 projects overlay the Modesto Formation (Qm), Quaternary Alluvial Fan deposits (Qf), or Quaternary Dos Palos Alluvium (Qdp). It is unlikely that paleontological resources would be encountered during construction of these 25 cumulative projects due to the low sensitivity of the geologic units where they are located. The cumulative impact on paleontological resources would be less than significant. Where cumulative projects overly geologic units other than the Modesto Formation (Qm), Quaternary Alluvial Fan deposits (Qf), or Quaternary Dos Palos Alluvium (Qdp), there would be no cumulative impact.

Greenhouse Gas Emissions

Geographic Extent

GHGs are global pollutants and have long atmospheric lifetimes of one year to several thousand years, which leads to dispersal of GHGs around the globe. In contrast to air quality, which generally is a regional or local concern, human-caused emissions of GHGs have been linked to climate change on a global scale. The geographic extent for the GHG emissions cumulative analysis is therefore considered global.

Potential Cumulative Impacts

GHG emissions and climate change are inherently cumulative impacts. Past, present, and probable future projects worldwide contribute or would contribute to the cumulative conditions for GHG emissions.

Cumulative impacts from GHG emissions are addressed by the thresholds of significance adopted by some air districts, such as BAAQMD and SCAQMD. The thresholds represent the levels at which a project's individual emissions would result in a cumulatively considerable contribution to GHGs. The air districts considered the cumulative nature of GHGs when setting thresholds for GHGs. The air districts also considered GHG emission reduction goals of AB 32, EO S-3-05, and GHG emission reduction strategies in the Scoping Plan when establishing the GHG significance thresholds. The

BAAQMD thresholds of significance for operational-related GHG emissions are: 1,100 $MTCO_2e$/year for land use development projects and 10,000 $MTCO_2e$/year for stationary-source projects.

These thresholds are intended for long-term operational GHG emissions. None of the air districts have adopted or recommended a significance threshold of GHG emissions from construction. Therefore, in several recent CEQA documents, the CPUC has elected to use an approach to determine the significance of GHG emissions from construction based on guidance from SCAQMD (SCAQMD, 2008). For construction related GHGs, SCAQMD recommends that total emissions from construction be amortized over 30 years and added to operational emissions, and then compared to the operation-based significance threshold of 10,000 MT/yr of CO_2e (SCAQMD, 2008). The BAAQMD CEQA Guidelines do not identify a GHG emissions threshold for construction-related emissions. Instead BAAQMD recommends that GHG emissions from construction be quantified and disclosed. The BAAQMD further recommends incorporation of BMPs to reduce GHG emissions during construction, as feasible and applicable.

The unmitigated total annual GHG emissions from construction and operation of the project in SJVAB would be 111.9 MT/yr of CO_2e, which would be well below the significance threshold of 10,000 MT/yr of CO_2e for stationary sources and the BAAQMD threshold of 1,100 $MTCO_2e$ per year for land use development projects. The project's unmitigated total annual GHG emissions in SFBAAB would be 0.01 MT/yr of CO_2e, which would be well below the significance threshold of 10,000 MT/yr for stationary sources or 1,100 $MTCO_2e$ per year for land use development projects. PG&E would implement APM GHG-1 to further minimize GHG emissions during construction. APM GHG-1 is consistent with current BAAQMD CEQA guidelines, which require use of BMPs. Therefore, the GHG emissions impacts from construction and operation of the project in both SJVAB and SFBAAB would be less than significant.

The project would not conflict with an applicable plan, policy, or regulation adopted to reduce GHG emissions. Section 5.8, *Greenhouse Gas Emissions* provides a more detailed discussion of applicable plans and regulations. Additionally, APM GHG-1 and APM GHG-2 would incorporate measures that would further reduce GHG emissions.

The GHG emissions from the project would not be a "cumulatively considerable" contribution to global climate change under CEQA because they would be helping to solve the cumulative problem as a part of the AB 32 and EO S-3-05 process discussed in Section 5.8, *Greenhouse Gas Emissions*.

Hazards and Hazardous Materials

Geographic Extent

The geographic extent for the analysis of cumulative impacts associated with hazards and hazardous materials is the area within approximately 0.25 miles of the following project components: new power line; Vierra Substation expansion; the remote Kasson, Manteca, and Tracy substation upgrades; and the remote telecommunication tower upgrades at Mount Oso and Highland Peak. The limited geographic extent is appropriate given the small volume of hazardous materials that would be used for construction and the low probability for a hazardous materials spill or release of significant size from the proposed project. Furthermore, the impact of any release would not travel far due to the low volatility and vapor pressure of the types of materials that would be used during the construction.

Potential Cumulative Impacts

The projects listed in **Table 5.20-1** within the geographic locale of the proposed project components would use similar hazardous materials, also in small quantities, as are associated with construction, typically cleaning solvents, adhesives, vehicle fuels, and lubricating oil. In order for a cumulative impact to occur as the result of the use of hazardous materials, there would need to be multiple simultaneous releases of hazardous materials from the projects in close proximity to the proposed project. The probability of such an event occurring is extremely low because each of the other projects would also be required to implement safety measures to reduce their risk of a hazardous materials release. Therefore, the cumulative impact from the use, transport, disposal or accidental release of hazardous materials would be less than significant.

Hazardous Materials Site. Concurrent construction at the projects located adjacent to the project components could be subject to the risk of encountering hazardous materials due to groundwater or soil contamination. However, the adjacent projects would be required to implement health and safety procedures for their workers to reduce their risk of exposure to hazardous materials from groundwater or soil contamination. With these safeguards in place, the cumulative impact from the hazardous materials site would be less than significant.

Air Traffic Hazard. Construction of the projects located adjacent to the proposed project would not increase air traffic in the region. The adjacent projects could also require helicopter support, as does the proposed project. However, such helicopter use would be temporary and all projects would be required to obtain an FAA Notice of Determination of No Hazard to Air Traffic. Therefore, the cumulative impact to the nearby airport would be less than significant.

Emergency Access. The project components and adjacent projects would be required to obtain all applicable state and local permits and to communicate with local officials about any impacts to road traffic so that neither emergency access nor response plans would be impacted. Therefore, the cumulative impact would be less than significant.

Wildfire. The proposed new power line, Vierra Substation expansion, and Kasson, Manteca, and Tracy Substations are located in an unzoned Fire Hazard Severity Zone which indicates that the substations have a less than moderate susceptibility to wildland fires. The Mount Oso and Highland Peak telecommunication towers are located in a high Fire Hazard Severity Zone. The project would require fire reduction measures (**MM 5.9-1**) at these two locations to ensure that the chance of a fire is minimized. In addition to the fire reduction measures, there are no projects nearby that could contribute to the wildfire danger during construction. Therefore, cumulative impacts from risk from wildland fires would be less than significant. Refer to Section 5.9, *Hazards and Hazardous Materials* for the full description of the mitigation.

Hydrology and Water Quality

Geographic Extent

The geographic extent for this cumulative analysis is defined as the watersheds where the new power line, Vierra Substation expansion, and remote substation upgrades at Manteca, Kasson, and Tracy Substations are located. These watersheds are within San Joaquin County and the San Joaquin hydrologic basin boundary. These watersheds represent both the hydrologic and administrative units for water quality control and protection of beneficial uses for water resources in the project area.

Potential Cumulative Impacts

All cumulative projects listed in **Table 5.20-1,** except for the projects near Highland Peak Microwave Station (Nos. 40 – 43), contribute or would contribute to the cumulative conditions for hydrology and water quality within the cumulative analysis study area.

Water Quality Standards, Waste Discharge Requirements, and Erosion. Past and present projects have resulted in degradation of water quality in nearby waterbodies. Ground disturbing activities required to construct cumulative projects could result in soil erosion and sediment deposition into local streams. Construction and operation of the new power line, Vierra Substation expansion, and remote substation upgrades at Manteca, Kasson, and Tracy substations, in combination with the cumulative projects would require the use of hazardous materials such as diesel fuel and gasoline. Spilled materials and sedimentation from earth-moving activities could potentially be transported to waterways and adversely impact water quality in the watersheds. Drilling and excavation could also produce soils and water that require treatment and disposal because of past land uses that have resulted in contamination. The Delta Waterways, southern portion, where the remote Kasson, Manteca, and Tracy substation sites would discharge, is primarily impaired for agricultural industry pollutants and not those most common to the industrial and construction sectors. Common and problematic pollutants from the construction and industrial sectors are sediment and metals. When a region has already been impacted significantly by these pollutants, extra precautions would be taken to avoid cumulatively additive effects from new projects.

However, according to the SWRCB's 2010 Statewide Integrated Report (Clean Water Act Section 303(d) List / 305(b) Report), none of the waterways subject to direct or indirect discharge from the project are 303(d)-listed waterbodies impaired by sediment, nor do they have a USEPA-approved total maximum daily load (TMDL) implementation plan for sediment. Additionally, none of the waterways subject to direct or indirect discharge from the project have designated beneficial uses of "cold, spawn, and migratory."

PG&E would implement a SWPPP (APM HYDRO-1) that would ensure performance standards for water quality protection are met in accordance with CVRWQCB requirements. The SWPPP requires monitoring and maintenance of BMPs until all ground-disturbing activities have ended and disturbed areas are sufficiently stabilized. Adequately defining, implementing, and monitoring erosion and sediment control BMPs would ensure there would be a less than significant cumulative impact from the project on downstream impaired waters.

Increased or Polluted Runoff or Substantial Degradation of Water Quality. Impervious surfaces would not increase substantially from the project and cumulative projects, because the cumulative projects would be constructed within mostly developed areas, and the project components would have a negligible increase in impervious areas. Except for the small area of the new foundations for the TSPs, the microwave tower at the Vierra Substation and the monopoles at the Kasson, Manteca, and Tracy substations, any increase in impervious areas would be temporary because areas to be graded are limited and would be restored to existing conditions once construction is complete. Therefore, a cumulative increase in runoff would be less than significant. Use of vehicles and equipment during construction or operation of the cumulative projects could release hazardous materials due to leaks or spills; however, the quantity of pollutants would be minimal and measures would be required to ensure containment and proper disposal of affected soil and water. Therefore, the cumulative projects would not result in a substantial source of polluted runoff and the cumulative increase in polluted runoff due to the construction and operation of the new power line, Vierra

Substation expansion, and upgrades at the remote Kasson, Manteca, and Tracy substations would be less than significant.

Noise

Geographic Extent

The geographic extent for the analysis of cumulative impacts associated with noise is limited to areas within 0.5 mile of the project components. This geographic extent is appropriate because noise levels attenuate rapidly with distance, and the noise generated by activities greater than 0.5 mile from the project components would not have the potential to combine with the noise generated by project construction.

Potential Cumulative Impacts

All cumulative impact projects listed in **Table 5.20-1** located within 0.5 mile of the Vierra Substation expansion and Kasson Substation could potentially produce cumulative noise impacts if they are constructed concurrently with the project.

Ground-borne Vibration. Construction of the cumulative impact projects would require the use of heavy equipment that would generate ground-borne vibrations. The vibrations would be short-term. Additionally, ground-borne vibrations are localized and attenuate very rapidly with distance. No significant cumulative impact from ground-borne vibration would occur.

Ambient Noise. Construction activities and equipment use associated with construction of the cumulative impact projects have the potential to generate substantial noise. The noise from construction of the cumulative projects could temporarily increase ambient noise levels. Short-term construction noise impacts may occur simultaneously at a few work locations along the overall length of the project, but would mainly occur during the daytime hours consistent with, or comparable to, local noise ordinances.

Among the cumulative projects listed in **Table 5.20-1**, only those that may be under construction concurrently with the project are considered; specifically, those that have scheduling information or a notice of determination. For the Vierra Substation expansion, they include ACE Forward-Pedestrian Path and New Surface Parking (#4), ACE Forward-SR 120 Crossover (#5), State Route 120 Interchange Project (#6), and South Lathrop Specific Plan Zone (#9). For the Kasson Substation, this only includes PA-1700258 (#13). The cumulative noise associated with these activities would create periodic and/or temporary significant increases in the ambient noise levels at the project's noise sensitive receptors. However, with mitigation measure **MM 5.13-1**, the project's contribution to cumulative noise impacts would be mitigated to less than significant levels.

Construction work for all of the cumulative projects, notably the ones that may have construction overlap with respect to the project, would occur during the daytime hours. For the proposed project, while construction activities would occur only during the daytime hours, it is possible that nighttime construction could become necessary to continue work until a safe stopping point is reached or if planned electrical outages (clearances) are scheduled at night. To effectively reduce this impact, **MM 5.13-1** would require that the notification of nighttime work to the affected residents state that the work will be done in a manner to avoid excessive noise. **MM 5.13-1** would also require that PG&E provide a public liaison person to respond to concerns of neighboring receptors and address any

nighttime-related complaint associated with the Vierra project within 24 hours of its filing. **MM 5.13-1** would further require the construction contractor to install and maintain temporary sound barriers between the construction site and the sensitive receptors as needed during construction phases with high noise levels. With implementation of **MM 5.13-1**, the project's contribution to cumulative noise impacts including noise impacts from nighttime work would be reduced to less than significant levels. Refer to Section 5.13, *Noise* for the full description of the mitigation.

Transportation

Geographic Extent

The geographic extent of the transportation cumulative analysis is a three-mile radius from the Vierra Substation expansion and new power line. Cumulative projects located in this area are expected to potentially use the same roads for access as construction vehicles for the new power line construction and Vierra Substation expansion. Cumulative projects in this area could also potentially be located near the UPRR line adjacent to the new power line and Vierra Substation expansion. The timing of these cumulative projects varies and is often uncertain. The analysis below focuses on cumulative projects with estimated timing coinciding with the Vierra project.

Potential Cumulative Impacts

Increased VMT. As discussed in Section 5.17, *Transportation*, the project would lead to less than significant increases in VMT. However, other projects generating increased VMT could potentially lead to cumulative impacts. Cumulative projects with estimated timing coinciding with peak Vierra construction traffic are: the SR-120 and Yosemite Avenue/Guthmiller Road Interchange Project; the SR-120 and McKinley Avenue Interchange Project; and construction associated with the River Islands/West Lathrop Specific Plan Amendment. Both interchange projects would be expected to generate lower than average construction traffic VMT, as the projects would require a small number of workers and equipment. The River Islands/West Lathrop Specific Plan Amendment development area is located west of I-5 from the Vierra Substation expansion and new power line, and would likely use construction workers living nearby and not commuting long distances; therefore, construction of the River Islands/West Lathrop Specific Plan Amendment would not significantly increase VMT. For these reasons, in addition to the fact that construction traffic from the Vierra project would be temporary, cumulative impacts to VMT would be less than significant.

Increased Hazards. With implementation of **MM 5.17-2**, which would require PG&E to follow FAA regulations and coordinate with the local airport, Vierra's construction-related helicopter activity would have less than significant impacts to the safety of people on the ground, as well as to the safety of operators and passengers of nearby aircraft. There is no known helicopter activity planned for the cumulative projects near the Vierra Substation expansion and new power line. Therefore, cumulative impacts from air traffic to people on the ground and passengers of other aircraft would be less than significant. Refer to Section 5.17, *Transportation* for the full description of the mitigation.

With implementation of **MM 5.17-1** and APM TRA-3, hazards to construction workers and train operators resulting from conflicts between Vierra construction activity and the railroad would be less than significant. **MM 5.17-1** would require PG&E to enact a Railroad Safety Plan, follow best management practices, and obtain encroachment permits from UPRR during construction. APM TRA-3 would involve coordination with the Crossroads Commerce Center during construction to avoid rail traffic. Cumulative impacts would also be less than significant; the only cumulative project in the area near the UPRR line is the Lathrop Gateway Business Park Specific Plan, and because its construction

schedule is unknown, it is unlikely to overlap with construction of the Vierra project. Also, **MM 5.17-1** would mitigate potential conflicts between the Vierra project and the railroad sufficiently to avoid cumulative impacts. Refer to Section 5.17, *Transportation* for the full description of the mitigation.

Reduced Emergency Access. Implementation of **MM 5.17-1** would ensure that potential impacts from the Vierra project to emergency access would be less than significant. **MM 5.17-1** would require that PG&E: ensure that emergency access is maintained during lane closures; and ensure that construction activities comply with the most recent version of the California Manual on Uniform Traffic Control Devices. However, cumulative impacts to emergency access could result from construction-associated lane closures, construction damage to roads, and increased traffic generated by construction vehicles. All of these might reduce vehicular level of service, thereby reducing emergency response times in the area. Cumulative projects with estimated timing coinciding with peak Vierra construction traffic are: the SR-120 and Yosemite Avenue/Guthmiller Road Interchange Project; the SR-120 and McKinley Avenue Interchange Project; and construction associated with the River Islands/West Lathrop Specific Plan Amendment. However, even with concurrent construction of these projects with the Vierra project, cumulative impacts to emergency access would be less than significant. The peak construction traffic period for the Vierra project, which would involve 400 total truck trips to import fill to the Vierra Substation expansion site, would be temporary, taking place over approximately four weeks. During this brief period of peak construction traffic, trips generated by Vierra construction would not be substantial enough to cause impacts to emergency services access. **MM 5.17-1** would further ensure the preservation of emergency access. Furthermore, the roadway network in the area enables many opportunities for emergency providers to take alternate routes, if necessary. For these reasons, cumulative impacts to emergency access would be less than significant.

Utilities and Service Systems

Geographic Extent

The geographic extent for this cumulative analysis is defined as the service areas where the new power line, Vierra Substation expansion, and remote substation upgrades at Manteca, Kasson, and Tracy Substations are located. These project components are located in the cities of Lathrop, Manteca, and Tracy as well as an unincorporated area of San Joaquin County.

Impacts Avoided by the Proposed Project

Construction of the proposed project would not exceed wastewater treatment requirements; require or result in the construction of new or expanded storm water drainage facilities; or conflict with federal, state, or local statutes and regulations related to wastewater, water supply, solid waste, electricity and gas supply, or telecommunication services. The proposed project would not contribute to cumulative impacts on these resources.

Potential Cumulative Impacts

All projects listed in **Table 5.20-1,** except for the projects near Highland Peak Microwave Station (Nos. 40-43), contribute or would contribute to the cumulative conditions for water supply and wastewater services, and landfill capacities within the cumulative analysis study area.

Wastewater Services. Construction of the cumulative projects may result in generation of additional wastewater. All of the cumulative projects would be located in areas that are served by existing municipal sewer systems. The cumulative projects involve redevelopment of existing areas and would

cumulatively contribute minimal amounts of wastewater. The minimal amount of project wastewater would be disposed at appropriately licensed off-site facilities and would not be a significant contribution to the amounts of wastewater that would be generated by the cumulative projects. The cumulative increase in wastewater would not exceed the wastewater treatment capacity of the wastewater treatment systems. Cumulative impacts would be less than significant.

Water Supplies and Facilities. Construction of the cumulative projects would require varying quantities of water for dust control, concrete mixing, and fill compaction. These projects are located within the cities of Lathrop, Manteca, Tracy, and an unincorporated part of San Joaquin County. The proposed project would purchase water from the City of Lathrop for construction of the components within the city boundaries. Sources of the water needed for construction activities at the remote substations have not been identified, but the amount of water needed for those activities would be negligibly small. Use of water from the City of Lathrop for project construction would be limited and short term. The total amount needed for project construction would be approximately 2.0 acre feet. The City of Lathrop has access to amounts of water that exceed its current annual demand. Additionally, the comparatively small quantity of water required during construction of the proposed project would not significantly impact existing water supplies. The cumulative impact on water supplies and facilities would be less than significant. The cumulative projects would increase demand for water supplies during operation, but there would be no cumulative increase from the proposed project because there would be no water use beyond what is used for current project operation.

Landfill. The Vasco Road landfill is a 246-acre regional landfill that serves the cumulative projects and proposed project. It is capable of processing a daily intake of 2,218 tons of garbage and has a permitted lifetime capacity of 33 million cubic yards. The landfill is scheduled to cease accepting waste and initiate closures in 2031. Additionally, there are other landfills with available capacity in the region that can be utilized in case the primary one becomes unavailable for any reason. Thus, there is adequate capacity to accommodate the relatively small amount of solid waste from the project in addition to waste from the cumulative projects. The cumulative impact on landfill capacity would be less than significant.

Wildfire

Geographic Extent

The geographic extent for the analysis of cumulative impacts associated with wildfire is limited to the two remote telecommunication tower upgrades at Mount Oso and Highland Peak because the two sites are located within a state responsibility area that has been defined as a very high hazard severity zone.

Potential Cumulative Impacts

There are no projects that would have a wildfire cumulative impact on the Mount Oso or Highland Peak telecommunication tower upgrades. The Mount Oso telecommunication tower does not have any cumulative projects identified near it. The Highland Peak telecommunication tower has project Nos. 38-40 from **Table 5.20-1** identified as projects nearby. Though each of the three projects are located within a state responsibility area for wildfire protection, none of the projects are located within a very high hazard severity zone. In addition, each of the projects would be required to have fire prevention plans and to provide training to their construction workers on how to prevent the start

of incipient fires. Therefore, the projects near the Highland Peak telecommunication tower would not have a cumulative impact.

c. Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?

LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED. The project could cause substantial adverse effects on human beings temporarily during construction, due to noise. As discussed in Section 5.13, *Noise*, unmitigated construction-related noise impacts would be potentially significant, but temporary. Implementation of **MM 5.13-1** would reduce the significance of noise impacts to a less than significant level. Refer to Section 5.13, *Noise* for the full description of the mitigation.

Other temporary impacts to human health during construction, include changes to air quality, exposure to geologic hazards, and exposure to hazardous materials. As discussed in Section 5.3, *Air Quality*, air quality effects would be less than significant. As discussed in Section 5.7, *Geology and Soils,* seismic impacts on workers during construction would be less than significant, and the project would not exacerbate existing seismic conditions. As discussed in Section 5.9, *Hazards and Hazardous Materials*, hazards impacts would be less than significant. Operation and maintenance activities would be comparable to current activities, and no additional impacts to human beings would occur. The potential for adverse project impacts to human beings would be less than significant with mitigation incorporated (**MM 5.13-1**).

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Section 6

Mitigation Monitoring Plan

6 Mitigation Monitoring Plan

Pacific Gas and Electric Company (PG&E) proposes to construct and operate the Vierra Reinforcement Project. An Initial Study (IS) was prepared to assess the proposed project's potential environmental effects. The IS was prepared based on information in the Proponent's Environmental Assessment (PEA), project site visits, and supplemental research. The majority of the project's impacts would occur during project construction. Within PG&E's application, Applicant Proposed Measures (APMs) were proposed to reduce potentially significant adverse impacts related to project construction and operation.

The purpose of this Mitigation Monitoring Plan is to ensure effective implementation of each APM, as well as the mitigation measures identified in the IS and imposed by the California Public Utilities Commission (CPUC) as part of project approval.

This Mitigation Monitoring Plan includes:

- The APMs that PG&E proposed in its PEA as part of the project and in subsequent revisions to the project description made by PG&E;
- The mitigation measures identified in the IS that PG&E has agreed to implement to mitigate the potentially significant impacts of the project;
- The actions required to implement these measures;
- The monitoring requirements; and
- The timing of implementation for each measure.

A CPUC-designated environmental monitor will carry out all construction field monitoring to ensure full implementation of all measures. In all instances where noncompliance occurs, the CPUC's designated environmental monitor will issue a warning to the construction foreman and PG&E's project manager. Continued noncompliance shall be reported to the CPUC's designated project manager. Any decisions to halt work due to noncompliance will be made by the CPUC. The CPUC's designated environmental monitor will keep a record of any incidents of noncompliance with mitigation measures, APMs, or other conditions of project approval. Copies of these documents shall be supplied to PG&E and the CPUC.

6.1 Minor Project Refinements

This section describes the CPUC's process for staff approval of Minor Project Refinements (MPRs) that may be necessary due to changes needed after the applicant's final engineering of elements of the proposed project. During the course of construction, circumstances may arise that require minor deviations from the project as approved. The CPUC, along with the IS/MND environmental monitors, would evaluate any proposed deviations from the approved project to ensure they are consistent with CEQA requirements. Depending on its nature, a requested deviation would be processed as an MPR or be the subject of a Petition for Modification (PFM) submitted by the applicant to the CPUC.

MPRs would be strictly limited to minor project changes that do not trigger additional permit requirements, would not have the potential to increase the severity of any identified potential impact or create a new, unidentified significant impact, and are within the geographic scope of the IS.

If a project change would create or have the potential to create a new significant impact, increase the severity of any identified potential impact, or occur outside the geographic area evaluated in the IS/MND,

PG&E would be required to submit a PFM. The CPUC would evaluate the PFM under CEQA, as appropriate, to determine what form of supplemental environmental review would be required.

6.2 Dispute Resolution

It is expected that the Mitigation Monitoring Plan will reduce or eliminate many potential disputes. However, even with the best preparation, disputes may occur. In such event, the following procedure will be observed:

- **Step 1.** Disputes and complaints (including those of the public) should be directed first to the CPUC-designated Project Manager for resolution. The Project Manager will attempt to resolve the dispute.
- **Step 2.** Should this informal process fail, the CPUC Project Manager may initiate enforcement or compliance action to address deviations from the approved project or adopted Mitigation Monitoring Plan.
- **Step 3.** If a dispute or complaint regarding the implementation or evaluation of the Mitigation Monitoring Plan cannot be resolved informally or through enforcement or compliance action by the CPUC, any affected participant in the dispute or complaint may file a written "notice of dispute" with the CPUC Executive Director or his/her designee. This notice should be filed in order to resolve the dispute in a timely manner, with copies concurrently served on other affected participants. Within 10 days of receipt, the Executive Director or designee(s) shall meet and confer with the filer and other affected participants for purposes of resolving the dispute. The CPUC Executive Director shall issue an Executive Resolution describing his/her decision, and serve it on the filer and other affected participants.
- **Step 4.** If one or more of the affected parties is not satisfied with the decision as described in the Resolution, such party(ies) may appeal it to the CPUC via a procedure to be specified by the CPUC.

Parties may also seek review by the CPUC through existing procedures specified in the CPUC Rules of Practice and Procedure for formal and expedited dispute resolution, although a good faith effort should first be made to use the foregoing procedure.

TABLE 6-1 MITIGATION MONITORING PLAN

Impact	Applicant Proposed Measure (APM) or Mitigation Measure	Monitoring Requirement	Timing of Action
5.1	AESTHETICS		
Nighttime lighting	APM AES-1: Nighttime lighting to minimize potential visual impacts. Nighttime construction activities, if they occur, will incorporate measures such as use of non-glare or hooded fixtures and directional lighting to reduce spillover into areas outside the construction site and minimize the visibility of lighting from off-site locations wherever feasible.	CPUC verifies that PG&E uses non-glare and hooded fixtures, and makes use of directional lighting.	During nighttime construction.
Construction Debris	APM AES-2: Construction cleanup. Construction activities will be kept as clean and inconspicuous as practical. Construction debris will be picked up regularly from construction areas. The appearance of disturbed land areas will be restored to approximate pre-construction visual conditions, where feasible and consistent with landowner requests, through implementation of re-contouring and/or re-vegetation.	CPUC inspects periodically construction area(s).	During construction and following completion of construction.
New source of glare	APM AES-3: Use of galvanized finish on TSPs. Use of a galvanized finish that will weather to a dull, non-reflective patina on new TSPs will reduce the potential for a new source of glare resulting from introduction of project elements.	CPUC inspects new TSPs.	Prior to completion of construction.
Substation view	APM AES-4: Perimeter wall, fence and landscaping for partial screening of substation expansion. A perimeter wall will be installed along the south side of the substation (facing Vierra Road) to provide partial screening of the expanded substation. A perimeter chain link fence with neutral gray slats will enclose the west side of the expanded substation (facing D'Arcy Parkway railroad overcrossing). The design of the wall and fence will be comparable to the design of the existing substation perimeter wall and fence. Landscaping along the substation perimeter will also be comparable to existing landscaping at the substation, and will include similar landscaping comprising drought-tolerant shrubs.	CPUC verifies that the perimeter wall, fence, and landscaping installed.	Prior to completion of construction and following completion of construction.

TABLE 6-1 MITIGATION MONITORING PLAN

Impact	Applicant Proposed Measure (APM) or Mitigation Measure	Monitoring Requirement	Timing of Action
5.2	AGRICULTURAL AND FOREST RESOURCES		
Construction disturbance to agricultural operations	APM AGR-1: Landowner coordination. PG&E will coordinate with J. R. Simplot Company (or tenant) in advance of construction activities to minimize impacts on agricultural operations.	CPUC verifies that PG&E is coordinating with J. R. Simplot (or tenant).	Prior to construction – coordinate with J. R. Simplot (or tenant) During construction – minimize disturbance to agricultural operations.
5.3	AIR QUALITY		
Fugitive dust	APM AIR-1: Fugitive dust emissions minimization. Pursuant to SJVAPCD Regulation VIII, a Dust Control Plan will be submitted to the SJVAPCD for approval at least 30 days prior to commencing construction activities. Based on the SJVAPCD Guidance for Assessing and Mitigating Air Quality Impacts (SJVAPCD 2015), the following are examples of fugitive dust control measures that may be included in the Dust Control Plan to minimize dust emissions: • Apply water to unpaved surfaces and areas • Use non-toxic chemical or organic dust suppressants on unpaved roads and traffic areas • Limit or reduce speed vehicle speed on unpaved roads and traffic areas • Maintain areas in a stabilized condition by restricting vehicle access • Install wind barriers • During high winds, cease outdoor activities that disturb the soil • Keep bulk materials sufficiently wet when handling • When storing bulk materials, apply water to the surface or cover the storage pile with a tarp • Don't overload haul trucks. Overloaded haul trucks are likely to spill bulk materials • Cover haul trucks with a tarp or other suitable cover. Or, wet the top of the load enough to limit visible dust emissions	CPUC verifies that PG&E meets SJVAPCD Regulation VIII requirements and follows the example dust control measures described in the SJVAPCD Guidance for Assessing and Mitigating Air Quality Impacts.	During Construction.

TABLE 6-1 MITIGATION MONITORING PLAN

Impact	Applicant Proposed Measure (APM) or Mitigation Measure	Monitoring Requirement	Timing of Action
	• Clean the interior of cargo compartments on emptied haul trucks prior to leaving a site • Prevent trackout by installing a trackout control device • Clean up trackout at least once a day. If along a busy road or highway, clean up trackout immediately. • Monitor dust-generating activities and implement appropriate measures for maximum dust control.		
5.4	BIOLOGICAL RESOURCES		
Disturbance of nesting birds	APM BIO-2: Avoid impacts on nesting birds. If work is scheduled during the nesting season (February 1 through August 31), nest detection surveys will correspond with a standard buffer for individual species in accordance with the species-specific buffers set forth in Appendix D of the PEA and will occur within 15 days prior to the start of work activities at designated construction areas, staging areas, and landing zones to determine nesting status by a qualified wildlife biologist. Nest surveys will be accomplished by ground surveys and will support phased construction, with surveys scheduled to be repeated if construction lapses in a work area for 15 days between March and July. Access for ground surveys will be subject to property owner permission. If active nests containing eggs or young are found, the biologist will establish a species-specific nest buffer, as defined in Appendix D of the PEA. Where feasible, standard buffers will apply, although the biologist may increase or decrease the standard buffers in accordance with the factors set forth in Appendix D. Nesting pair acclimation to disturbance in areas with regularly occurring human activities will be considered when establishing nest buffers. The established buffers will remain in effect until the young have fledged or the nest is no longer active as confirmed by the biologist. Active nests will be periodically monitored until the biologist has determined that the young have fledged or once construction ends. Per the discretion of the biologist, vegetation removal by hand may be allowed within nest buffers or in areas of potential nesting activity. Inactive nests may be removed in accordance with PG&E's approved avian permits. The biologist will have authority to order the cessation of nearby project activities if nesting pairs exhibit signs of disturbance.	A qualified biologist shall perform nesting bird surveys and establish nest buffers, if appropriate.	Prior to and during project construction.

TABLE 6-1 MITIGATION MONITORING PLAN

Impact	Applicant Proposed Measure (APM) or Mitigation Measure	Monitoring Requirement	Timing of Action
	All references in this APM to qualified wildlife biologists refer to qualified biologists with a bachelor's degree or above in a biological science field and demonstrated field expertise in ornithology, in particular, nesting behavior.		
Permanent impacts to burrowing owl, Swainson's hawk, and white-tailed kite foraging habitat	APM BIO-4: Voluntary Compensatory Mitigation for Permanent Impacts to Burrowing Owl, Swainson's Hawk and White-tailed Kite Foraging Habitat. Prior to construction, PG&E shall mitigate for permanent impacts to agricultural lands that are potential foraging habitat for Burrowing Owl, Swainson's Hawk and White-tailed Kite through PG&E's San Joaquin Valley O&M Habitat Conservation Plan in the total amount of 2.63 acres. Confirmation of the completion of this obligation must be provided to the CPUC prior to the commencement of ground-disturbing activities in agricultural land.	CPUC shall verify that mitigation payments have been made.	Prior to construction.
Biological resource impacts	MM 5.4-1: General Avoidance of Biological Resource Impacts. (Supersedes APM BIO-1). Pacific Gas and Electric Company (PG&E) will implement field protocols and avoidance and minimization measures to reduce impacts sensitive natural communities. This mitigation measure consists of the following components: • Worker Environmental Awareness Program (WEAP). PG&E will conduct environmental training for all construction and on-site personnel prior to the beginning of site work. The WEAP training will be presented by a California Public Utilities Commission (CPUC)-approved, qualified biologist. All construction crew members and contractors who attend the training will sign a form indicating that they attended the training and understood the information. Follow-up training will be conducted as needed; new workers will attend WEAP training prior to beginning at the work site. • Training will include a discussion of the avoidance and minimization measures that are being implemented to protect biological resources, as well as the terms and conditions of permits that apply to the project. Training will include information on the United States and California Endangered Species Acts and the consequences of noncompliance with these acts. Under this program, workers will be informed about the presence, life history, and habitat requirements of all listed and special-	PG&E shall implement a WEAP and other on-site best management practices.	During construction.

TABLE 6-1 MITIGATION MONITORING PLAN

Impact	Applicant Proposed Measure (APM) or Mitigation Measure	Monitoring Requirement	Timing of Action
	status species with at least a moderate potential to occur in the vicinity based on Table 5.4-2 of this Initial Study/Mitigated Negative Declaration, with a focus on those species that could be affected within the project area. Training will also include information on state and federal laws protecting nesting birds, and other biological resources, as applicable and appropriate to the project. Additionally, personnel will be trained for situations where it is necessary to contact a qualified biologist (e.g., should any sensitive biological resources such as an active nest be found during construction). If sensitive resources are found, the qualified biologist will provide guidelines for the personnel to avoid impacts on them. • All WEAP participants will receive a brochure that outlines all this information including contact information for the appropriate environmental personnel. A record of all trained personnel will be kept on site, and a sticker indicating training completion will be worn on all worker hard hats. A copy of the training and brochure will be provided to CPUC prior to the start of construction for project files. • Litter and trash management. All food scraps, wrappers, food containers, cans, bottles, and other trash from the project area will be deposited in closed animal-proof trash containers and removed from the project site daily. Open fires (such as barbecues) are prohibited at work sites. • Parking and vehicle speed limit. Vehicles and equipment will be parked on pavement, existing roads, and previously disturbed or developed areas or work areas. Off-road parking will only be permitted in previously identified and designated work areas. Vehicle speeds on unpaved roads will not exceed 15 miles per hour. • Access route and work area limitations. Vehicles will be confined to established roadways and existing access roads, pre-approved temporary access routes, existing boardwalks, and designated matted work areas. Access routes and construction work areas will be limited to the minimum necessary to safely construct the project. • Maintenance and refueling. All equipment will be maintained to minimize the potential for leaks of automotive fluids such as fuels, solvents, or oils. • Pets and firearms. No pets, firearms, hunting or fishing will be permitted at the project site.		

TABLE 6-1 MITIGATION MONITORING PLAN

Impact	Applicant Proposed Measure (APM) or Mitigation Measure	Monitoring Requirement	Timing of Action
	• Cover pipes and excavations. Minimize potential for special-status species to seek refuge or shelter in pipes and excavations. Inspect pipes, of diameter wide enough to be entered by a special-status species that could inhabit the area where pipes are stored, for wildlife species prior to moving pipes and culverts. 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 will search open trenches or steep-walled holes every morning prior to initiating daily activities to ensure wildlife are not trapped. If any trapped wildlife are found, a qualified biologist will be notified and will relocate the species to adjacent habitat or the species will be allowed to naturally disperse, as determined by a biologist. If a special-status species are identified within the work area, California Department of Fish and Wildlife shall be notified of the detection.		
Impacts to special-status plant species	MM 5.4-2: Avoid and Minimize Impacts on Special-status Plant Species. (Supersedes APM BIO-1). Pacific Gas and Electric Company (PG&E) will implement the following measures to minimize impacts on habitat potentially suitable for special-status plant species: Pre-construction surveys for special-status plant species in areas of suitable habitat will be conducted during the appropriate blooming period by a qualified biologist prior to the start of construction If special-status plant species are found, a report documenting the survey results will be provided to the California Public Utilities Commission (CPUC) prior to construction and the following actions will be implemented: • Special-status plants within and immediately adjacent to work areas and access routes will be marked by a qualified biologist and avoided to the extent feasible. • If impacts to special-status plants cannot first be avoided, the impacts will be enumerated and described. PG&E will notify the landowner of the presence and location of the special-status plants and contact California Department of Fish and Wildlife (CDFW) to arrange for the plants to be salvaged. CDFW must be notified at least 10 days prior to ground disturbance to allow for salvage of rare or endangered plants. Following the 10-day notification period, PG&E may proceed with construction	PG&E will avoid and minimize impacts to special-status plant species through a variety of surveys, site management practices, and worker training.	Prior to and during construction.

TABLE 6-1 MITIGATION MONITORING PLAN

Impact	Applicant Proposed Measure (APM) or Mitigation Measure	Monitoring Requirement	Timing of Action
	activities unless notification is received from the landowner or CDFW within 48 hours indicating that the plants will be salvaged. • As part of the Worker Environmental Awareness Program, include information on the identification of noxious weeds and invasive plants, the importance of noxious-weed and invasive plant control, and measures to minimize their spread. Training will include the following best management practices (BMPs) to avoid or minimize the spread of invasive plants and noxious weeds: (1) avoid working in invasive plant or noxious weed infested areas or prioritize activities so that infested areas are worked in last; (2) keep records of road maintenance activities including location and source of grading material; (3) maintain gravel and soil spoil piles free of invasive plants or noxious weeds; use areas known to be weed-free for staging and laydown areas; (4) minimize soil disturbance to the extent possible; (5) ensure materials used for erosion control will be certified weed free (i.e., straw wattles, gravel, fill material, etc.); when restoring a site after disturbance, use a native seed mix; (6) drive on and park on established roads as much as possible; (7) off-road equipment that is not local to the project area will arrive onsite clean and free of soil and plant parts; and (8) use clean clothing, footwear, and gear before moving from an infested area to a non-infested area. • Prior to commencement of activities located on or adjacent to non-paved surfaces, a biologist will flag known populations of noxious weeds and invasive plants in the work areas. • To minimize introduction and spread of noxious weeds and invasive plants, PG&E will avoid moving weed-infested gravel, rock, and other fill materials to relatively weed-free locations. PG&E will use certified weed-free straw and mulch for erosion-control projects. PG&E will maintain stockpiled, uninfested material in a weed-free condition. • PG&E will minimize soil disturbance and the removal of vegetation during construction and other ground-disturbing activities to the extent practicable. Vehicles and equipment should remain on established roads or access routes as much as is practicable. • PG&E will stage in areas not infested with weeds or treat for weed removal prior to using an infested area.		

TABLE 6-1 MITIGATION MONITORING PLAN

Impact	Applicant Proposed Measure (APM) or Mitigation Measure	Monitoring Requirement	Timing of Action
	• PG&E will conduct post-construction monitoring of any disturbed soils in the spring following completion of construction for any invasive species that inadvertently have been introduced by the project in an area where they did not previously grow. PG&E shall coordinate with the CPUC to determine appropriate means of invasive species eradication (such as hand-pulling or chemical herbicide application).		
Impacts to burrowing owl and Swainson's hawk	MM 5.4-3: Burrowing Owl and Swainson's Hawk Mitigation Measures. (Supersedes APM BIO-3). *Burrowing Owl* Surveys for burrowing owl will be conducted by a qualified biologist in the vicinity of Vierra Substation expansion and the railroad tracks, the alignment south of Christopher Way, and any other suitable habitat within 500 feet of the project area. Surveys will be conducted according to California Department of Fish and Wildlife (CDFW) (2012) (or newer guidance, if available). Burrowing owl site clearance and mitigation shall follow the following approach: Breeding Season (February 1 through August 31) • Pre-construction surveys for burrowing owls shall be performed at least 14 days prior and again 24 hours prior to initial ground disturbance activities following the methodology in the CDFW (2012) Staff Report on Burrowing Owl Mitigation (Staff Report). If burrowing owls are present, a detailed survey report shall be prepared by the applicant and submitted to CDFW for review. The report shall include survey methods and timing, and maps, among other information based on the reporting elements presented in the Staff Report. The required reporting information is described in the Staff Report (CDFW, 2012; see page 30). • Any occupied burrows shall not be disturbed and shall be provided with a 250 foot protective buffer until and unless a qualified biologist approved by the CPUC verifies through non-invasive means that either: (1) the birds have not begun egg laying, or (2) juveniles from the occupied burrows are foraging independently and are capable of independent survival. • Once a qualified biologist determines the fledglings are capable of independent survival, they may only be evicted after a Burrowing Owl Exclusion Plan (BOEP) is developed by a qualified biologist and approved	PG&E shall follow prescribed measures to survey for and minimize impacts to burrowing owl and Swainson's hawk.	Prior to and during construction.

TABLE 6-1 MITIGATION MONITORING PLAN

Impact	Applicant Proposed Measure (APM) or Mitigation Measure	Monitoring Requirement	Timing of Action
	by the CDFW. The BOEP shall provide for passive exclusion by a permitted individual, and any other appropriate measures such as collapsing of nearby unoccupied burrows, providing artificial burrows onsite or in a different location, and monitoring to determine the success of the actions taken. If compensatory mitigation has been provided through the PG&E O&M HCP in accordance with APM BIO-4, the burrow may then be destroyed following implementation of any CDFW 2012-appropriate measures as well as concurrence from CDFW. • Pre-construction surveys following destruction of burrows and prior to initial construction activities are required 24 hours prior to construction to ensure owls do not re-colonize the project area. • If project activities are delayed or suspended for more than 15 days during the breeding season, surveys will be repeated. Depending upon the condition of the project site (e.g., if burrows are absent, or if small mammal burrows are present with owl sign), surveys may require only a single habitat assessment review, or may require a repeat of the full survey protocol. Non-breeding Season (September 1 through January 31) • Pre-construction surveys following the CDFW (2012) Staff Report shall be performed prior (at least 14 days prior and again 24 hours prior) to initial ground disturbance activities. If burrowing owls are present, a detailed survey report shall be prepared by the applicant and submitted to CDFW for review following the methodology described for breeding season surveys. Burrowing owls may only be evicted after a BOEP is developed and approved by the CDFW, and compensatory mitigation has been provided under the PG&E O&M HCP in accordance with APM BIO-4. • Pre-construction surveys following destruction of burrows and prior to initial construction activities are required (24 hours prior) to ensure owls do not re-colonize the project area. If owls are found within 165 feet of the project area, it is recommended that visual screens or other measures are implemented to limit disturbance of the owls without evicting them from the occupied burrows. A post-survey report shall be provided to CDFW, as described in the Burrowing Owl Staff Report (CDFW, 2012). The CPUC should also receive a copy of the report.		

TABLE 6-1 MITIGATION MONITORING PLAN

Impact	Applicant Proposed Measure (APM) or Mitigation Measure	Monitoring Requirement	Timing of Action
	• If no burrowing owls are detected, no further measures are required. If burrowing owls are detected, no construction activities will occur within 250 feet of occupied burrows during the nesting season or within 160 feet of occupied burrows during the non-nesting season. For purposes of this measure, the nesting season is February 1st to August 31st. Additionally, burrowing owls shall be monitored by a qualified biologist during construction to assess the sensitivity of the burrowing owls to the construction activities. The size of the avoidance buffer may be increased or decreased as determined by the monitoring biologist based on the planned construction activities and the sensitivity of the burrowing owls. • If a burrowing owl is observed at the construction site at any time during construction, then exclusion fencing will be used to establish a safe buffer area until the animal can be passively relocated out of the construction area or other appropriate buffer distance is established consistent with CDFW guidance. Construction sites in areas that previously contained an occupied burrow should remain active and disturbed to discourage burrowing owl recolonization of the construction area. *Swainson's Hawk* • If work activities are performed during the Swainson's hawk nesting period (March 1 to July 30), pre-construction surveys for Swainson's hawks shall be performed following the current methodology adopted by CDFW, in consultation with the appropriate CDFW staff. • Construction activities shall remain a distance of 0.25-mile from any active nest tree. This distance may be reduced with concurrence from CDFW based on site conditions or other factors that affect visibility of the nest from work areas, such as buildings or trees. • If PG&E elects to remove a nest tree, the nest trees may be removed between September 1 and February 1, when the nests are unoccupied. Replacement trees shall be required near the same location, consistent with safety considerations near power lines, with specimen size depending on the size of the tree removed. Trees up to 6- inch caliper (at 3-foot height) shall be replaced with minimum 24-inch box specimens. Trees between 6-12-inch caliper shall be replaced with minimum 36-inch box specimens and trees greater than 12-inch caliper shall be replaced with 48-inch box specimens.		

TABLE 6-1 MITIGATION MONITORING PLAN

Impact	Applicant Proposed Measure (APM) or Mitigation Measure	Monitoring Requirement	Timing of Action
5.5	CULTURAL AND TRIBAL CULTURAL RESOURCES		
Worker education training	APM CUL-1: Worker education training. The following procedures will be implemented prior to commencement of any project-related construction activities: • All PG&E, contractor, and subcontractor project personnel will receive training regarding: o appropriate work practices necessary to effectively implement the APMs and to comply with the applicable environmental laws and regulations; o the potential for exposing subsurface cultural resources and paleontological resources; and o how to recognize possible buried cultural and paleontological resources. • This training will include a presentation of: o procedures to be followed upon discovery or suspected discovery of historic or archaeological materials, including Native American remains and their treatment; and o procedures to be followed upon discovery or suspected discovery of paleontological resources; and actions that may be taken in the case of violation of applicable laws.	Implement WEAP program for all construction and on-site personnel.	Prior to and during construction.
Discovery of cultural resources	APM CUL-2: Inadvertent discovery of previously unidentified cultural resources. The following procedure will be employed if a previously undocumented cultural resource is encountered during construction: • All work within 100 feet (30 meters) of the find will be halted or redirected by the construction foreman and protective barriers or flagging will be installed along with signage identifying the area as an "environmentally sensitive area." Entry into the area will be limited to PG&E-approved/qualified cultural resources specialists, PG&E, and other authorized personnel. • PG&E and the CPUC will be notified immediately.	Halt construction and evaluate any buried cultural resources as potential historical resources.	During construction.

TABLE 6-1 MITIGATION MONITORING PLAN

Impact	Applicant Proposed Measure (APM) or Mitigation Measure	Monitoring Requirement	Timing of Action
	• A qualified archaeologist will document the resource and coordinate with PG&E, the landowner, and the CPUC on the appropriate steps for evaluation and preservation of the find. The level of effort will be based on the size and nature of the resource, as determined by the archeologist and approved by the CPUC. • No work will occur within the environmentally sensitive area until clearance has been granted by the archaeologist or PG&E and the CPUC. Environmentally sensitive area flagging and signage will only be removed when authorized by PG&E or the archaeologist and the CPUC.		
Discovery of human remains	APM CUL-3: Discovery of human remains. The following procedures will be implemented in the event of the discovery of human remains, in compliance with California law, including, but not limited to, the following provisions: CEQA Guidelines Section 15064.5(e); PRC Sections 5097.94, 5097.98, and 5097.99; and California Health and Safety Code Section 7050.5: • Work in the immediate area of the find will be halted and the PG&E archaeologist and County Coroner and the CPUC will be notified immediately. Work will remain suspended until the Coroner can assess the remains. In the event the remains are determined to be prehistoric in origin, the Coroner will notify the NAHC, which will then identify a Most Likely Descendent (MLD). The MLD will consult with PG&E's archaeologist within 48 hours of notification to determine further treatment of the remains.	Halt construction and treat with appropriate dignity and respect any human remains.	During construction.
Discovery of tribal cultural resources	APM CUL-4: Undiscovered potential tribal cultural resources. The following procedure will be employed (after stopping work and following the procedure for determining eligibility in APM CUL-2) if a resource is encountered and determined by the project's qualified archaeologist to be potentially eligible for the CRHR or a local register of historic resources and is associated with a California Native American Tribe(s) with a traditional and cultural affiliation with the geographic area of the proposed project: • The project's qualified archaeologist will notify the CPUC for appropriate action. PG&E will assist the CPUC if needed to identify the lead contact person for the California Native American Tribe(s) potentially associated	Halt construction and evaluate any buried tribal cultural resources as potential historical resources.	During construction.

TABLE 6-1 MITIGATION MONITORING PLAN

Impact	Applicant Proposed Measure (APM) or Mitigation Measure	Monitoring Requirement	Timing of Action
	with the cultural resource and with a traditional and cultural affiliation with the geographic area of the proposed project. The CPUC will contact the lead contact person to set up a meeting with PG&E and the CPUC. • The project's qualified archaeologist will participate with the CPUC in discussions with the California Native American Tribe(s) to determine whether the resource is a "tribal cultural resource" as defined by PRC section 21074, and the tribe(s)' preferred method of mitigation, if the resource is determined to be a TCR. If no agreement can be reached for mitigation after discussions with the California Native American Tribe(s) or it is determined that the tribe(s)' preferred mitigation is not feasible, PG&E will consult with the CPUC and implement one of the example mitigation measures listed in PRC section 21084.3(b), or other feasible mitigation.		

TABLE 6-1 MITIGATION MONITORING PLAN

Impact	Applicant Proposed Measure (APM) or Mitigation Measure	Monitoring Requirement	Timing of Action
Damage to buried, as yet unknown cultural resources	MM 5.5-1: Cultural Resources Testing. PG&E shall conduct pre-construction extended Phase I archaeological testing, and Phase II evaluation if a deposit is uncovered, in locations identified in a testing plan submitted to CPUC's representative for review and approval. The specific workplan for this enhanced identification effort will be developed with input from the appropriate Native American tribal groups,[1] will be invited to monitor the mechanical coring and participate in laboratory identification efforts. If cultural or tribal cultural resources are not identified in the course of this testing, no archaeological or Native American monitoring will be required during construction. However, APMs CUL-1 – CUL-4, including worker training and inadvertent discovery procedures, will remain in place. The testing plan will conform to the standards described in *Guidelines for Archaeological Research Designs* (OHP 1991) and will contain thresholds that will explain what requirements are necessary to move the Phase I identification effort (XPI) into a Phase II evaluation effort (Phase II). The testing plan will also contain a research design and will outline generalized methods to complete the Phase II evaluation. The purpose of the testing plan is to identify cultural and tribal cultural resources prior to construction of the expanded Vierra Substation, new power line, and Kasson Substation modifications. The plan shall be prepared by an archaeologist that meets the Secretary of the Interior's professional standards for archaeologists (see Archaeology and Historic Preservation: Secretary of the Interior Standards and Guidelines, 36 C.F.R. 61). The plan must include the following: • A statement of the problem(s) and research goals, • A statement of methods to achieve Phase I testing and laboratory identification and, if necessary, Phase II evaluation, • A statement regarding how the results will be reported, • Maps depicting project boundaries and locations of mechanical coring for each project area being tested,	Pre-construction testing and evaluation. Possible construction monitoring depending on results.	Prior to and possibly during construction.

[1] The Northern Valley Yokuts are the tribe most closely associated with the project area and the primary tribe consulted for the project, and should be given the right of first refusal for offering input on the plan and participation in the testing activities.

TABLE 6-1 MITIGATION MONITORING PLAN

Impact	Applicant Proposed Measure (APM) or Mitigation Measure	Monitoring Requirement	Timing of Action
	• A schedule for implementation of the testing plan, including the laboratory identification, • The preparer's resume and the resume of other key staff who are expected to implement the testing plan, and • Thresholds for elevating the Phase I XPI testing and identification into a Phase II evaluation effort.		

	Archaeological testing of the new transmission line will include each of the proposed pole locations. Those locations will be subject to archaeological testing by mechanical coring to the maximum depth of the final design plans. Coring will be completed using a hydraulic coring rig (Geoprobe) to recover continuous core samples of subsurface deposits. In each of the 20 proposed new pole locations, testing shall include one hydraulic core that is approximately 4 inches in diameter and up to 40 feet below ground surface (the testing depth to be dictated by the maximum depth of project components) to determine the presence or absence of cultural or tribal cultural resources. Each core will be collected and processed in a laboratory. Generally, selected samples including soils and any identified archaeological strata (e.g., layer containing cultural materials) will be wet-screened through 1/16-inch mesh or flotation processed to determine if archaeological materials are present or absent. If cultural materials are identified, a Phase II evaluation will be undertaken based on the collected material and the research design. The proposed Vierra Substation expansion footprint will also be subject to subsurface identification efforts by mechanical coring. Within the project footprint in this location, a mechanical core will be excavated every 25-30 meters to the maximum depth of project impacts in the specific locations within those boundaries. Additionally, testing will be conducted at Kasson Substation by mechanical coring. Up to three cores to the maximum depth of project impacts will be collected at Kasson Substation. In all instances, if cultural or tribal cultural resources are identified in the course of laboratory testing, the Phase II evaluation plan and associated research design that was created and approved by the CPUC's representative in coordination with interested archaeological and/or Native American contacts as appropriate to the resources will be followed. The Phase II evaluation plan will help the CPUC representative determine whether any discovered resources qualify as historical resources, unique archaeological resources or tribal cultural resources pursuant to Pub. Res. Code, § 5024.1 and Title 14, Cal. Code Regs., § 4852. The results of these efforts will be reported in a subsequent evaluation and summary report provided to the CPUC for concurrence on the eligibility determination and, if necessary, mitigation measures will also be outlined. Best practices suggest mitigation should focus on avoidance of the resource, if possible, to prevent any impacts to the resource. If the resource is eligible under CRHR criterion 4 and it cannot be avoided, CEQA best practices suggest implementing a robust data recovery program, to the extent consistent with		

TABLE 6-1 MITIGATION MONITORING PLAN

Impact	Applicant Proposed Measure (APM) or Mitigation Measure	Monitoring Requirement	Timing of Action
	safety concerns, developed in consultation with the CPUC and landowner. If any cultural resources discovered during the course of testing are found to be historical resources, unique archaeological resources or tribal cultural resources, the CPUC will require construction ground disturbance in the specific location of that project component to be monitored by a qualified archaeologist and Native American monitor.		
5.6	ENERGY		
	No APMs or Mitigation Measures are suggested because project construction, operation, and maintenance would have a less than significant impact on energy.		
5.7	GEOLOGY AND SOILS		
Construction above liquefiable or loose soils	APM GS-1: Minimization of construction above liquefiable soils or in soft or loose soils. PG&E will conduct geotechnical investigations prior to construction to identify liquefiable soils, soft soils or loose soils, and implement design and civil engineering standards in accordance with California Building Code (2016) and to comply with California State General Order 95 (2015) standards.	A site geotechnical investigation will be conducted to identify subsurface geotechnical conditions.	The geotechnical investigation will be performed prior to construction.
Discovery of paleontological resources	APM CUL-5: Discovery of paleontological resources. If paleontological resources are discovered during construction activities, the following procedures will be followed: • Stop work immediately within 100 feet of the discovery. • Contact the designated project inspector PG&E CRS, and the CPUC immediately. • Protect the site from further impacts, including looting, erosion, or other human or natural damage. • PG&E's CRS will arrange for a Principal Paleontologist to evaluate the discovery. If the discovery is determined to be significant, PG&E will consult with the CPUC and implement appropriate measures to protect and document the paleontological resource. Examples of such measures	Paleontological Resource Monitors (PRMs) and Paleontological Resources Specialists (PRSs, also designated as Principal Paleontologists) will be responsible for determining the significance of a paleontological resource. Monitoring will be performed during any excavation below grade. The PRS has the authority to suspend monitoring should conditions be encountered where it can be clearly demonstrated that monitoring would not be effective.	Monitoring will be performed whenever excavation of soil below grade is occurring.

TABLE 6-1 MITIGATION MONITORING PLAN

Impact	Applicant Proposed Measure (APM) or Mitigation Measure	Monitoring Requirement	Timing of Action
	include: establishing recovery standards, preparing specimens for identification and preservation, and securing a curation agreement from the appropriate agency. • Work may not resume within 100 feet of the find until approval by the paleontologist and PG&E CRS, and the CPUC.		
5.8	GREENHOUSE GAS EMISSIONS		
GHG Emissions	APM GHG-1: Minimize GHG Emissions. The following procedures will be implemented: • Minimize unnecessary construction vehicle idling time. The ability to limit construction vehicle idling time will depend on the sequence of construction activities and when and where vehicles are needed or staged. Certain vehicles, such as large diesel-powered vehicles, have extended warm-up times following start-up that limit their availability for use following start-up. Where such diesel-powered vehicles are required for repetitive construction tasks, these vehicles may require more idling time. The project will apply a "common sense" approach to vehicle use, so that idling is reduced as far as possible below the maximum of 5 consecutive minutes allowed by California law; if a vehicle is not required for use immediately or continuously for construction activities, its engine will be shut off. Construction foremen will include briefings to crews on vehicle use as part of pre-construction conferences. Those briefings will include discussion of a "common sense" approach to vehicle use. • Maintain construction equipment in proper working conditions in accordance with PG&E standards. • Minimize construction equipment exhaust by using low-emission or electric construction equipment where feasible. Portable diesel fueled construction equipment with engines 50 hp or larger and manufactured in 2000 or later will be registered under the CARB Statewide Portable Equipment Registration Program. • Minimize welding and cutting by using compression of mechanical applications where practical and within standards. • Encourage the recycling of construction waste where feasible.	CPUC-designated environmental monitor verifies that PG&E minimizes vehicle idling time, construction equipment is kept in proper working condition, low-emission or electrical equipment is used where feasible, compression of mechanical applications is used where practical and within standards, and recycling of construction waste is encouraged where feasible. CPUC verifies that PG&E trains workers on vehicle use.	During construction. Prior to construction – verify training of workers.

TABLE 6-1 MITIGATION MONITORING PLAN

Impact	Applicant Proposed Measure (APM) or Mitigation Measure	Monitoring Requirement	Timing of Action
SF6 Emissions	APM GHG-2: Minimize SF6 emissions. The following procedures will be implemented: • Incorporate the new breakers to be installed at Vierra Substation into PG&E's system-wide SF6 emission reduction program. CARB has adopted the Regulation for Reducing Sulfur Hexafluoride Emissions from Gas Insulated Switchgear sections 95350 to 95359, title 17, California Code of Regulations, which requires that company-wide SF6 emission rate not exceed 1 percent by 2020. Since 1998, PG&E has implemented a programmatic plan to inventory, track, and recycle SF6 inputs, and inventory and monitor system-wide SF6 leakage rates to facilitate timely replacement of leaking breakers. PG&E has improved its leak detection procedures and increased awareness of SF6 issues within the company. X-ray technology is now used to inspect internal circuit breaker components to eliminate dismantling of breakers, reducing SF6 handling and accidental releases. As an active member of EPA's SF6 Emission Reduction Partnership for Electrical Power Systems, PG&E has focused on reducing SF6 emissions from its transmission and distribution operations. • Require that the new breakers at Vierra Substation have a manufacturer's guaranteed maximum leakage rate of 0.5 percent per year or less for SF6. • Maintain substation breakers in accordance with PG&E's maintenance standards. • Comply with California Air Resources Board Early Action Measures as these policies become effective.	PG&E provides documentation to CPUC to show implementation of SF6 emission reduction program.	During operation and maintenance.
5.9	HAZARDS AND HAZARDOUS MATERIALS		
Worker Environmental Training	APM HM-1: Worker Environmental Training Program. An environmental training program will be established to communicate environmental concerns and appropriate work practices to all construction field personnel. The training program will emphasize site-specific physical conditions to improve hazard prevention, and will include: an overview of Personal Protection Equipment (PPE) (safety vest and hard had requirements); fire safety and fire control (general requirements, preventative steps, and PPE); personal health and safety, electrical safety, and safety procedures and protocols; and a review of the Stormwater Pollution Prevention Plan (SWPPP), which will also address	PG&E to submit the Worker Environmental Training Program to the CPUC for review. Present WEAP-Health Safety and Environment to construction workers.	30 days before start of construction for review of plan. Throughout construction.

TABLE 6-1 MITIGATION MONITORING PLAN

Impact	Applicant Proposed Measure (APM) or Mitigation Measure	Monitoring Requirement	Timing of Action
	spill response. The worker environmental training program will be provided to CPUC staff for review prior to construction.		
Spills and use of hazardous materials	APM HM-2: Update Spill Prevention Control and Counter Measures (SPCC) Plan and Hazardous Materials Business Plan (HMBP). The expanded substation will be equipped with a retention basin that meets SPCC Guidelines (40 Code of Federal Regulations 112). Prior to operation of the project, PG&E will update the existing SPCC Plan and HMBP for Vierra Substation to include all new equipment and on-site hazardous materials associated with the substation expansion, and to address containment from an accidental spill. A copy of the updated SPCC Plan and HMBP will be submitted to the CPUC for record keeping.	PG&E to submit the updated SPCC Plan and HMBP to the CPUC for review.	30 days prior to completion of construction.
Emergency response to spills	APM HM-3: Emergency spill response equipment and training. Emergency spill response and cleanup kits will be readily available at Vierra Substation for cleanup of an accidental spill. Construction crews will be trained in safe handling and cleanup responsibilities.	Present emergency spill response safe handling and cleanup responsibilities to construction workers.	Throughout construction.
Encountering contaminated soil	APM HM-4: Soil and Groundwater testing and disposal. In the event soils suspected of being contaminated (on the basis of visual, olfactory, or other evidence) are removed during site grading or excavation activities, the excavated soil will be tested, and if measured above hazardous waste levels, will be contained and disposed of at a licensed waste facility. The presence of known or suspected contaminated soil will require testing and investigation procedures to be supervised by a qualified person, as appropriate, to meet state and federal regulations. In the event groundwater is encountered during construction, the groundwater will be tested prior to being discharged over land or removed from the site. Testing of groundwater will be supervised by a qualified person, as appropriate, to meet state and federal regulations.	In the event that contaminated soil or water is found and removed, notify the CPUC and provide documentation that the contaminated soil or water was disposed of properly.	Throughout construction.

TABLE 6-1 MITIGATION MONITORING PLAN

Impact	Applicant Proposed Measure (APM) or Mitigation Measure	Monitoring Requirement	Timing of Action
Fire hazard	MM 5.9-1: Fire Hazard Reduction Measures. Pacific Gas and Electric Company shall implement the following measures prior to and during construction at the Highland Peak and Mount Oso microwave stations: • As part of the Worker Training Program, workers will be trained in fire prevention and response practices to be implemented to minimize the risk of fire, and in the event of fire, trained to provide immediate response. Construction personnel will be trained in reporting and incipient stage fire prevention, control, and extinguishing. • Prohibit smoking at the worksites other than in designated areas that are free of ignitable material. Require disposal of cigarette butts in a way that will not ignite vegetation or other materials. • Ensure an appropriate fire extinguisher is present during any hot work activity. • Do not park vehicles in areas with vegetation prone to ignition. • Equip all vehicles with a fire extinguisher.	PG&E to submit the Fire Hazard Reduction Measures that are included in the Worker Training Program to the CPUC for review. Present the Fire Hazard Reduction Measures to construction workers.	30 days before start of construction for review of plan. Throughout construction.
5.10	HYDROLOGY AND WATER QUALITY		
Erosion and sediment runoff	APM HYDRO-1: Stormwater Pollution Prevention Plan. PG&E will prepare and implement a SWPPP to prevent construction-related erosion, sediment runoff, and discharge of other pollutants into adjacent waterways and onto neighboring properties. Because project activities will result in ground disturbance of more than one acre, PG&E will obtain coverage under the SWRCB General Permit for Storm Water Discharges Associated with Construction Activity Order No. 2009-0009-DWQ (and as amended by 2010-0014-DWQ and 2012-006-DWQ). To obtain coverage under the permit, PG&E will develop and submit permit registration documents—including a Notice of Intent, SWPPP, risk assessment, site map, construction drawings, certification by Legally Responsible Person (LRP), contractor contact information, and annual fee—to the State of California's SMARTS database and obtain a WDID number prior to initiating construction activities. PG&E will prepare and implement a SWPPP to help stabilize disturbed areas and reduce erosion and sedimentation. A monitoring program will also be	PG&E submit a copy of approved SWPPP to the CPUC.	Sixty days before the start of construction.

TABLE 6-1 MITIGATION MONITORING PLAN

Impact	Applicant Proposed Measure (APM) or Mitigation Measure	Monitoring Requirement	Timing of Action
	established to ensure that the prescribed BMPs are followed during project construction. A qualified SWPPP practitioner will oversee the implementation of the SWPPP and associated BMPs.		
	• The following measures are generally drawn from the permit and will be included in the SWPPP prepared for the construction of the project: • All BMPs will be on site and ready for installation before the start of construction activities. • BMPs will be developed to prevent the acceleration of natural erosion and sedimentation rates, such as the use of silt fence and wattles. • Prior to conducting clearing activities during the wet season and before the onset of winter rains or any anticipated storm events, erosion-control measures will be installed. Temporary measures such as silt fences or wattles, which are intended to minimize sediment transport from temporarily disturbed areas, will remain in place until disturbed areas have stabilized.	Monitoring for effectiveness of storm water BMPs, notifications of any violations, and documentation as needed.	Throughout construction
	If the project is exempt from local post-construction storm water BMP requirements the permit registration documents shall contain: • A post-construction storm water system design • Demonstrated compliance with post-construction water balance calculator	Prepare a post-construction storm water management plan.	Sixty days before the start of construction.
	APM HM-1: Worker Environmental Training Program. APM HM-2: Update Spill Prevention Control and Counter Measures (SPCC) Plan and Hazardous Materials Business Plan (HMBP). APM HM-3: Emergency spill response equipment and training. *(See Section 5.9, Hazards and Hazardous Materials for a full description.)*		

TABLE 6-1 MITIGATION MONITORING PLAN

Impact	Applicant Proposed Measure (APM) or Mitigation Measure	Monitoring Requirement	Timing of Action
5.11	LAND USE AND PLANNING		
	No APMs or Mitigation Measures are suggested because project construction, operation, and maintenance would have no impact on land use.		
5.12	MINERAL RESOURCES		
	No APMs or Mitigation Measures are suggested because project construction, operation, and maintenance would have no impact on mineral resources.		
5.13	NOISE		
Construction limits	APM NOI-1: Construction schedule limits. Construction hours within the project area, which is industrially-zoned, will typically occur between the hours of 7:00 a.m. and 7:00 p.m., Monday through Friday, and between 9:00 a.m. and 7:00 p.m. Saturday. Nighttime work is not anticipated but may occur to take advantage of line clearances during off-peak hours, which would be short in duration. If nighttime work is needed because of clearance restrictions on the existing power lines connected to Vierra Substation, PG&E will take appropriate measures to minimize disturbances to local residents, including contacting nearby residences within 500 feet of the activity to inform them of the work schedule and probable inconveniences.	CPUC verifies that PG&E uses noise reduction devices and low noise equipment. PG&E sends out notification and posts sign.	During construction. Prior to commencement of construction.
Construction equipment noise	APM NOI-2: Construction equipment noise reduction devices. Construction equipment will use noise reduction devices that are no less effective than those originally installed by the manufacturer.	CPUC verifies that PG&E uses noise reduction devices.	During construction.
Placement of stationary construction equipment	APM NOI-3: Placement of stationary construction equipment. Stationary equipment used during construction will be located as far as practical from sensitive noise receptors.	CPUC verifies that PG&E places stationary construction equipment as far as practical from sensitive noise receptors.	During construction.
Engine idling	APM NOI-4: Minimization of unnecessary engine idling. Construction crews will limit unnecessary engine idling. (See APM GHG-1)	CPUC verified that unnecessary engine idling is limited	During construction.

TABLE 6-1 MITIGATION MONITORING PLAN

Impact	Applicant Proposed Measure (APM) or Mitigation Measure	Monitoring Requirement	Timing of Action
Equipment operation noise	APM NOI-5: Use of "quiet" equipment. Where feasible, equipment will be used that is specifically designed for low-noise emissions or that is powered by electric or natural gas as opposed to diesel or gasoline.	CPUC verifies that PG&E uses low noise equipment.	During construction.
Sensitive receptor notification	APM NOI-6: Sensitive Receptor Notification. Sensitive receptors in areas of heavy construction noise, including helicopter usage, will be notified prior to commencing construction activities. Notification will include written notice and posting signs in appropriate locations, with a contact number to call with questions and concerns.	PG&E sends out notification and posts sign.	Prior to commencement of construction.
Construction practices for noise reduction	MM 5.13-1: Nighttime Construction Noise Measures. In the event that any necessary nighttime (i.e., between 10:00 p.m. and 7:00 a.m.) construction activity is likely to create a noise complaint at any occupied residence within 250 feet of construction, PG&E shall: • Limit all helicopter activity to daytime hours. • Identify all residences within 250 feet of any potential nighttime construction activities, and notify and consult with the nearby residences, or make an attempt to do so, prior to the nighttime construction activities. Residents shall be provided with information regarding the nature of the work, its likely duration, and measures to reduce interior noise (such as shutting windows). • If the above measures are not sufficient to reduce interior noise to below a level that could likely result in a complaint at any occupied dwelling within 250 feet of construction, PG&E shall take one or more of the following actions: o Install and maintain temporary sound barriers capable of reducing noise levels by 5 to 10 dBA. Temporary sound barriers shall consist of either sound blankets at the noise source or other sound barriers/techniques such as acoustic padding or acoustic walls placed near the noise source. Barriers shall be placed such that the line-of-sight between the construction equipment and adjacent sensitive land uses is blocked.	CPUC verifies that helicopter activities occur during the daytime hours. PG&E files with the CPUC, monthly reports regarding noise complaints and their responses.	During construction. During construction.

TABLE 6-1 MITIGATION MONITORING PLAN

Impact	Applicant Proposed Measure (APM) or Mitigation Measure	Monitoring Requirement	Timing of Action
	o Relocate residents to a nearby hotel during nighttime construction that could result in a complaint. • PG&E shall identify and provide a public liaison person before and during construction to respond to concerns of neighboring receptors, including residents, about noise construction disturbance. Contact information for reaching the public liaison officer via telephone or in person shall be included in the above notices and shall also be posted conspicuously at the construction site(s). PG&E shall address any nighttime construction work complaint within 24 hours of the filing of the complaint. If there are any complaints, PG&E shall provide monthly reports with records of complaints and responses to the CPUC. These reports shall be provided to CPUC within 15 days of the end of the month.		
5.14	POPULATION AND HOUSING		
	APMs or Mitigation Measures are suggested because project construction, operation, and maintenance would have no impact on population and housing.		
5.15	PUBLIC SERVICES		
	No APMs or Mitigation Measures are suggested because project construction, operation, and maintenance would have no impact on public services.		
5.16	RECREATION		
	No APMs or Mitigation Measures are suggested because project construction, operation, and maintenance would have no impact on recreation.		
5.17	TRANSPORTATION AND TRAFFIC		
Disruption to private rail spur	APM TRA-3: Crossroads Commerce Center coordination. Prior to the start of construction, PG&E will consult with the Crossroads Commerce Center regarding the schedule of traffic using the private rail spur that crosses Nestle Way to reduce potential interruption of rail services serving the industrial park.	PG&E reports coordination with the Crossroads Commerce Center to the CPUC.	Prior to commencement of construction and if needed, during construction.

TABLE 6-1 MITIGATION MONITORING PLAN

Impact	Applicant Proposed Measure (APM) or Mitigation Measure	Monitoring Requirement	Timing of Action
Construction traffic	MM 5.17-1: Transportation Plans. (Supersedes APM TRA-1). Pacific Gas and Electric Company (PG&E) shall obtain any necessary transportation and/or encroachment permits, including those for transport of oversized loads and hazardous materials, lane closures, and construction near railroad tracks, and shall comply with permit requirements designed to minimize hazards, impacts to emergency services, and impacts to rail service. Construction activities that are in, along, or cross local roadways and rail lines must follow best management practices (BMPs), including compliance with the California Manual on Uniform Traffic Control Devices (MUTCD) 2014 Edition, Revision 4. PG&E shall: • Prepare and implement a Railroad Safety Plan, if required by encroachment permit(s) obtained from Union Pacific Railroad (UPRR), for its construction activities to address the transport of heavy/oversized loads over the railroad tracks or spur, as well as safety measures to be employed during construction near the railroad tracks; • Prepare and implement Transportation Management Plans (TMPs), or lane closure/width reduction and/or traffic diversion plans, as required by any necessary transportation and/or encroachment permits, including plans for maintaining emergency vehicle access during lane or full roadway closures (e.g., if needed for helicopter travel over Nestle Way, Christopher Way, and D'Arcy Parkway).	PG&E submits a Transportation Management Plan to the CPUC. The CPUC verifies adequacy and implementation of the Transportation Management Plan. PG&E obtains transportation and/or encroachment permits as needed during construction. On a monthly basis, PG&E reports to the CPUC all transportation and/or encroachment permits obtained.	Prior to commencement of construction and during construction.
Helicopter operations	MM 5.17-2: Air transit and neighborhood coordination. (Supersedes APM TRA-2). Pacific Gas and Electric Company (PG&E) will implement the following protocols that pertain to helicopter use and air traffic during construction: • PG&E will comply with all applicable FAA regulations regarding air traffic. • PG&E's helicopter operator will coordinate all project helicopter operation with the local airport before and during project construction.	PG&E reports coordination with the FAA to the CPUC.	Prior to commencement of construction and during construction.

TABLE 6-1 MITIGATION MONITORING PLAN

Impact	Applicant Proposed Measure (APM) or Mitigation Measure	Monitoring Requirement	Timing of Action
5.18	UTILITIES AND SERVICE SYSTEMS		
	APM HM-4: Soil and Groundwater testing and disposal. (See Section 5.9, *Hazards and Hazardous Materials* for a full description).		
	APM HYDRO-1: Stormwater Pollution Prevention Plan. (See Section 5.10, *Hydrology and Water Quality* for a full description).		
5.19	WILDFIRE		
	MM 5.9-1: Fire Hazard Reduction Measures. (See Section 5.9, *Hazards and Hazardous Materials* for a full description).		

Applicant Proposed Measures (APMs) appear in the Proponent's Environmental Assessment (A.18-06-004).

Appendix A

List of Preparers and Agency Contacts

Appendix A. List of Preparers and Agency Contacts

A consultant team comprised of staff from the California Energy Commission prepared this document under the direction of the California Public Utilities Commission. The preparers and reviewers of this document are provided below.

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California Public Utilities Commission, Energy Division

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Personnel	Role
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The agencies and individuals that were consulted during the preparation of this document are identified below.

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James Ramos	Chairperson

Appendix B

Air Quality and GHG Emissions Calculations

Annual Emissions in SJVAB (tons/year) [a]

	ROG	NOx	CO	SOx	PM10 Total	PM2.5 Total
Emissions in SJVAB Estimated by CalEEMod (from the Following Table)	0.3656	3.6858	2.7356	0.0065	0.3582	0.2333
Helicopter Emissions [b]	0.0073	0.0033	0.0092	0.0007	0.0001	0.0001
Total Emissions in SJVAB	0.3729	3.6891	2.7447	0.0072	0.3584	0.2334

Sources: PGE, 2018c; 2019b; CPUC analysis

Notes:

[a] Emissions in SJVAB include those estimated using CalEEMod for the construction work in SJVAB and those from the helicopter.

[b] CPUC revised the SOx emissions of the helicopter using the unit of weight consistent with other pollutants. CPUC also calculated the emissions of SOx as SO_2, which is about twice the weight of sulfur.

Annual Emissions from CalEEMod (tons/year)

	ROG	NOx	CO	SOx	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Emissions in SFBAAB Estimated by CalEEMod	0.00008	0.00063	0.00055	0	0.00015	0	0.00016	0.00004	0	0.00004
Emissions in SJVAB Estimated by CalEEMod	0.36562	3.68577	2.73555	0.00645	0.19665	0.1616	0.35824	0.08356	0.1497	0.23326
Total Project Emissions Estimated by CalEEMod	0.3657	3.6864	2.7361	0.00645	0.1968	0.1616	0.3584	0.0836	0.1497	0.2333

Sources: PGE, 2019b; CPUC analysis

Note:

Construction emissions were analyzed in the air basin they would be generated in. The emissions in SFBAAB are from the work at Highland Peak tower. The total emissions in SJVAB are calculated by subtracting the total emissions in SFBAAB from the total emissions of the whole project. Work at the Tesla and Ripon Cogen substations would be limited to updating automation equipment in the control room, which would result in negligible emissions. Emissions associated with vehicle trips to and from Ripon Cogen and Tesla substations would be minor and are discussed in the updated construction emission estimates as Attachment 3 of this appendix (ESA, 2019a).

Maximum Daily Emissions in SJVAB (pounds per day [lbs/day])

	ROG	NOx	CO	SOx	PM10 Total	PM2.5 Total
Worst-case Daily Emissions (Pounds per Day [lbs/day]) Estimated by CalEEMod [a]	8.9922	89.4556	65.4399	0.15182	9.9592	6.5109
Helicopter Emissions [b]	7.30	3.30	9.18	0.74	0.11	0.11
Total Emissions in SJVAB	16.29	92.75	74.62	0.90	10.07	6.62

Sources: PGE, 2018c; 2019b; CPUC analysis
Notes:

[a] The worst-case daily construction emission estimates from CalEEMod were the worst from either summer or winter computer runs (detailed calculations shown in the following tables).

[b] CPUC revised the SOx emissions of the helicopter using the unit of weight consistent with other pollutants. CPUC also calculated the emissions of SOx as SO_2, which is about twice the weight of sulfur.

Summary of Worst-case Daily Emissions (Pounds per Day [lbs/day]) Estimated by CalEEMod from either Summer or Winter Computer Runs

	ROG	NOx	CO	SOx	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Emissions in SFBAAB (from Highland Peak)	0.0345	0.255	0.2381	0.00108	0.0628	0.00165	0.0645	0.017	0.00156	0.0185
Emissions in SJVAB	8.9922	89.4556	65.4399	0.15182	6.6054	3.95015	9.9592	3.0227	3.64894	6.5109
Total Project	9.0267	89.7106	65.678	0.1529	6.6682	3.9518	10.0237	3.0397	3.6505	6.5294

Sources: PGE, 2019b; CPUC analysis
Note:
The table shows summary of worst-case daily construction emission estimates from CalEEMod from either summer or winter computer runs. Detailed calculations are shown on the following page.

Maximum Daily Emissions (pounds per day [lbs/day]) from CalEEMod Winter Computer Run

	ROG	NOx	CO	SOx	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Emissions in SFBAAB (from Highland Peak)	0.0342	0.255	0.2247	1.02E-03	0.0628	1.65E-03	0.0645	0.017	1.56E-03	0.0185
Emissions in SJVAB	8.9853	89.4556	65.1789	0.15018	6.6054	3.95015	9.9592	3.0227	3.64894	6.5109
Total Project	9.0195	89.7106	65.4036	0.1512	6.6682	3.9518	10.0237	3.0397	3.6505	6.5294

Maximum Daily Emissions (pounds per day [lbs/day]) from CalEEMod Summer Computer Run

	ROG	NOx	CO	SOx	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Emissions in SFBAAB (from Highland Peak)	0.0345	0.2487	0.2381	1.08E-03	0.0628	1.62E-03	0.0645	0.017	1.54E-03	0.0185
Emissions in SJVAB	8.9922	89.272	65.4399	0.15182	6.6054	3.94968	9.9585	3.0227	3.64846	6.5102
Total Project	9.0267	89.5207	65.678	0.1529	6.6682	3.9513	10.023	3.0397	3.65	6.5287

Sources: PGE, 2019b; CPUC analysis

Note:

Construction emissions were analyzed in the air basin they would be generated in. The emissions in SFBAAB are from the work at Highland Peak tower. The total emissions in SJVAB are calculated by subtracting the total emissions in SFBAAB from the total emissions of the whole project.

Helicopter Criteria Pollutant Emission Factors

Type	Mode	Operation				Power (hp)	Fuel Consumption				Combustion Emission Factors (LTO: kg, Operation: kg/hour)				
		Daily		Days per Week	Weeks						NO_x	HC	CO	SO_x	PM
Hughes 500	LTO	1	LTO/day	1	2	317	16.4	kg	5.35	gallons	0.0595	0.4382	0.5712	0.0177	0.0023
	Operation	3	Hours/day	1	2	317	98.8	kg/ hr	32.25	gallons/hr	0.48	0.96	1.2	0.1067	0.016

Helicopter Criteria Pollutant Emissions (Combustion)

Type	Mode	Daily Emissions (pounds/day)					Total Emissions (pounds)				
		NO_x	HC	CO	SO_x	PM	NO_x	HC	CO	SO_x	PM
Hughes 500	LTO	0.13	0.96	1.26	0.04	0.01	0.26	1.93	2.51	0.08	0.01
	Operation	3.17	6.34	7.92	0.70	0.11	6.34	12.67	15.84	1.41	0.21
Total Emissions		3.30	7.30	9.18	0.74	0.11	6.60	14.60	18.35	1.49	0.22

Sources: PGE, 2018c; CPUC analysis of the SOx emissions

Notes:

[a] CPUC revised the SOx emissions using the unit of weight consistent with other pollutants. CPUC also calculated the emissions of SOx as SO_2, which is about twice the weight of sulfur.

Fuel usage data and criteria pollutant emission factors obtained from the *FOCA Guidance on Determination of Helicopter Emissions, Edition 2, December 2015*.

Jet Fuel assumed to contain an average 0.054% wt. sulfur per the FAA's Aviation Emissions, Impacts & Mitigation: a Primer, dated January 2015.

Density of fuel from *ExxonMobil Aviation World Jet Fuel Specifications, 2005 Edition.*

775-840 kg/m^3 = 6.47 - 7.01 lb/gallon

Average Density = 6.74 lb/gallon

LTO = Landing and take-off cycle

1 LTO per day of operations is assumed.

Construction Equipment List (Not Including Work at Howland Road Substation)

Activity	Total Number of On-Site Workers	Estimated Quantity of Equipment		CalEEMod Equipment Type	Horsepower	CalEEMod Default HP (y/n)	Estimated Days per Week of Operation	Estimated Hours per Day of Operation	Estimated Duration of Use (weeks)
Vegetation Trimming	2	1	Leaf blower	Other Construction Equipment	9	n	2	10	1
		1	Weed mower	Other Construction Equipment	20	n	2	10	1
		1	Pickup truck	On-road vehicle - Add as vendor trip	NA	NA	2	10	1
Traffic Control	4	2	Work site protection type vehicles	On-road vehicle - Add as vendor trip	NA	NA	6	2	12

Activity	Total Number of On-Site Workers	Estimated Quantity of Equipment		CalEEMod Equipment Type	Horsepower	CalEEMod Default HP (y/n)	Estimated Days per Week of Operation	Estimated Hours per Day of Operation	Estimated Duration of Use (weeks)
		2	Flasher board	Assume battery powered - no emissions	NA	NA	6	8	12
TSP Installation (includes foundation and augur TSP holes)	6	1	40-ton cranes	Cranes	231	y	4	1	8
		1	Tractor trailer	Off-Highway Trucks	402	y	4	2	8
		1	Construction digger	Trenchers	78	y	2	6	8
		1	Crane with 120 boom	Cranes	231	y	2	4	8
		1	Backhoe	Tractors/Loaders/Backhoes	97	y	4	2	8
		1	Dump truck	Off-Highway Trucks	250	n	2	6	8
		1	Foreman pickup truck	On-road vehicle - Add as vendor trip	NA	NA	6	1	8
		1	Crew-cab truck	On-road vehicle - Add as vendor trip	NA	NA	6	1	8
		2	Cement truck	Off-Highway Trucks	402	y	2	6	6
Conductor Installation	15	1	V-Groove puller attached to line truck	Other General Industrial Equipment	88	y	3	6	5
		1	Helicopter (small)	Will be calculated outside CalEEMod	NA	NA	1	3	2
		1	Tensioner attached to line truck	Other General Industrial Equipment	88	y	3	6	5
		1	40-ton cranes	Cranes	231	y	6	6	5
		2	Bucket trucks	On-road vehicle - Add as vendor trip	NA	NA	6	6	5
		2	Boom trucks	On-road vehicle - Add as vendor trip	NA	NA	6	6	5
		3	Crew-cab truck	On-road vehicle - Add as vendor trip	NA	NA	6	2	5
		3	Foreman pickup truck	On-road vehicle - Add as vendor trip	NA	NA	6	3	5
		1	Forklift	Forklifts	89	y	6	2	5

Activity	Total Number of On-Site Workers	Estimated Quantity of Equipment		CalEEMod Equipment Type	Horsepower	CalEEMod Default HP (y/n)	Estimated Days per Week of Operation	Estimated Hours per Day of Operation	Estimated Duration of Use (weeks)
		1	Hardline puller	Other General Industrial Equipment	88	y	3	6	5
		2	Crane with 120 boom	Cranes	231	y	6	6	5
Substation Expansion A	19	2	Concrete Truck	Off-Highway Trucks	402	y	3	3	8
		1	D-3 Bulldozer	Rubber Tired Dozers	247	y	5	6	2
		1	Bucket truck	On-road vehicle - Add as vendor trip	NA	NA	5	6	2
		1	Line Truck	On-road vehicle - Add as vendor trip	NA	NA	5	6	2
		1	50-ton crane	Cranes	231	y	5	6	1
		2	Water Truck	Add as vendor trip	NA	NA	5	6	8
		2	Compactor	Plate Compactors	8	y	5	6	6
		1	Road grader, six wheel	Graders	187	y	5	6	2
		1	Elevating scraper	Scrapers	367	y	5	6	2
		2	Mini excavator	Excavators	50	y	5	8	8
		1	Large excavator drill	Excavators	158	y	5	6	4
Substation Expansion B	18	3	Aerial man Lift	Aerial Lifts	63	y	5	5	20
		1	2-ton flatbed trucks	Add as vendor trip	NA	NA	5	4	20
		2	Fork Lift	Forklifts	89	y	5	5	20
		2	Backhoe	Tractors/Loaders/Backhoes	97	y	5	6	20
		2	Skid-steer bobcat	Skid Steer Loaders	65	y	5	4	30
		1	Boom truck	On-road vehicle - Add as vendor trip	NA	NA	5	6	20
		2	Air compressor	Air Compressors	78	y	5	2	30
		1	Portable generators	Generator Sets	84	y	5	4	30

Activity		Total Number of On-Site Workers	Estimated Quantity of Equipment		CalEEMod Equipment Type	Horsepower	CalEEMod Default HP (y/n)	Estimated Days per Week of Operation	Estimated Hours per Day of Operation	Estimated Duration of Use (weeks)
Substation Expansion C		0	2	Dump truck	On-road vehicle - Add as haul trip	NA	NA	5	NA	4
Substation Expansion D		7	5	Pickup truck	On-road vehicle - Add as vendor trip	NA	NA	5	4	52
Telecom: Vierra Substation	MW Tower/Monopole Foundation Work (Digging, Framing, Rebar, Concrete Pour, Concrete Test, Concrete Curing)	8	1	Backhoe	Tractors/Loaders/Backhoes	97	y	4	10	2
			1	Pickup Truck	On-road vehicle - Add as vendor trip	NA	NA	4	10	2
			1	Dump Truck	Off-Highway Trucks	402	y	2	10	1
			1	Concrete Truck	Off-Highway Trucks	402	y	2	10	1
	MW Tower/Monopole Stacking and Waveguide Bridge	4	1	Crane	Cranes	231	y	4	10	2
			1	Pickup Truck	On-road vehicle - Add as vendor trip	NA	NA	4	10	2
	MW Antenna and Waveguide Installation	3	1	Crane	Cranes	231	y	2	10	1
Telecom: Kasson Substation	MW Tower/Monopole Foundation Work (Digging, Framing, Rebar, Concrete Pour, Concrete Test, Concrete Curing)	8	1	Backhoe	Tractors/Loaders/Backhoes	97	y	4	10	2
			1	Pickup Truck	On-road vehicle - Add as vendor trip	NA	NA	4	10	2
			1	Dump Truck	Off-Highway Trucks	402	y	1	10	1
			1	Concrete Truck	Off-Highway Trucks	402	y	1	10	1
	MW Tower/Monopole	4	1	Crane	Cranes	231	y	4	10	2

Activity		Total Number of On-Site Workers	Estimated Quantity of Equipment		CalEEMod Equipment Type	Horsepower	CalEEMod Default HP (y/n)	Estimated Days per Week of Operation	Estimated Hours per Day of Operation	Estimated Duration of Use (weeks)
	Stacking and Waveguide Bridge		1	Pickup Truck	On-road vehicle - Add as vendor trip	NA	NA	4	10	2
	MW Antenna and Waveguide Installation	3	1	Crane	Cranes	231	y	2	10	1
Telecom: Tracy Substation	MW Tower/Monopole Foundation Work (Digging, Framing, Rebar, Concrete Pour, Concrete Test, Concrete Curing)	8	1	Backhoe	Tractors/Loaders/Backhoes	97	y	4	10	2
			1	Pickup Truck	On-road vehicle - Add as vendor trip	NA	NA	4	10	2
			1	Dump Truck	Off-Highway Trucks	402	y	1	10	1
			1	Concrete Truck	Off-Highway Trucks	402	y	1	10	1
	MW Tower/Monopole Stacking and Waveguide Bridge	4	1	Crane	Cranes	231	y	4	10	2
			1	Pickup Truck	On-road vehicle - Add as vendor trip	NA	NA	4	10	2
	MW Antenna and Waveguide Installation	3	1	Crane	Cranes	231	y	2	10	1
Telecom: Manteca Substation	MW Tower/Monopole Foundation Work (Digging, Framing, Rebar, Concrete Pour, Concrete Test, Concrete Curing)	8	1	Backhoe	Tractors/Loaders/Backhoes	97	y	4	10	2
			1	Pickup Truck	On-road vehicle - Add as vendor trip	NA	NA	4	10	2
			1	Dump Truck	Off-Highway Trucks	402	y	1	10	1
			1	Concrete Truck	Off-Highway Trucks	402	y	1	10	1
	MW Tower/Monopole Stacking and Waveguide Bridge	4	1	Crane	Cranes	231	y	4	10	2
			1	Pickup Truck	On-road vehicle - Add as vendor trip	NA	NA	4	10	2

Activity		Total Number of On-Site Workers	Estimated Quantity of Equipment		CalEEMod Equipment Type	Horsepower	CalEEMod Default HP (y/n)	Estimated Days per Week of Operation	Estimated Hours per Day of Operation	Estimated Duration of Use (weeks)
	MW Antenna and Waveguide Installation	3	1	Crane	Cranes	231	y	2	10	1
Telecom: Highland Peak	MW Antenna and Waveguide Installation	3	1	Pickup Truck	On-road vehicle - Add as vendor trip	NA	NA	2	10	1
Telecom: Mt. Oso	MW Antenna and Waveguide Installation	3	1	Pickup Truck	On-road vehicle - Add as vendor trip	NA	NA	2	10	1

Source: PGE, 2018d

Notes:

Equipment use (Days Per Week and Duration (weeks)) were rounded up in CalEEMod to conservatively estimate maximum daily emissions:

- CalEEMod does not allow construction phases to be modeled with less than 5 days per week of operation. All phases and equipment listed as less than 5 days per week of operation were rounded up to 5 days per week in CalEEMod.
- Equipment duration of use (weeks) within a Construction Phase were grouped and rounded up in CalEEMod.

On-road vehicles (e.g. pickup trucks) modeled in CalEEMod as vendor trips, 2 trips (approximately 15 vehicle miles) per day per vehicle.

Haul trips included in CalEEMod for the following phases:

- Substation Expansion C - 400 loads (25 cubic yards per load)
- Telecom Vierra Substation - 14 loads (10 cubic yards per load) for tower installation
- Telecom Kasson, Tracy, and Manteca Substations - 2 loads (10 cubic yards per load) each for monopole installation

Howland Road Substation Typical Construction Equipment and Duration of Use

Activity	Total Number of On-Site Workers[1]	Estimated Type and Quantity of Equipment		Estimated Days per Week of Operation	Estimated Hours per Day of Operation	Estimated Duration of Use (weeks)
Civil Construction	5-10	1	Auger	3	10	1
		1	Excavator	6	10	5
		3	Concrete Truck	2	10	1
		2	Loader	6	10	5
		6	Work Trucks (pick-up and line trucks)	6	10	5
		1	Water Truck	6	2	5
		N/A	Dump/ Haul Trucks	*See table note # 2*		
Equipment Installation and Outdoor Electrical Construction	5	1	Bucket truck	5	10	3
		1	Water truck	5	2	3
		1	Backhoe	5	10	2
		1	Forklift	5	10	1
		6	Worker trucks (pick-up)	5	10	3
Indoor Electrical Construction and Testing	5	1	Forklift	5	10	1
		6	Work Trucks (pick-up and line trucks)	5	10	3

Source: PGE, 2019d

Notes:

[1] The range of workers on site for the combined Howland Road Substation would be 5 – 10 workers. This could occur during civil work, or during overlap of civil construction and equipment installation and outdoor electrical construction.

[2] A total of 41 haul loads are estimated for import and export of material associated with trenching and foundation excavation activities. These 41 (2-way) haul trips would be spread throughout the 30-day construction, as needed.

Attachment 1: GHG Emissions from Helicopter and Circuit Breakers
(Source: PGE, 2018c; 2018e)

Helicopter Emission Factors

Type	Mode	Operation			Power (hp)	Fuel Consumption		Emission Factors (kg GHG/gallon)		
		Daily	Days per Week	Weeks				CO_2	N_2O	CH_4
Hughes 500	LTO	1 LTO/day	1	2	317	16.4 kg	5.35 gallons	9.57	3.1E-04	2.7E-04
	Operation	3 Hours/day	1	2	317	98.8 kg/hr	32.25 gallons/hr	9.57	3.1E-04	2.7E-04

Helicopter Greenhouse Gas Emissions

Type	Mode	Total Emissions (metric tons)			
		CO_2	N_2O	CH_4	CO2e
Hughes 500	LTO	0.10	3.3E-06	2.9E-06	0.10
	Operation	1.85	6.0E-05	5.2E-05	1.87
Total Emissions		1.95	6.3E-05	5.5E-05	1.97

Notes:

Fuel usage data obtained from the *FOCA Guidance on Determination of Helicopter Emissions, Edition 2, December 2015* .

Greenhouse gas emission factors obtained from *California Climate Action Registry General Reporting Protocol, Version 3.1, January 2009* .

Global Warming Potentials (GWPs) obtained from the Fifth Assessment Report (AR5) of the Intergovernmental Panel on Climate Change (IPCC). GWPs used here do not include climate-carbon feedbacks.

Density of fuel from *ExxonMobil Aviation World Jet Fuel Specifications, 2005 Edition.*

775-840 kg/m^3 = 6.47 - 7.01 lb/gallon

Average Density = 6.74 lb/gallon

LTO = Landing and take-off cycle

1 LTO per day of operations is assumed.

SF_6-Insulated Breaker Emissions - Greenhouse Gas

Emission Scenario	Qty.	Equipment	SF6 Capacity (lbs/breaker)	Leak Rate	**Emissions** (metric tons/year)	
					SF6	CO2e
Without APM GHG-2	11	Circuit Breaker	80	1.0%	0.0040	94.0
With APM GHG-2	11	Circuit Breaker	80	0.5%	0.0020	47.0

Notes:

Circuit breakers were conservatively assumed to each contain approximately 80 pounds of SF6 consistent with the PG&E: Missouri Flat-Gold Hill 115 KV Power Line Reconductoring Project PEA.

Implementation of APM GHG-2 includes the requirement that new breakers at Vierra Substation have a manufacturer's guaranteed maximum leakage rate of 0.5 percent per year or less for SF6.

The Global Warming Potential for SF6 (23,500) obtained from the Fifth Assessment Report (AR5) of the Intergovernmental Panel on Climate Change (IPCC).

Attachment 2: Updated Emissions Summary, CalEEMod Input and Output Files (Source: PGE, 2019b)

Emissions Summary - Annual

Construction Phase	Pollutants (tons/yr)						GHG Emissions (MT/yr)			
	ROG	NO_x	CO	SO_2	PM_{10}	$PM_{2.5}$	CO_2	CH_4	N_2O	CO_2e
Phase 1: Site Preparation 2020										
Construction Equipment	0.00014	0.00068	0.00073	0.000	0.00005	0.00005	0.0643	0.00002	0.000	0.06486
Haul Truck Trips	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Vendor Trips	0	0.00012	0.00003	0.000	0.00001	0.000	0.0269	0.000	0.000	0.0269
Worker Trips	0.00001	0.00001	0.00006	0.000	0.00002	0	0.0141	0.000	0.000	0.0141
Fugitive Dust	0	0	0	0	0.000	0.000	0	0	0	0
Phase Totals	*0.00015*	*0.00081*	*0.00082*	*0*	*0.00008*	*0.00005*	*0.1053*	*0.00002*	*0*	*0.10586*
Phase 2: Traffic Control 2020										
Construction Equipment	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Haul Truck Trips	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Vendor Trips	0.00058	0.017	0.00362	0.00004	0.00105	0.00036	3.8678	0.00024	0.000	3.87452
Worker Trips	0.00115	0.00083	0.00814	0.00002	0.00231	0.00062	2.0344	0.00006	0.000	2.03608
Fugitive Dust	0	0	0	0	0.000	0.000	0	0	0	0
Phase Totals	*0.00173*	*0.01783*	*0.01176*	*0.00006*	*0.00336*	*0.001*	*5.9022*	*0.0003*	*0*	*5.911*
Phase 3: TSP Installation 2020										
Construction Equipment	0.052	0.5084	0.2949	0.00087	0.0221	0.0203	76.0616	0.0246	0.000	76.7504
Haul Truck Trips	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Vendor Trips	0.00038	0.0111	0.00237	0.00003	0.00068	0.00024	2.5248	0.00016	0.000	2.52928
Worker Trips	0.00113	0.00081	0.00797	0.00002	0.00226	0.00061	1.992	0.00005	0.000	1.9934
Fugitive Dust	0	0	0	0	0.000	0.000	0	0	0	0
Phase Totals	*0.05351*	*0.52031*	*0.30524*	*0.00092*	*0.02504*	*0.021*	*80.5784*	*0.02481*	*0*	*81.273*
Phase 4: Conductor Installation 2020										
Construction Equipment	0.0238	0.2592	0.143	0.00029	0.0131	0.0121	25.206	0.00815	0.000	25.4342
Haul Truck Trips	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Vendor Trips	0.00122	0.0355	0.00755	0.00008	0.00497	0.00145	8.058	0.0005	0.000	8.072
Worker Trips	0.0018	0.00129	0.0127	0.00004	0.00981	0.0025	3.1788	0.00009	0.000	3.18132
Fugitive Dust	0	0	0	0	0.000	0.000	0	0	0	0
Phase Totals	*0.02682*	*0.29599*	*0.16325*	*0.00041*	*0.02788*	*0.016*	*36.4428*	*0.00874*	*0*	*36.688*
Phase 5a: Substation Expansion 2020										
Construction Equipment	0.0892	0.9427	0.5587	0.00119	0.0413	0.038	104.2214	0.0337	0.000	105.165
Haul Truck Trips	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Vendor Trips	0.00097	0.0253	0.00544	0.00007	0.00216	0.00075	7.0883	0.00027	0.000	7.09586
Worker Trips	0.00372	0.00267	0.0263	0.00007	0.00747	0.00202	6.5765	0.00018	0.000	6.58154
Fugitive Dust	0	0	0	0	0.112	0.061	0	0	0	0
Phase Totals	*0.09389*	*0.97067*	*0.59044*	*0.00133*	*0.16303*	*0.102*	*117.8862*	*0.03415*	*0*	*118.842*
Phase 5b: Substation Expansion 2020										
Construction Equipment	0.083	0.8168	0.935	0.00139	0.0471	0.0443	121.0321	0.0304	0.000	121.8833
Haul Truck Trips	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Vendor Trips	0.00121	0.0352	0.0075	0.00008	0.00216	0.00075	8.0043	0.0005	0.000	8.0183
Worker Trips	0.0107	0.00769	0.0758	0.00021	0.0215	0.00581	18.9454	0.00052	0.000	18.95996
Fugitive Dust	0	0	0	0	0.000	0.000	0	0	0	0
Phase Totals	*0.09491*	*0.85969*	*1.0183*	*0.00168*	*0.07076*	*0.051*	*147.9818*	*0.03142*	*0*	*148.862*
Phase 5c: Substation Expansion 2020										
Construction Equipment	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Haul Truck Trips	0.00288	0.10030	0.01530	0.00029	0.00699	0.00214	27.3697	0.00122	0.000	27.40386
Vendor Trips	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Worker Trips	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Fugitive Dust	0	0	0	0	0.00066	0.00010	0	0	0	0
Phase Totals	*0.00288*	*0.1003*	*0.0153*	*0.00029*	*0.00765*	*0.002*	*27.3697*	*0.00122*	*0*	*27.404*
Phase 5d: Substation Expansion - 2020										
Construction Equipment	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Haul Truck Trips	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Vendor Trips	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Worker Trips	0.00489	0.00351	0.0346	0.0001	0.00982	0.00266	8.6533	0.00024	0.000	8.66002
Fugitive Dust	0	0	0	0	0.000	0.000	0	0	0	0
Phase Totals	*0.00489*	*0.00351*	*0.0346*	*0.0001*	*0.00982*	*0.003*	*8.6533*	*0.00024*	*0*	*8.660*
Phase 5d: Substation Expansion - 2021										
Construction Equipment	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Haul Truck Trips	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Vendor Trips	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Worker Trips	0.00217	0.0015	0.0151	0.00004	0.00471	0.00127	3.997	0.0001	0.000	3.9998
Fugitive Dust	0	0	0	0	0.000	0.000	0	0	0	0
Phase Totals	*0.00217*	*0.0015*	*0.0151*	*0.00004*	*0.00471*	*0.001*	*3.997*	*0.0001*	*0*	*4.000*
Phase 6: Vierra Substation 2020										
Construction Equipment	0.0153	0.1596	0.0883	0.00026	0.00649	0.00597	22.5412	0.00729	0.000	22.74532
Haul Truck Trips	0.00011	0.0039	0.00059	0.00001	0.00025	0.00008	1.0644	0.00005	0.000	1.0658
Vendor Trips	0.00008	0.00237	0.0005	0.00001	0.00015	0.00005	0.5372	0.00003	0.000	0.53804
Worker Trips	0.0006	0.00043	0.00424	0.00001	0.0012	0.00033	1.0596	0.00003	0.000	1.06044
Fugitive Dust	0	0	0	0	0.000	0.000	0	0	0	0
Phase Totals	*0.01609*	*0.1663*	*0.09363*	*0.00029*	*0.00809*	*0.006*	*25.2024*	*0.0074*	*0*	*25.410*
Phase 7: Kasson Substation 2020										
Construction Equipment	0.0153	0.1596	0.0883	0.00026	0.00649	0.00597	22.5412	0.00729	0.000	22.74532
Haul Truck Trips	0.00002	0.00056	0.00008	0.0000	0.00004	0.00001	0.1521	0.00001	0.000	0.15238
Vendor Trips	0.00008	0.00237	0.0005	0.00001	0.00015	0.00005	0.5372	0.00003	0.000	0.53804
Worker Trips	0.0006	0.00043	0.00424	0.00001	0.0012	0.00033	1.0596	0.00003	0.000	1.06044
Fugitive Dust	0	0	0	0	0.000	0.000	0	0	0	0
Phase Totals	*0.016*	*0.16296*	*0.09312*	*0.00028*	*0.00788*	*0.006*	*24.2901*	*0.00736*	*0*	*24.496*
Phase 8: Tracy Substation 2020										
Construction Equipment	0.0153	0.1596	0.0883	0.00026	0.00649	0.00597	22.5412	0.00729	0.000	22.74532
Haul Truck Trips	0.00002	0.00056	0.00008	0.0000	0.00004	0.00001	0.1521	0.00001	0.000	0.15238
Vendor Trips	0.00008	0.00237	0.0005	0.00001	0.00015	0.00005	0.5372	0.00003	0.000	0.53804
Worker Trips	0.0006	0.00043	0.00424	0.00001	0.0012	0.00033	1.0596	0.00003	0.000	1.06044
Fugitive Dust	0	0	0	0	0.000	0.000	0	0	0	0
Phase Totals	*0.016*	*0.16296*	*0.09312*	*0.00028*	*0.00788*	*0.006*	*24.2901*	*0.00736*	*0*	*24.496*
Phase 9: Manteca Substation 2020										
Construction Equipment	0.0153	0.1596	0.0883	0.00026	0.00649	0.00597	22.5412	0.00729	0.000	22.74532
Haul Truck Trips	0.00002	0.00056	0.00008	0.0000	0.00004	0.00001	0.1521	0.00001	0.000	0.15238

Emissions Summary - Annual

Construction Phase	Pollutants (tons/yr)							GHG Emissions (MT/yr)			
	ROG	NO_x	CO	SO_2	PM_{10}	$PM_{2.5}$		CO_2	CH_4	N_2O	CO_2e
Vendor Trips	0.00008	0.00237	0.0005	0.00001	0.00015	0.00005		0.5372	0.00003	0.000	0.53804
Worker Trips	0.0006	0.00043	0.00424	0.00001	0.0012	0.00033		1.0596	0.00003	0.000	1.06044
Fugitive Dust	0	0	0	0	0.000	0.000		0	0	0	0
Phase Totals	*0.016*	*0.16296*	*0.09312*	*0.00028*	*0.00788*	*0.006*		*24.2901*	*0.00736*	*0*	*24.496*
Phase 10: Highland Peak 2020											
Construction Equipment	0.000	0.000	0.000	0.000	0.000	0.000		0.000	0.000	0.000	0
Haul Truck Trips	0.000	0.000	0.000	0.000	0.000	0.000		0.000	0.000	0.000	0
Vendor Trips	0.00002	0.00059	0.00013	0.000	0.00004	0.00001		0.1343	0.00001	0.000	0.13458
Worker Trips	0.00006	0.00004	0.00042	0.000	0.00012	0.00003		0.106	0.000	0.000	0.106
Fugitive Dust	0	0	0	0	0.000	0.000		0	0	0	0
Phase Totals	*0.00008*	*0.00063*	*0.00055*	*0*	*0.00016*	*0.000*		*0.2403*	*0.00001*	*0*	*0.241*

Construction Phase	Pollutants (tons/yr)						GHG Emissions (MT/yr)			
	ROG	NO_x	CO	SO_2	PM_{10}	$PM_{2.5}$	CO_2	CH_4	N_2O	CO_2e
Phase 11: Mt Oso - 2020										
Construction Equipment	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0
Haul Truck Trips	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0
Vendor Trips	0.00001	0.00024	0.00005	0.000	0.00001	0.00001	0.0537	0	0.000	0.0537
Worker Trips	0.00002	0.00002	0.00017	0.000	0.00005	0.00001	0.0424	0.000	0.000	0.0424
Fugitive Dust	0	0	0	0	0.000	0.000	0	0	0	0
Phase Totals	*0.00003*	*0.00026*	*0.00022*	*0*	*0.00006*	*0.000*	*0.0961*	*0*	*0*	*0.096*
Phase 11: Mt Oso - 2021										
Construction Equipment	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0
Haul Truck Trips	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0
Vendor Trips	0.00001	0.00032	0.00007	0.000	0.00002	0.00001	0.0798	0	0.000	0.0798
Worker Trips	0.00003	0.00002	0.00023	0.000	0.00007	0.00002	0.0612	0.000	0.000	0.0612
Fugitive Dust	0	0	0	0	0.000	0.000	0	0	0	0
Phase Totals	*0.00004*	*0.00034*	*0.0003*	*0*	*0.00009*	*0.000*	*0.141*	*0*	*0*	*0.141*
Phase 12: Howland Site Preparation 2020										
Construction Equipment	0.0160	0.1598	0.1705	0.00029	0.00852	0.00784	25.480	0.00824	0.000	25.71062
Haul Truck Trips	0.00034	0.01180	0.00180	0.00003	0.00075	0.00023	3.221	0.00014	0.000	3.22492
Vendor Trips	0.00088	0.0257	0.00546	0.00006	0.00158	0.00055	5.8286	0.00036	0.000	5.83868
Worker Trips	0.00099	0.00071	0.00701	0.00002	0.00199	0.00054	1.7519	0.00005	0.000	1.7533
Fugitive Dust	0	0	0	0	0.00008	0.00001	0	0	0	0
Phase Totals	*0.01821*	*0.19801*	*0.18477*	*0.0004*	*0.01292*	*0.009*	*36.2814*	*0.00879*	*0*	*36.528*
Phase 13: Howland Monopole 2020										
Construction Equipment	0.00182	0.018	0.01850	0.00002	0.00117	0.00108	2.1949	0.0007	0.000	2.21478
Haul Truck Trips	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0
Vendor Trips	0.00101	0.0293	0.00624	0.00007	0.0018	0.00063	6.6613	0.00041	0.000	6.67278
Worker Trips	0.00062	0.00044	0.00438	0.00001	0.00124	0.00034	1.0949	0.00003	0.000	1.09574
Fugitive Dust	0	0	0	0	0.000	0.000	0	0	0	0
Phase Totals	*0.00345*	*0.04754*	*0.02912*	*0.0001*	*0.00421*	*0.002*	*9.9511*	*0.00115*	*0*	*9.983*
Phase 14: Howland Indoor Work 2020										
Construction Equipment	0.00048	0.00432	0.00393	0.00001	0.00032	0.00030	0.4472	0.00014	0.000	0.45112
Haul Truck Trips	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.000	0.000	0.000	0
Vendor Trips	0.00039	0.0114	0.00242	0.00003	0.0007	0.00024	2.5786	0.00016	0.000	2.58308
Worker Trips	0.00032	0.00023	0.00262	0.00001	0.00064	0.00017	0.5651	0.00002	0.000	0.56566
Fugitive Dust	0	0	0	0	0.000	0.000	0	0	0	0
Phase Totals	*0.00119*	*0.01595*	*0.00897*	*0.00005*	*0.00166*	*0.001*	*3.5909*	*0.00032*	*0*	*3.600*

PROJECT TOTALS	Pollutants (tons/yr)						GHG Emissions (MT/yr)			
	ROG	NO_x	CO	SO_2	PM_{10}	$PM_{2.5}$	CO_2	CH_4	N_2O	CO_2e
Construction Equipment	0.328	3.348	2.478	0.005	0.160	0.148	444.872	0.135	0.000	448.656
Haul Truck Trips	0.003	0.118	0.018	0.000	0.008	0.002	32.111	0.001	0.000	32.152
Vendor Trips	0.007	0.201	0.043	0.001	0.016	0.005	47.055	0.003	0.000	47.132
Worker Trips	0.030	0.021	0.212	0.001	0.067	0.018	53.251	0.001	0.000	53.292
Fugitive Dust	0.000	0.000	0.000	0.000	0.113	0.061	0.000	0.000	0.000	0.000
Total	0.3680	3.6885	2.7517	0.0065	0.3632	0.2346	577.290	0.141	0.000	581.231

General Assumptions:

25 cy per load for haul trips
Total haul trips include both import and export, unphased
Use CalEEMod default trip lengths:
- one-way worker trip length = 10.8 mi
- one-way vendor trip length = 7.3 mi
- one-way haul trip length = 20 mi

Pickup/crw cab/boom/bucket/line trucks counted as vendor trips, 2 one way trips per day
Water trucks counted as vendor trips, traveling 5 mph for 6 hrs per day (30 VMT)
Global Warming Potentials (GWPs) obtained from the Fifth Assessment Report (AR5) of the Intergovernmental Panel on Climate Change (IPCC). GWPs used here do not include climate-carbon feedbacks.

ProjectName	LocationScope	EMFAC_ID	WindSpeed	PrecipitationFrequency	ClimateZone	UrbanizationLevel
Vierra Reinforcement Project	C	SJ	2.7	51	2	Urban

tblProjectCharacteristics

ProjectName	OperationalYear	UtilityCompany	CO2IntensityFactor	CH4IntensityFactor	N2OIntensityFactor
Vierra Reinforcement Project	2023	Pacific Gas & Electric Company	641.35	0.029	0.006

tblProjectCharacteristics

ProjectName	TotalPopulation	TotalLotAcreage	UsingHistoricalEnergyUseData	ConstructionPhaseStartDate
Vierra Reinforcement Project	0	0	0	2020/01/01

PollutantSelection	PollutantFullName	PollutantName
1	Reactive Organic Gases (ROG)	ROG
1	Nitrogen Oxides (NOx)	NOX
1	Carbon Monoxide (CO)	CO
1	Sulfur Dioxide (SO2)	SO2
1	Particulate Matter 10um (PM10)	PM10
1	Particulate Matter 2.5um (PM2.5)	PM2_5
1	Fugitive PM10um (PM10)	PM10_FUG
1	Fugitive PM2.5um (PM2.5)	PM25_FUG
1	Biogenic Carbon Dioxide (CO2)	CO2_BIO
1	Non-Biogenic Carbon Dioxide (CO2)	CO2_NBIO
1	Carbon Dioxide (CO2)	CO2
1	Methane (CH4)	CH4
1	Nitrous Oxide (N2O)	N2O
1	CO2 Equivalent GHGs (CO2e)	CO2E

tblLandUse

LandUseType	LandUseSubType	LandUseUnitAmount	LandUseSizeMetric	LotAcreage	LandUseSquareFeet	Population
Commercial	User Defined Commercial	0	User Defined Unit	0	0	0
Parking	Other Asphalt Surfaces	0	Acre	0	0	0
Residential	User Defined Residential	0	Dwelling Unit	0	0	0

tblLandUse

BuildingSpaceSquareFeet	GreenSpaceAllowEdit	RecSwimmingAreaAllowEdit
0	0	0
0	0	0
0	0	0

tblConstructionPhase

PhaseNumber	PhaseName	PhaseType	PhaseStartDate	PhaseEndDate	NumDaysWeek	NumDays	PhaseDescription
1	Phase 1 - Site Preparation	Site Preparation	2020/05/01	2020/05/02	5	2	
2	Phase 5A - Substation Expansion	Grading	2020/05/01	2020/07/08	5	50	
3	Phase 2 - Traffic Control	Building Construction	2020/05/01	2020/07/23	6	72	
4	Phase 3 - TSP Installation	Building Construction	2020/05/01	2020/06/24	6	48	
5	Phase 5B - Substation Expansion	Building Construction	2020/05/01	2020/11/25	5	150	
6	Phase 5D - Substation Expansion	Building Construction	2020/05/01	2021/04/28	5	260	
7	Phase 4 - Conductor Installation	Building Construction	2020/06/26	2020/07/30	6	30	
8	Phase 5C - Substation Expansion	Grading	2020/09/12	2020/10/07	5	20	
9	Phase 6 - Vierra Substation	Building Construction	2020/10/28	2020/11/10	5	10	
10	Phase 7 - Kasson Substation	Building Construction	2020/11/11	2020/11/24	5	10	
11	Phase 8 - Tracy Substation	Building Construction	2020/11/25	2020/12/08	5	10	
12	Phase 9 - Manteca Substation	Building Construction	2020/12/09	2020/12/22	5	10	
13	Phase 10 - Highland Peak	Building Construction	2020/12/23	2020/12/29	5	5	
14	Phase 11 - Mt Oso	Building Construction	2020/12/30	2021/01/05	5	5	
15	Phase 12 - Howland Site Preparation	Site Preparation	2020/05/01	2020/06/05	6	30	
16	Phase 13 - Howland Monopole	Building Construction	2020/05/15	2020/06/19	6	30	
17	Phase 14 - Howland Indoor Work	Building Construction	2020/06/19	2020/07/07	6	15	

PhaseName	OffRoadEquipmentType	OffRoadEquipmentUnitAmount	UsageHours	HorsePower	LoadFactor
Phase 1 - Site Preparation	Other Construction Equipment	1	10	9	0.42
Phase 1 - Site Preparation	Other Construction Equipment	1	10	20	0.42
Phase 5A - Substation Expansion	Cranes	1	6	231	0.29
Phase 5A - Substation Expansion	Excavators	2	8	50	0.38
Phase 5A - Substation Expansion	Excavators	1	6	158	0.38
Phase 5A - Substation Expansion	Graders	1	6	187	0.41
Phase 5A - Substation Expansion	Off-Highway Trucks	2	3	402	0.38
Phase 5A - Substation Expansion	Rollers	2	6	80	0.38
Phase 5A - Substation Expansion	Rubber Tired Dozers	1	6	247	0.4
Phase 5A - Substation Expansion	Scrapers	1	6	367	0.48
Phase 2 - Traffic Control	Excavators	0	7	158	0.38
Phase 3 - TSP Installation	Cranes	1	2	231	0.29
Phase 3 - TSP Installation	Cranes	1	4	231	0.29
Phase 3 - TSP Installation	Off-Highway Trucks	1	2	402	0.38
Phase 3 - TSP Installation	Off-Highway Trucks	1	6	250	0.38
Phase 3 - TSP Installation	Off-Highway Trucks	2	6	402	0.38
Phase 3 - TSP Installation	Tractors/Loaders/Backhoes	1	2	97	0.37
Phase 3 - TSP Installation	Trenchers	1	6	78	0.5
Phase 5B - Substation Expansion	Aerial Lifts	3	5	63	0.31
Phase 5B - Substation Expansion	Air Compressors	2	2	78	0.48
Phase 5B - Substation Expansion	Forklifts	2	5	89	0.2
Phase 5B - Substation Expansion	Generator Sets	1	4	84	0.74
Phase 5B - Substation Expansion	Skid Steer Loaders	2	4	65	0.37
Phase 5B - Substation Expansion	Tractors/Loaders/Backhoes	2	8	97	0.37
Phase 5C - Substation Expansion	Excavators	0	7	158	0.38

PhaseName	OffRoadEquipmentType	OffRoadEquipmentUnitAmount	UsageHours	HorsePower	LoadFactor
Phase 4 - Conductor Installation	Cranes	3	6	231	0.29
Phase 4 - Conductor Installation	Forklifts	1	2	89	0.2
Phase 4 - Conductor Installation	Other General Industrial Equipment	3	6	88	0.34
Phase 5D - Substation Expansion	Excavators	0	7	158	0.38
Phase 6 - Vierra Substation	Tractors/Loaders/Backhoes	1	10	97	0.37
Phase 6 - Vierra Substation	Off-Highway Trucks	2	10	402	0.38
Phase 6 - Vierra Substation	Cranes	2	10	231	0.29
Phase 7 - Kasson Substation	Tractors/Loaders/Backhoes	1	10	97	0.37
Phase 7 - Kasson Substation	Off-Highway Trucks	2	10	402	0.38
Phase 7 - Kasson Substation	Cranes	2	10	231	0.29
Phase 8 - Tracy Substation	Tractors/Loaders/Backhoes	1	10	97	0.37
Phase 8 - Tracy Substation	Off-Highway Trucks	2	10	402	0.38
Phase 8 - Tracy Substation	Cranes	2	10	231	0.29
Phase 9 - Manteca Substation	Tractors/Loaders/Backhoes	1	10	97	0.37
Phase 9 - Manteca Substation	Off-Highway Trucks	2	10	402	0.38
Phase 9 - Manteca Substation	Cranes	2	10	231	0.29
Phase 10 - Highland Peak	Tractors/Loaders/Backhoes	0	10	97	0.37
Phase 11 - Mt Oso	Tractors/Loaders/Backhoes	0	10	97	0.37
Phase 12 - Howland Site Preparation	Bore/Drill Rigs	1	1	221	0.5
Phase 12 - Howland Site Preparation	Excavators	1	10	158	0.38
Phase 12 - Howland Site Preparation	Off-Highway Trucks	3	0.67	402	0.38
Phase 12 - Howland Site Preparation	Tractors/Loaders/Backhoes	2	10	97	0.37
Phase 13 - Howland Monopole	Tractors/Loaders/Backhoes	1	3.33	97	0.37
Phase 13 - Howland Monopole	Forklifts	1	1.67	89	0.2
Phase 14 - Howland Indoor Work	Forklifts	1	3.33	89	0.2

PhaseName	WorkerTripNumber	VendorTripNumber	HaulingTripNumber	WorkerTripLength	VendorTripLength	HaulingTripLength	WorkerVehicleClass	VendorVehicleClass	HaulingVehicleClass
Phase 1 - Site Preparation	4	2	0	10.8	7.3	20	LD_Mix	HDT_Mix	HHDT
Phase 5A - Substation Expansion	38	4	0	10.8	7.3	20	LD_Mix	HDT_Mix	HHDT
Phase 5A - Substation Expansion	0	2	0	10.8	30	20	LD_Mix	HDT_Mix	HHDT
Phase 2 - Traffic Control	8	4	0	10.8	7.3	20	LD_Mix	HDT_Mix	HHDT
Phase 3 - TSP Installation	12	4	0	10.8	7.3	20	LD_Mix	HDT_Mix	HHDT
Phase 5B - Substation Expansion	36	4	0	10.8	7.3	20	LD_Mix	HDT_Mix	HHDT
Phase 5C - Substation Expansion	0	0	800	10.8	7.3	20	LD_Mix	HDT_Mix	HHDT
Phase 4 - Conductor Installation	30	20	0	10.8	7.3	20	LD_Mix	HDT_Mix	HHDT
Phase 5D - Substation Expansion	14	0	0	10.8	7.3	20	LD_Mix	HDT_Mix	HHDT
Phase 6 - Vierra Substation	30	4	28	10.8	7.3	20	LD_Mix	HDT_Mix	HHDT
Phase 7 - Kasson Substation	30	4	4	10.8	7.3	20	LD_Mix	HDT_Mix	HHDT
Phase 8 - Tracy Substation	30	4	4	10.8	7.3	20	LD_Mix	HDT_Mix	HHDT
Phase 9 - Manteca Substation	30	4	4	10.8	7.3	20	LD_Mix	HDT_Mix	HHDT
Phase 10 - Highland Peak	6	2	0	10.8	7.3	20	LD_Mix	HDT_Mix	HHDT
Phase 11 - Mt Oso	6	2	0	10.8	7.3	20	LD_Mix	HDT_Mix	HHDT
Phase 12 - Howland Site Preparation	16	14	82	10.8	7.3	20	LD_Mix	HDT_Mix	HHDT
Phase 13 - Howland Monopole	10	16	0	10.8	7.3	20	LD_Mix	HDT_Mix	HHDT
Phase 14 - Howland Indoor Work	10	12	0	10.8	7.3	20	LD_Mix	HDT_Mix	HHDT

PhaseName	WorkerPercentPave	VendorPercentPave	HaulingPercentPave	RoadSiltLoading	MaterialSiltContent	MaterialMoistureContent	AverageVehicleWeight
Phase 1 - Site Preparation	100	100	100	0.1	8.5	0.5	2.4
Phase 5A - Substation Expansion	100	100	100	0.1	8.5	0.5	2.4
Phase 2 - Traffic Control	100	100	100	0.1	8.5	0.5	2.4
Phase 3 - TSP Installation	100	100	100	0.1	8.5	0.5	2.4
Phase 5B - Substation Expansion	100	100	100	0.1	8.5	0.5	2.4
Phase 5C - Substation Expansion	100	100	100	0.1	8.5	0.5	2.4
Phase 4 - Conductor Installation	100	100	100	0.1	8.5	0.5	2.4
Phase 4 - Conductor Installation	100	100	100	0.1	8.5	0.5	2.4
Phase 4 - Conductor Installation	100	100	100	0.1	8.5	0.5	2.4
Phase 5D - Substation Expansion	100	100	100	0.1	8.5	0.5	2.4
Phase 6 - Vierra Substation	100	100	100	0.1	8.5	0.5	2.4
Phase 7 - Kasson Substation	100	100	100	0.1	8.5	0.5	2.4
Phase 8 - Tracy Substation	100	100	100	0.1	8.5	0.5	2.4
Phase 9 - Manteca Substation	100	100	100	0.1	8.5	0.5	2.4
Phase 10 - Highland Peak	100	100	100	0.1	8.5	0.5	2.4
Phase 11 - Mt Oso	100	100	100	0.1	8.5	0.5	2.4
Phase 12 - Howland Site Preparation	100	100	100	0.1	8.5	0.5	2.4
Phase 13 - Howland Monopole	100	100	100	0.1	8.5	0.5	2.4
Phase 14 - Howland Indoor Work	100	100	100	0.1	8.5	0.5	2.4

MeanVehicleSpeed
40
40
40
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40

PhaseName	DemolitionSizeMetric	DemolitionUnitAmount

PhaseName	MaterialImported	MaterialExported	GradingSizeMetric	ImportExportPhased	MeanVehicleSpeed	AcresOfGrading	MaterialMoistureContentBulldozing	MaterialMoistureContentTruckLoading	MaterialSiltContent
Phase 1 - Site Preparation	0	0		0	7.1		7.9	12	6.9
Phase 5A - Substation Expansion	0	0		0	7.1	2.8	7.9	12	6.9
Phase 5C - Substation Expansion	10000	0	Cubic Yards	0	7.1		7.9	12	6.9
Phase 12 - Howland Site Preparation	0	1020	Cubic Yards	0	7.1		7.9	12	6.9

PhaseName	ArchitecturalCoatingStartDate	ArchitecturalCoatingEndDate	EF_Residential_Interior	ConstArea_Residential_Interior

EF_Residential_Exterior	ConstArea_Residential_Exterior	EF_Nonresidential_Interior	ConstArea_Nonresidential_Interior

EF_Nonresidential_Exterior	ConstArea_Nonresidential_Exterior	EF_Parking	ConstArea_Parking

ParkingLotAcreage

VehicleTripsLandUseSubType	VehicleTripsLandUseSizeMetric	WD_TR	ST_TR	SU_TR	HW_TL	HS_TL	HO_TL	CC_TL	CW_TL
Other Asphalt Surfaces	Acre	0	0	0	0	0	0	7.3	9.5
User Defined Commercial	User Defined Unit	0	0	0	0	0	0	7.3	9.5
User Defined Residential	Dwelling Unit	0	0	0	10.8	7.3	7.5	0	0

VehicleTripsLandUseSubType	VehicleTripsLandUseSizeMetric	CNW_TL	PR_TP	DV_TP	PB_TP	HW_TTP	HS_TTP	HO_TTP
Other Asphalt Surfaces	Acre	7.3	0	0	0	0	0	0
User Defined Commercial	User Defined Unit	7.3	0	0	0	0	0	0
User Defined Residential	Dwelling Unit	0	0	0	0	45.6	19	35.4

VehicleTripsLandUseSubType	VehicleTripsLandUseSizeMetric	CC_TTP	CW_TTP	CNW_TTP
Other Asphalt Surfaces	Acre	0	0	0
User Defined Commercial	User Defined Unit	0	0	0
User Defined Residential	Dwelling Unit	0	0	0

Season	EmissionType	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD
A	FleetMix	0.56138	0.034626	0.184829	0.116141	0.016642	0.004535	0.016185	0.056706
A	CH4_IDLEX	0	0	0	0	0.004792	0.003175	0.016116	0.779896
A	CH4_RUNEX	0.003549	0.009907	0.005314	0.010389	0.018811	0.00883	0.004327	0.011574
A	CH4_STREX	0.005199	0.01613	0.007488	0.018442	0.017668	0.007109	0.052611	0.077033
A	CO_IDLEX	0	0	0	0	0.137778	0.117581	0.292849	1.84392
A	CO_RUNEX	0.501609	1.215171	0.69505	1.138438	1.189941	0.684601	0.355521	0.591727
A	CO_STREX	1.151589	3.169693	1.595741	3.231663	2.300491	1.123467	4.978286	1.440863
A	CO2_NBIO_IDLEX	0	0	0	0	9.364603	14.482991	165.701523	5450.808507
A	CO2_NBIO_RUNEX	242.880943	305.183305	343.416276	475.212381	687.2179	708.214295	1198.068125	1512.403876
A	CO2_NBIO_STREX	55.657038	69.683399	78.261891	107.566637	28.264377	22.053022	46.73168	4.556531
A	NOX_IDLEX	0	0	0	0	0.094892	0.114089	0.455911	15.642361
A	NOX_RUNEX	0.045589	0.131605	0.076911	0.148806	2.022416	1.218411	1.19105	1.803989
A	NOX_STREX	0.067704	0.182597	0.12466	0.294992	0.926112	0.446866	12.858093	20.309697
A	PM10_IDLEX	0	0	0	0	0.001054	0.001331	0.00013	0.005101
A	PM10_PMBW	0.03675	0.03675	0.03675	0.03675	0.07644	0.08918	0.13034	0.061096
A	PM10_PMTW	0.008	0.008	0.008	0.008	0.010264	0.010845	0.012	0.035568
A	PM10_RUNEX	0.001599	0.002413	0.001623	0.001686	0.022252	0.017834	0.003187	0.005927
A	PM10_STREX	0.002278	0.003472	0.00237	0.002433	0.000839	0.00039	0.000736	0.000034
A	PM25_IDLEX	0	0	0	0	0.001009	0.001273	0.000124	0.00488
A	PM25_PMBW	0.01575	0.01575	0.01575	0.01575	0.03276	0.03822	0.05586	0.026184
A	PM25_PMTW	0.002	0.002	0.002	0.002	0.002566	0.002711	0.003	0.008892
A	PM25_RUNEX	0.001473	0.002222	0.001492	0.001555	0.021249	0.017041	0.003044	0.00567
A	PM25_STREX	0.002095	0.003193	0.002179	0.002238	0.000772	0.000359	0.000677	0.000031
A	ROG_DIURN	0.040467	0.152924	0.058175	0.093403	0.003	0.00109	0.001092	0.000053
A	ROG_HTSK	0.102294	0.31442	0.125802	0.213857	0.099241	0.034733	0.038979	0.002129
A	ROG_IDLEX	0	0	0	0	0.015717	0.013024	0.020245	0.491781
A	ROG_RESTL	0.030193	0.102775	0.046569	0.078217	0.001355	0.000516	0.000488	0.000029
A	ROG_RUNEX	0.008923	0.02465	0.013179	0.025991	0.149104	0.120602	0.047136	0.08301
A	ROG_RUNLS	0.033582	0.189431	0.06955	0.123451	0.307269	0.077207	0.017825	0.000157
A	ROG_STREX	0.070116	0.21753	0.10099	0.248714	0.238278	0.095879	0.296358	0.034133
A	SO2_IDLEX	0	0	0	0	0.000093	0.000141	0.00159	0.051906
A	SO2_RUNEX	0.002431	0.003066	0.003439	0.004759	0.006731	0.00688	0.011482	0.014402
A	SO2_STREX	0.000576	0.000753	0.00081	0.001133	0.000326	0.000241	0.000554	0.000069
A	TOG_DIURN	0.040467	0.152924	0.058175	0.093403	0.003	0.00109	0.001092	0.000053
A	TOG_HTSK	0.102294	0.31442	0.125802	0.213857	0.099241	0.034733	0.038979	0.002129
A	TOG_IDLEX	0	0	0	0	0.021537	0.017132	0.028241	0.562669

Season	EmissionType	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD
A	TOG_RESTL	0.030193	0.102775	0.046569	0.078217	0.001355	0.000516	0.000488	0.000029
A	TOG_RUNEX	0.012968	0.035918	0.019219	0.037817	0.180405	0.140192	0.055578	0.102244
A	TOG_RUNLS	0.033582	0.189431	0.06955	0.123451	0.307269	0.077207	0.017825	0.000157
A	TOG_STREX	0.076767	0.238166	0.11057	0.272306	0.260885	0.104976	0.324475	0.037371
S	FleetMix	0.56138	0.034626	0.184829	0.116141	0.016642	0.004535	0.016185	0.056706
S	CH4_IDLEX	0	0	0	0	0.004792	0.003175	0.014975	0.73498
S	CH4_RUNEX	0.004036	0.01117	0.006026	0.011778	0.019328	0.008956	0.00441	0.011592
S	CH4_STREX	0.004277	0.013218	0.006158	0.015158	0.01662	0.006721	0.049464	0.072406
S	CO_IDLEX	0	0	0	0	0.137778	0.117581	0.203054	1.339876
S	CO_RUNEX	0.612788	1.451579	0.844396	1.378406	1.211693	0.690118	0.360152	0.595105
S	CO_STREX	0.930225	2.541225	1.288794	2.608117	2.12439	1.041298	4.588493	1.328166
S	CO2_NBIO_IDLEX	0	0	0	0	9.364603	14.482991	175.650734	5774.64565
S	CO2_NBIO_RUNEX	265.042199	331.812069	373.988344	516.36951	687.2179	708.214295	1198.068125	1512.403876
S	CO2_NBIO_STREX	55.657038	69.683399	78.261891	107.566637	28.264377	22.053022	46.73168	4.556531
S	NOX_IDLEX	0	0	0	0	0.094892	0.114089	0.470591	16.145529
S	NOX_RUNEX	0.041501	0.118332	0.069751	0.134844	1.917057	1.158411	1.129024	1.718571
S	NOX_STREX	0.06174	0.166393	0.113682	0.268986	0.866879	0.421458	12.813528	20.302329
S	PM10_IDLEX	0	0	0	0	0.001054	0.001331	0.000109	0.004301
S	PM10_PMBW	0.03675	0.03675	0.03675	0.03675	0.07644	0.08918	0.13034	0.061096
S	PM10_PMTW	0.008	0.008	0.008	0.008	0.010264	0.010845	0.012	0.035568
S	PM10_RUNEX	0.001599	0.002413	0.001623	0.001686	0.022252	0.017834	0.003187	0.005927
S	PM10_STREX	0.002278	0.003472	0.00237	0.002433	0.000839	0.00039	0.000736	0.000034
S	PM25_IDLEX	0	0	0	0	0.001009	0.001273	0.000105	0.004115
S	PM25_PMBW	0.01575	0.01575	0.01575	0.01575	0.03276	0.03822	0.05586	0.026184
S	PM25_PMTW	0.002	0.002	0.002	0.002	0.002566	0.002711	0.003	0.008892
S	PM25_RUNEX	0.001473	0.002222	0.001492	0.001555	0.021249	0.017041	0.003044	0.00567
S	PM25_STREX	0.002095	0.003193	0.002179	0.002238	0.000772	0.000359	0.000677	0.000031
S	ROG_DIURN	0.0985	0.375927	0.140241	0.222764	0.007271	0.002635	0.00271	0.000129
S	ROG_HTSK	0.118538	0.381026	0.146281	0.241719	0.114809	0.040291	0.046154	0.002374
S	ROG_IDLEX	0	0	0	0	0.015717	0.013024	0.018859	0.463459
S	ROG_RESTL	0.063727	0.21927	0.096821	0.160032	0.002748	0.001043	0.00104	0.000059
S	ROG_RUNEX	0.01013	0.027782	0.014944	0.029441	0.150383	0.120914	0.047343	0.083052
S	ROG_RUNLS	0.032254	0.180663	0.066284	0.118158	0.302268	0.075901	0.017594	0.000155
S	ROG_STREX	0.057681	0.178262	0.083053	0.204423	0.224133	0.090644	0.278633	0.032082
S	SO2_IDLEX	0	0	0	0	0.000093	0.000141	0.001684	0.05499
S	SO2_RUNEX	0.002654	0.003336	0.003747	0.005174	0.006731	0.00688	0.011482	0.014402

Season	EmissionType	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD
S	SO2_STREX	0.000572	0.000741	0.000804	0.001121	0.000323	0.000239	0.000548	0.000067
S	TOG_DIURN	0.0985	0.375927	0.140241	0.222764	0.007271	0.002635	0.00271	0.000129
S	TOG_HTSK	0.118538	0.381026	0.146281	0.241719	0.114809	0.040291	0.046154	0.002374
S	TOG_IDLEX	0	0	0	0	0.021537	0.017132	0.026294	0.530264
S	TOG_RESTL	0.063727	0.21927	0.096821	0.160032	0.002748	0.001043	0.00104	0.000059
S	TOG_RUNEX	0.014729	0.040486	0.021795	0.042846	0.182272	0.140648	0.05588	0.102306
S	TOG_RUNLS	0.032254	0.180663	0.066284	0.118158	0.302268	0.075901	0.017594	0.000155
S	TOG_STREX	0.063152	0.195172	0.090933	0.223814	0.245398	0.099244	0.305068	0.035126
W	FleetMix	0.56138	0.034626	0.184829	0.116141	0.016642	0.004535	0.016185	0.056706
W	CH4_IDLEX	0	0	0	0	0.004792	0.003175	0.017266	0.841922
W	CH4_RUNEX	0.003378	0.009509	0.005061	0.00992	0.018335	0.008712	0.004246	0.011558
W	CH4_STREX	0.006045	0.018843	0.008706	0.021466	0.018731	0.007501	0.055824	0.081783
W	CO_IDLEX	0	0	0	0	0.137778	0.117581	0.385797	2.53998
W	CO_RUNEX	0.473834	1.160134	0.657918	1.080843	1.17015	0.679563	0.351161	0.588558
W	CO_STREX	1.386294	3.83566	1.920697	3.894641	2.494452	1.213477	5.402825	1.563457
W	CO2_NBIO_IDLEX	0	0	0	0	9.364603	14.482991	152.244541	5003.604833
W	CO2_NBIO_RUNEX	235.897619	296.792207	333.782587	462.243191	687.2179	708.214295	1198.068125	1512.403876
W	CO2_NBIO_STREX	55.657038	69.683399	78.261891	107.566637	28.264377	22.053022	46.73168	4.556531
W	NOX_IDLEX	0	0	0	0	0.094892	0.114089	0.435661	14.947508
W	NOX_RUNEX	0.049951	0.144899	0.084448	0.1634	2.066551	1.242333	1.214597	1.837967
W	NOX_STREX	0.07461	0.201168	0.137364	0.325052	0.988439	0.473686	12.905025	20.317457
W	PM10_IDLEX	0	0	0	0	0.001054	0.001331	0.000158	0.006206
W	PM10_PMBW	0.03675	0.03675	0.03675	0.03675	0.07644	0.08918	0.13034	0.061096
W	PM10_PMTW	0.008	0.008	0.008	0.008	0.010264	0.010845	0.012	0.035568
W	PM10_RUNEX	0.001599	0.002413	0.001623	0.001686	0.022252	0.017834	0.003187	0.005927
W	PM10_STREX	0.002278	0.003472	0.00237	0.002433	0.000839	0.00039	0.000736	0.000034
W	PM25_IDLEX	0	0	0	0	0.001009	0.001273	0.000151	0.005937
W	PM25_PMBW	0.01575	0.01575	0.01575	0.01575	0.03276	0.03822	0.05586	0.026184
W	PM25_PMTW	0.002	0.002	0.002	0.002	0.002566	0.002711	0.003	0.008892
W	PM25_RUNEX	0.001473	0.002222	0.001492	0.001555	0.021249	0.017041	0.003044	0.00567
W	PM25_STREX	0.002095	0.003193	0.002179	0.002238	0.000772	0.000359	0.000677	0.000031
W	ROG_DIURN	0.013627	0.050013	0.020111	0.033257	0.001053	0.00039	0.000363	0.00002
W	ROG_HTSK	0.104228	0.327459	0.128131	0.216829	0.10628	0.0365	0.040117	0.002173
W	ROG_IDLEX	0	0	0	0	0.015717	0.013024	0.021719	0.530893
W	ROG_RESTL	0.012654	0.042726	0.019759	0.033702	0.000635	0.000243	0.000216	0.000013
W	ROG_RUNEX	0.008499	0.023667	0.012554	0.024837	0.147926	0.12031	0.046938	0.082969

Season	EmissionType	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD
W	ROG_RUNLS	0.039163	0.229575	0.083726	0.147212	0.338873	0.085439	0.019963	0.000174
W	ROG_STREX	0.081525	0.254125	0.117416	0.289499	0.252616	0.101154	0.314455	0.036238
W	SO2_IDLEX	0	0	0	0	0.000093	0.000141	0.001463	0.047647
W	SO2_RUNEX	0.002361	0.002982	0.003342	0.004628	0.00673	0.00688	0.011482	0.014402
W	SO2_STREX	0.00058	0.000764	0.000815	0.001144	0.00033	0.000243	0.000562	0.000071
W	TOG_DIURN	0.013627	0.050013	0.020111	0.033257	0.001053	0.00039	0.000363	0.00002
W	TOG_HTSK	0.104228	0.327459	0.128131	0.216829	0.10628	0.0365	0.040117	0.002173
W	TOG_IDLEX	0	0	0	0	0.021537	0.017132	0.030289	0.607419
W	TOG_RESTL	0.012654	0.042726	0.019759	0.033702	0.000635	0.000243	0.000216	0.000013
W	TOG_RUNEX	0.01235	0.034483	0.018307	0.03613	0.178686	0.139766	0.055288	0.102185
W	TOG_RUNLS	0.039163	0.229575	0.083726	0.147212	0.338873	0.085439	0.019963	0.000174
W	TOG_STREX	0.089258	0.278232	0.128555	0.316959	0.276582	0.110751	0.344289	0.039676

Season	EmissionType	OBUS	UBUS	MCY	SBUS	MH
A	FleetMix	0.001192	0.001407	0.004983	0.000606	0.000767
A	CH4_IDLEX	0.011872	0	0	0.834796	0
A	CH4_RUNEX	0.012135	1.384831	0.427193	0.012251	0.034417
A	CH4_STREX	0.030281	0.0678	0.163103	0.069981	0.025534
A	CO_IDLEX	0.245169	0	0	6.224282	0
A	CO_RUNEX	0.747829	8.316027	21.252726	0.742672	2.430328
A	CO_STREX	6.353634	13.196881	10.122356	6.349638	5.919886
A	CO2_NBIO_IDLEX	64.810288	0	0	1220.877231	0
A	CO2_NBIO_RUNEX	1290.176496	1955.803554	169.780695	1103.640936	1226.008162
A	CO2_NBIO_STREX	70.642459	108.79107	46.814775	41.304286	58.277747
A	NOX_IDLEX	0.122122	0	0	10.525418	0
A	NOX_RUNEX	0.723684	8.319114	1.177831	4.193449	1.696584
A	NOX_STREX	1.972783	15.083585	0.317544	14.339287	0.87519
A	PM10_IDLEX	0.000011	0	0	0.01012	0
A	PM10_PMBW	0.13034	0.585014	0.01176	0.7448	0.13034
A	PM10_PMTW	0.012	0.012	0.004	0.010834	0.012931
A	PM10_RUNEX	0.002174	0.140416	0.001866	0.022965	0.035207
A	PM10_STREX	0.000904	0.001132	0.003498	0.000633	0.001119
A	PM25_IDLEX	0.000011	0	0	0.009682	0
A	PM25_PMBW	0.05586	0.25072	0.00504	0.3192	0.05586
A	PM25_PMTW	0.003	0.003	0.001	0.002709	0.003233
A	PM25_RUNEX	0.002051	0.13431	0.001747	0.021957	0.033626
A	PM25_STREX	0.000831	0.001041	0.003298	0.000582	0.001029
A	ROG_DIURN	0.001808	0.004982	1.315166	0.003184	1.1974
A	ROG_HTSK	0.020828	0.068388	0.875988	0.025598	0.083869
A	ROG_IDLEX	0.031056	0	0	0.739242	0
A	ROG_RESTL	0.00067	0.002015	0.678661	0.001151	0.351017
A	ROG_RUNEX	0.048979	0.61982	2.245344	0.107824	0.11431
A	ROG_RUNLS	0.051748	0.013889	0.599215	0.011551	0.024814
A	ROG_STREX	0.390513	0.91436	2.226145	0.315981	0.344356
A	SO2_IDLEX	0.000631	0	0	0.011857	0
A	SO2_RUNEX	0.012677	0.012613	0.002109	0.010622	0.012171
A	SO2_STREX	0.000818	0.001323	0.000699	0.000522	0.000686
A	TOG_DIURN	0.001808	0.004982	1.315166	0.003184	1.1974
A	TOG_HTSK	0.020828	0.068388	0.875988	0.025598	0.083869
A	TOG_IDLEX	0.044244	0	0	1.061463	0

Season	EmissionType	OBUS	UBUS	MCY	SBUS	MH
A	TOG_RESTL	0.00067	0.002015	0.678661	0.001151	0.351017
A	TOG_RUNEX	0.064603	2.069018	2.754059	0.129245	0.156241
A	TOG_RUNLS	0.051748	0.013889	0.599215	0.011551	0.024814
A	TOG_STREX	0.427563	1.001109	2.421852	0.345959	0.377026
S	FleetMix	0.001192	0.001407	0.004983	0.000606	0.000767
S	CH4_IDLEX	0.011863	0	0	0.834366	0
S	CH4_RUNEX	0.012496	1.38742	0.41575	0.012524	0.036068
S	CH4_STREX	0.028244	0.059622	0.136768	0.057503	0.023705
S	CO_IDLEX	0.241555	0	0	6.092947	0
S	CO_RUNEX	0.767865	8.397413	20.987202	0.758423	2.528776
S	CO_STREX	5.746939	10.595228	9.02131	4.45754	5.321392
S	CO2_NBIO_IDLEX	67.631583	0	0	1281.308016	0
S	CO2_NBIO_RUNEX	1290.176496	1955.803554	169.780695	1103.640936	1226.008162
S	CO2_NBIO_STREX	70.642459	108.79107	46.814775	41.304286	58.277747
S	NOX_IDLEX	0.125974	0	0	10.862103	0
S	NOX_RUNEX	0.673359	7.864747	1.018402	3.976542	1.577995
S	NOX_STREX	1.904282	14.968561	0.291898	14.304497	0.81828
S	PM10_IDLEX	0.000009	0	0	0.008531	0
S	PM10_PMBW	0.13034	0.585014	0.01176	0.7448	0.13034
S	PM10_PMTW	0.012	0.012	0.004	0.010834	0.012931
S	PM10_RUNEX	0.002174	0.140416	0.001866	0.022965	0.035207
S	PM10_STREX	0.000904	0.001132	0.003498	0.000633	0.001119
S	PM25_IDLEX	0.000009	0	0	0.008162	0
S	PM25_PMBW	0.05586	0.25072	0.00504	0.3192	0.05586
S	PM25_PMTW	0.003	0.003	0.001	0.002709	0.003233
S	PM25_RUNEX	0.002051	0.13431	0.001747	0.021957	0.033626
S	PM25_STREX	0.000831	0.001041	0.003298	0.000582	0.001029
S	ROG_DIURN	0.00441	0.012694	3.457024	0.007781	2.968926
S	ROG_HTSK	0.022951	0.087385	1.281222	0.027363	0.096063
S	ROG_IDLEX	0.030863	0	0	0.736147	0
S	ROG_RESTL	0.001274	0.004225	1.762183	0.00219	0.682484
S	ROG_RUNEX	0.049872	0.626227	2.170407	0.1085	0.118394
S	ROG_RUNLS	0.050837	0.012998	0.575081	0.009937	0.024418
S	ROG_STREX	0.364237	0.804069	1.866543	0.25964	0.319685
S	SO2_IDLEX	0.000658	0	0	0.012434	0
S	SO2_RUNEX	0.012678	0.012615	0.002102	0.010622	0.012172

Season	EmissionType	OBUS	UBUS	MCY	SBUS	MH
S	SO2_STREX	0.000807	0.001279	0.00067	0.000491	0.000676
S	TOG_DIURN	0.00441	0.012694	3.457024	0.007781	2.968926
S	TOG_HTSK	0.022951	0.087385	1.281222	0.027363	0.096063
S	TOG_IDLEX	0.044025	0	0	1.057939	0
S	TOG_RESTL	0.001274	0.004225	1.762183	0.00219	0.682484
S	TOG_RUNEX	0.065906	2.078367	2.665207	0.130232	0.162201
S	TOG_RUNLS	0.050837	0.012998	0.575081	0.009937	0.024418
S	TOG_STREX	0.398794	0.880354	2.030731	0.284273	0.350015
W	FleetMix	0.001192	0.001407	0.004983	0.000606	0.000767
W	CH4_IDLEX	0.011885	0	0	0.835389	0
W	CH4_RUNEX	0.011785	1.382562	0.445176	0.012	0.032908
W	CH4_STREX	0.032193	0.075817	0.193417	0.081909	0.027325
W	CO_IDLEX	0.250159	0	0	6.405649	0
W	CO_RUNEX	0.728897	8.244326	23.017091	0.72847	2.339724
W	CO_STREX	6.962722	15.883024	11.676289	8.337987	6.545363
W	CO2_NBIO_IDLEX	60.914215	0	0	1137.425193	0
W	CO2_NBIO_RUNEX	1290.176496	1955.803554	169.780695	1103.640936	1226.008162
W	CO2_NBIO_STREX	70.642459	108.79107	46.814775	41.304286	58.277747
W	NOX_IDLEX	0.116803	0	0	10.060472	0
W	NOX_RUNEX	0.748284	8.498525	1.278149	4.278483	1.755366
W	NOX_STREX	2.044984	15.195959	0.342362	14.372368	0.935118
W	PM10_IDLEX	0.000013	0	0	0.012314	0
W	PM10_PMBW	0.13034	0.585014	0.01176	0.7448	0.13034
W	PM10_PMTW	0.012	0.012	0.004	0.010834	0.012931
W	PM10_RUNEX	0.002174	0.140416	0.001866	0.022965	0.035207
W	PM10_STREX	0.000904	0.001132	0.003498	0.000633	0.001119
W	PM25_IDLEX	0.000013	0	0	0.011781	0
W	PM25_PMBW	0.05586	0.25072	0.00504	0.3192	0.05586
W	PM25_PMTW	0.003	0.003	0.001	0.002709	0.003233
W	PM25_RUNEX	0.002051	0.13431	0.001747	0.021957	0.033626
W	PM25_STREX	0.000831	0.001041	0.003298	0.000582	0.001029
W	ROG_DIURN	0.000682	0.001808	0.351909	0.001203	0.399536
W	ROG_HTSK	0.021067	0.073592	0.953673	0.025715	0.096013
W	ROG_IDLEX	0.031322	0	0	0.743517	0
W	ROG_RESTL	0.000358	0.001015	0.213559	0.000617	0.184264
W	ROG_RUNEX	0.048114	0.614204	2.357682	0.107203	0.110575

Season	EmissionType	OBUS	UBUS	MCY	SBUS	MH
W	ROG_RUNLS	0.056308	0.017282	0.702658	0.014839	0.026529
W	ROG_STREX	0.41516	1.02248	2.640143	0.36984	0.368507
W	SO2_IDLEX	0.000594	0	0	0.011061	0
W	SO2_RUNEX	0.012677	0.012612	0.002141	0.010622	0.012169
W	SO2_STREX	0.000828	0.001369	0.000737	0.000555	0.000697
W	TOG_DIURN	0.000682	0.001808	0.351909	0.001203	0.399536
W	TOG_HTSK	0.021067	0.073592	0.953673	0.025715	0.096013
W	TOG_IDLEX	0.044547	0	0	1.066328	0
W	TOG_RESTL	0.000358	0.001015	0.213559	0.000617	0.184264
W	TOG_RUNEX	0.06334	2.060824	2.888161	0.128339	0.150791
W	TOG_RUNLS	0.056308	0.017282	0.702658	0.014839	0.026529
W	TOG_STREX	0.454548	1.119487	2.872098	0.404928	0.403469

RoadPercentPave	RoadSiltLoading	MaterialSiltContent	MaterialMoistureContent	MobileAverageVehicleWeight	MeanVehicleSpeed	CARB_PM_VMT
100	0.1	4.3	0.5	2.4	40	0

WoodstovesLandUseSubType	NumberConventional	NumberCatalytic	NumberNoncatalytic	NumberPellet	WoodstoveDayYear	WoodstoveWoodMass
User Defined Residential	0	0	0	0	82	3019.2

FireplacesLandUseSubType	NumberWood	NumberGas	NumberPropane	NumberNoFireplace	FireplaceHourDay	FireplaceDayYear	FireplaceWoodMass
User Defined Residential	0	0	0	0	3	82	3078.4

ROG_EF	ROG_EF_Degreaser	ROG_EF_PesticidesFertilizers
0.0000214	3.542E-07	5.152E-08

Area_EF_Residential_Interior	Area_Residential_Interior	Area_EF_Residential_Exterior	Area_Residential_Exterior
150	0	150	0

Area_EF_Nonresidential_Interior	Area_Nonresidential_Interior	Area_EF_Nonresidential_Exterior	Area_Nonresidential_Exterior
150	0	150	0

ReapplicationRatePercent	Area_EF_Parking	Area_Parking
10	150	0

NumberSnowDays	NumberSummerDays
0	180

EnergyUseLandUseSubType	T24E	NT24E	LightingElect	T24NG	NT24NG
Other Asphalt Surfaces	0	0	0	0	0
User Defined Commercial	0	0	0	0	0
User Defined Residential	0	0	0	0	0

WaterLandUseSubType	WaterLandUseSizeMetric	IndoorWaterUseRate	OutdoorWaterUseRate	ElectricityIntensityFactorToSupply
Other Asphalt Surfaces	Acre	0	0	2117
User Defined Commercial	User Defined Unit	0	0	2117
User Defined Residential	Dwelling Unit	0	0	2117

WaterLandUseSubType	WaterLandUseSizeMetric	ElectricityIntensityFactorToTreat	ElectricityIntensityFactorToDistribute
Other Asphalt Surfaces	Acre	111	1272
User Defined Commercial	User Defined Unit	111	1272
User Defined Residential	Dwelling Unit	111	1272

WaterLandUseSubType	WaterLandUseSizeMetric	ElectricityIntensityFactorForWastewaterTreatment	SepticTankPercent
Other Asphalt Surfaces	Acre	1911	10.33
User Defined Commercial	User Defined Unit	1911	10.33
User Defined Residential	Dwelling Unit	1911	10.33

WaterLandUseSubType	WaterLandUseSizeMetric	AerobicPercent	AnaerobicandFacultativeLagoonsPercent
Other Asphalt Surfaces	Acre	87.46	2.21
User Defined Commercial	User Defined Unit	87.46	2.21
User Defined Residential	Dwelling Unit	87.46	2.21

WaterLandUseSubType	WaterLandUseSizeMetric	AnaDigestCombDigestGasPercent	AnaDigestCogenCombDigestGasPercent	
Other Asphalt Surfaces	Acre	100		0
User Defined Commercial	User Defined Unit	100		0
User Defined Residential	Dwelling Unit	100		0

SolidWasteLandUseSubType	SolidWasteLandUseSizeMetric	SolidWasteGenerationRate	LandfillNoGasCapture	LandfillCaptureGasFlare
Other Asphalt Surfaces	Acre	0	6	94
User Defined Commercial	User Defined Unit	0	6	94
User Defined Residential	Dwelling Unit	0	6	94

LandfillCaptureGasEnergyRecovery
0
0
0

tblLandUseChange

VegetationLandUseType	VegetationLandUseSubType	AcresBegin	AcresEnd	CO2peracre

tblSequestration

BroadSpeciesClass	NumberOfNewTrees	CO2perTree

ConstMitigationEquipmentType	FuelType	Tier	NumberOfEquipmentMitigated	TotalNumberOfEquipmentMitigated	DPF	OxidationCatalyst
Aerial Lifts	Diesel	No Change	0	3	No Change	0
Air Compressors	Diesel	No Change	0	2	No Change	0
Bore/Drill Rigs	Diesel	No Change	0	1	No Change	0
Cranes	Diesel	No Change	0	14	No Change	0
Excavators	Diesel	No Change	0	4	No Change	0
Forklifts	Diesel	No Change	0	5	No Change	0
Generator Sets	Diesel	No Change	0	1	No Change	0
Graders	Diesel	No Change	0	1	No Change	0
Off-Highway Trucks	Diesel	No Change	0	17	No Change	0
Other Construction Equipment	Diesel	No Change	0	2	No Change	0
Other General Industrial Equipment	Diesel	No Change	0	3	No Change	0
Rollers	Diesel	No Change	0	2	No Change	0
Rubber Tired Dozers	Diesel	No Change	0	1	No Change	0
Scrapers	Diesel	No Change	0	1	No Change	0
Skid Steer Loaders	Diesel	No Change	0	2	No Change	0
Tractors/Loaders/Backhoes	Diesel	No Change	0	10	No Change	0
Trenchers	Diesel	No Change	0	1	No Change	0

tblConstDustMitigation

SoilStabilizerCheck	SoilStabilizerPM10PercentReduction	SoilStabilizerPM25PercentReduction	ReplaceGroundCoverCheck
0			0

ReplaceGroundCoverPM10PercentReduction	ReplaceGroundCoverPM25PercentReduction	WaterExposedAreaCheck
		0

WaterExposedAreaFrequency	WaterExposedAreaPM10PercentReduction	WaterExposedAreaPM25PercentReduction

WaterUnpavedRoadMoistureContentCheck	WaterUnpavedRoadVehicleSpeedCheck	WaterUnpavedRoadMoistureContent
0	0	

WaterUnpavedRoadVehicleSpeed	CleanPavedRoadPercentReduction
	0

ProjectSetting	IncreaseDensityCheck	IncreaseDensityDUPerAcre	IncreaseDensityJobPerAcre	IncreaseDiversityCheck

ImproveWalkabilityDesignCheck	ImproveWalkabilityDesignIntersections	ImproveDestinationAccessibilityCheck

ImproveDestinationAccessibilityDistance	IncreaseTransitAccessibilityCheck	IncreaseTransitAccessibilityDistance

IntegrateBelowMarketRateHousingCheck	IntegrateBelowMarketRateHousingDU	ImprovePedestrianNetworkCheck

ImprovePedestrianNetworkSelection	ProvideTrafficCalmingMeasuresCheck	ProvideTrafficCalmingMeasuresPercentStreet

ProvideTrafficCalmingMeasuresPercentIntersection	ImplementNEVNetworkCheck	LimitParkingSupplyCheck

LimitParkingSupplySpacePercentReduction	UnbundleParkingCostCheck	UnbundleParkingCostCost	OnStreetMarketPricingCheck

OnStreetMarketPricingPricePercentIncrease	ProvideBRTSystemCheck	ProvideBRTSystemPercentBRT	ExpandTransitNetworkCheck

ExpandTransitNetworkTransitCoveragePercentIncrease	IncreaseTransitFrequencyCheck	IncreaseTransitFrequencyImplementationLevel

IncreaseTransitFrequencyHeadwaysPercentReduction

ImplementTripReductionProgramCheck	ImplementTripReductionProgramPercentEmployee	ImplementTripReductionProgramType
	0	

TransitSubsidyCheck	TransitSubsidyPercentEmployee	TransitSubsidyDailySubsidyAmount	ImplementEmployeeParkingCashOutCheck
0			0

ImplementEmployeeParkingCashOutPercentEmployee	WorkplaceParkingChargeCheck	WorkplaceParkingChargePercentEmployee
		0

WorkplaceParkingChargeCost	EncourageTelecommutingCheck	EncourageTelecommutingPercentEmployee9_80
		0

EncourageTelecommutingPercentEmployee4_40	EncourageTelecommutingPercentEmployee1_5days

MarketCommuteTripReductionOptionCheck	MarketCommuteTripReductionOptionPercentEmployee	EmployeeVanpoolCheck
0		0

EmployeeVanpoolPercentEmployee	EmployeeVanpoolPercentModeShare	ProvideRideSharingProgramCheck
2		0

ProvideRideSharingProgramPercentEmployee	ImplementSchoolBusProgramCheck	ImplementSchoolBusProgramPercentFamilyUsing
		0

LandscapeLawnmowerCheck	LandscapeLawnmowerPercentElectric	LandscapeLeafblowerCheck	LandscapeLeafblowerPercentElectric
	0		0

LandscapeChainsawCheck	LandscapeChainsawPercentElectric	UseLowVOCPaintResidentialInteriorCheck
0		0

UseLowVOCPaintResidentialInteriorValue	UseLowVOCPaintResidentialExteriorCheck	UseLowVOCPaintResidentialExteriorValue
150	0	150

UseLowVOCPaintNonresidentialInteriorCheck	UseLowVOCPaintNonresidentialInteriorValue
0	150

UseLowVOCPaintNonresidentialExteriorCheck	UseLowVOCPaintNonresidentialExteriorValue	HearthOnlyNaturalGasHearthCheck
0	150	0

NoHearthCheck	UseLowVOCCleaningSuppliesCheck	UseLowVOCPaintParkingCheck	UseLowVOCPaintParkingValue
0	0	0	150

ExceedTitle24Check	ExceedTitle24CheckPercentImprovement	InstallHighEfficiencyLightingCheck

InstallHighEfficiencyLightingPercentEnergyReduction	OnSiteRenewableEnergyCheck	KwhGeneratedCheck	KwhGenerated

PercentOfElectricityUseGeneratedCheck	PercentOfElectricityUseGenerated

ApplianceType	ApplianceLandUseSubType	PercentImprovement
ClothWasher		30
DishWasher		15
Fan		50
Refrigerator		15

ApplyWaterConservationStrategyCheck	ApplyWaterConservationStrategyPercentReductionIndoor
	0

ApplyWaterConservationStrategyPercentReductionOutdoor	UseReclaimedWaterCheck	PercentOutdoorReclaimedWaterUse
		0

PercentIndoorReclaimedWaterUse	UseGreyWaterCheck	PercentOutdoorGreyWaterUse	PercentIndoorGreyWaterUse
	0		

InstallLowFlowBathroomFaucetCheck	PercentReductionInFlowBathroomFaucet	InstallLowFlowKitchenFaucetCheck
0	32	0

PercentReductionInFlowKitchenFaucet	InstallLowFlowToiletCheck	PercentReductionInFlowToilet	InstallLowFlowShowerCheck
18	0	20	0

PercentReductionInFlowShower	TurfReductionCheck	TurfReductionTurfArea	TurfReductionPercentReduction
20	0		

UseWaterEfficientIrrigationSystemCheck	UseWaterEfficientIrrigationSystemPercentReduction	WaterEfficientLandscapeCheck	MAWA
0	6.1	0	

ETWU

InstituteRecyclingAndCompostingServicesCheck	InstituteRecyclingAndCompostingServicesWastePercentReduction

tblOperationalOffRoadEquipment

OperOffRoadEquipmentType	OperOffRoadEquipmentNumber	OperHoursPerDay	OperDaysPerYear	OperHorsePower	OperLoadFactor	OperFuelType

FleetMixLandUseSubType	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Other Asphalt Surfaces	0.56138	0.034626	0.184829	0.116141	0.016642	0.004535	0.016185	0.056706	0.001192	0.001407	0.004983	0.000606	0.000767
User Defined Commercial	0.56138	0.034626	0.184829	0.116141	0.016642	0.004535	0.016185	0.056706	0.001192	0.001407	0.004983	0.000606	0.000767
User Defined Residential	0.56138	0.034626	0.184829	0.116141	0.016642	0.004535	0.016185	0.056706	0.001192	0.001407	0.004983	0.000606	0.000767

GeneratorsPumpsEquipmentType	NumberOfEquipment	GeneratorsPumpsFuelType	HorsePowerValue	Load_Factor	HoursPerDay	HoursPerYear	GeneratorsPumpsEquipmentDescription

BoilerEquipmentType	NumberOfEquipment	BoilerFuelType	BoilerRatingValue	DailyHeatInput	AnnualHeatInput	BoilerEquipmentDescription

UserDefinedEquipmentType	UserDefinedFuelTypes	TOG_lb_day	TOG_tpy	ROG_lb_day	ROG_tpy	CO_lb_day	CO_tpy	NOX_lb_day

NOX_tpy	SO2_lb_day	SO2_tpy	PM10_lb_day	PM10_tpy	PM2_5_lb_day	PM2_5_tpy	CO2_lb_day	CO2_tpy	CH4_lb_day	CH4_tpy

GeneratorsPumpsEquipmentDescriptionEF	TOG_EF	TOG_EF_UOM	ROG_EF	ROG_EF_UOM	CO_EF	CO_EF_UOM	NOX_EF	NOX_EF_UOM

SO2_EF	SO2_EF_UOM	PM10_EF	PM10_EF_UOM	PM2_5_EF	PM2_5_EF_UOM	CO2_EF	CO2_EF_UOM	CH4_EF	CH4_EF_UOM

BoilerEquipmentDescriptionEF	TOG_EF	TOG_EF_UOM	ROG_EF	ROG_EF_UOM	CO_EF	CO_EF_UOM	NOX_EF	NOX_EF_UOM

SO2_EF	SO2_EF_UOM	PM10_EF	PM10_EF_UOM	PM2_5_EF	PM2_5_EF_UOM	CO2_EF	CO2_EF_UOM	CH4_EF	CH4_EF_UOM

SubModuleID	PhaseName	Season	Remarks
1			
3			Substation expansion area
4			Project specific inputs
5	Phase 1 - Site Preparation		Project specific inputs.
5	Phase 5A - Substation Expansion		Project specific inputs
5	Phase 5B - Substation Expansion		Project specific inputs
5	Phase 5C - Substation Expansion		Project specific inputs
6			Project specific inputs.
9			Only substation expansion area being graded.
13		A	
13		S	
13		W	

Vierra Reinforcement Project

San Joaquin County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Commercial	0.00	User Defined Unit	0.00	0.00	0
Other Asphalt Surfaces	0.00	Acre	0.00	0.00	0
User Defined Residential	0.00	Dwelling Unit	0.00	0.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.7	**Precipitation Freq (Days)**	51
Climate Zone	2			**Operational Year**	2023
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Substation expansion area

Construction Phase - Project specific inputs

Off-road Equipment - Project specific inputs.

Off-road Equipment - Project specific inputs

Off-road Equipment - Project specific inputs

Off-road Equipment - Project specific inputs

Trips and VMT - Project specific inputs.

Grading - Only substation expansion area being graded.

Vehicle Emission Factors -

Vehicle Emission Factors -

Vehicle Emission Factors -

Table Name	Column Name	Default Value	New Value
tblFleetMix	FleetMixLandUseSubType	User Defined Commercial	Other Asphalt Surfaces
tblFleetMix	FleetMixLandUseSubType	Other Asphalt Surfaces	User Defined Commercial
tblGrading	AcresOfGrading	56.25	2.80
tblGrading	MaterialExported	0.00	1,020.00
tblGrading	MaterialImported	0.00	10,000.00
tblOffRoadEquipment	HorsePower	158.00	50.00
tblOffRoadEquipment	HorsePower	402.00	250.00
tblOffRoadEquipment	HorsePower	172.00	9.00
tblOffRoadEquipment	HorsePower	172.00	20.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	3.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00

tblOffRoadEquipment	UsageHours	4.00	6.00
tblOffRoadEquipment	UsageHours	4.00	10.00
tblOffRoadEquipment	UsageHours	4.00	10.00
tblOffRoadEquipment	UsageHours	4.00	10.00
tblOffRoadEquipment	UsageHours	4.00	10.00
tblOffRoadEquipment	UsageHours	4.00	2.00
tblOffRoadEquipment	UsageHours	6.00	2.00
tblOffRoadEquipment	UsageHours	6.00	5.00
tblOffRoadEquipment	UsageHours	6.00	1.67
tblOffRoadEquipment	UsageHours	6.00	3.33
tblOffRoadEquipment	UsageHours	1.00	6.00
tblOffRoadEquipment	UsageHours	8.00	10.00
tblOffRoadEquipment	UsageHours	8.00	10.00
tblOffRoadEquipment	UsageHours	8.00	10.00
tblOffRoadEquipment	UsageHours	8.00	10.00
tblOffRoadEquipment	UsageHours	8.00	10.00
tblOffRoadEquipment	UsageHours	8.00	10.00
tblOffRoadEquipment	UsageHours	8.00	2.00
tblOffRoadEquipment	UsageHours	8.00	3.33
tblOffRoadEquipment	UsageHours	8.00	10.00
tblProjectCharacteristics	OperationalYear	2018	2023
tblTripsAndVMT	HaulingTripNumber	0.00	800.00
tblTripsAndVMT	HaulingTripNumber	0.00	28.00
tblTripsAndVMT	HaulingTripNumber	0.00	4.00
tblTripsAndVMT	HaulingTripNumber	0.00	4.00
tblTripsAndVMT	HaulingTripNumber	0.00	4.00
tblTripsAndVMT	HaulingTripNumber	0.00	82.00
tblTripsAndVMT	VendorTripLength	7.30	30.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	VendorTripNumber	0.00	20.00

tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	VendorTripNumber	0.00	14.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	0.00	16.00
tblTripsAndVMT	VendorTripNumber	0.00	12.00
tblTripsAndVMT	WorkerTripNumber	5.00	4.00
tblTripsAndVMT	WorkerTripNumber	0.00	30.00
tblTripsAndVMT	WorkerTripNumber	0.00	30.00
tblTripsAndVMT	WorkerTripNumber	0.00	30.00
tblTripsAndVMT	WorkerTripNumber	0.00	30.00
tblTripsAndVMT	WorkerTripNumber	0.00	30.00
tblTripsAndVMT	WorkerTripNumber	0.00	6.00
tblTripsAndVMT	WorkerTripNumber	0.00	6.00
tblTripsAndVMT	WorkerTripNumber	18.00	16.00
tblTripsAndVMT	WorkerTripNumber	28.00	38.00
tblTripsAndVMT	WorkerTripNumber	28.00	0.00
tblTripsAndVMT	WorkerTripNumber	0.00	8.00
tblTripsAndVMT	WorkerTripNumber	0.00	12.00
tblTripsAndVMT	WorkerTripNumber	0.00	36.00
tblTripsAndVMT	WorkerTripNumber	0.00	14.00
tblTripsAndVMT	WorkerTripNumber	0.00	10.00

tblTripsAndVMT	WorkerTripNumber	0.00	10.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2020	0.3657	3.6864	2.7361	6.4500e-003	0.1968	0.1616	0.3584	0.0836	0.1497	0.2333	0.0000	573.1519	573.1519	0.1407	0.0000	576.6688
2021	2.2100e-003	1.8400e-003	0.0154	5.0000e-005	4.7800e-003	3.0000e-005	4.8100e-003	1.2700e-003	3.0000e-005	1.3000e-003	0.0000	4.1380	4.1380	1.1000e-004	0.0000	4.1407
Maximum	**0.3657**	**3.6864**	**2.7361**	**6.4500e-003**	**0.1968**	**0.1616**	**0.3584**	**0.0836**	**0.1497**	**0.2333**	**0.0000**	**573.1519**	**573.1519**	**0.1407**	**0.0000**	**576.6688**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2020	0.3657	3.6864	2.7361	6.4500e-003	0.1968	0.1616	0.3584	0.0836	0.1497	0.2333	0.0000	573.1514	573.1514	0.1407	0.0000	576.6682
2021	2.2100e-003	1.8400e-003	0.0154	5.0000e-005	4.7800e-003	3.0000e-005	4.8100e-003	1.2700e-003	3.0000e-005	1.3000e-003	0.0000	4.1380	4.1380	1.1000e-004	0.0000	4.1407
Maximum	**0.3657**	**3.6864**	**2.7361**	**6.4500e-003**	**0.1968**	**0.1616**	**0.3584**	**0.0836**	**0.1497**	**0.2333**	**0.0000**	**573.1514**	**573.1514**	**0.1407**	**0.0000**	**576.6682**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
2	4-1-2020	6-30-2020	0.2159	0.2159
		Highest	0.2159	0.2159

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Phase 1 - Site Preparation	Site Preparation	5/1/2020	5/2/2020	5	2	
2	Phase 12 - Howland Site Preparation	Site Preparation	5/1/2020	6/5/2020	6	30	
3	Phase 5A - Substation Expansion	Grading	5/1/2020	7/8/2020	5	50	
4	Phase 2 - Traffic Control	Building Construction	5/1/2020	7/23/2020	6	72	
5	Phase 3 - TSP Installation	Building Construction	5/1/2020	6/24/2020	6	48	
6	Phase 5B - Substation Expansion	Building Construction	5/1/2020	11/25/2020	5	150	
7	Phase 5D - Substation Expansion	Building Construction	5/1/2020	4/28/2021	5	260	
8	Phase 13 - Howland Monopole	Building Construction	5/15/2020	6/19/2020	6	30	
9	Phase 14 - Howland Indoor Work	Building Construction	6/19/2020	7/7/2020	6	15	
10	Phase 4 - Conductor Installation	Building Construction	6/26/2020	7/30/2020	6	30	
11	Phase 5C - Substation Expansion	Grading	9/12/2020	10/7/2020	5	20	
12	Phase 6 - Vierra Substation	Building Construction	10/28/2020	11/10/2020	5	10	
13	Phase 7 - Kasson Substation	Building Construction	11/11/2020	11/24/2020	5	10	
14	Phase 8 - Tracy Substation	Building Construction	11/25/2020	12/8/2020	5	10	
15	Phase 9 - Manteca Substation	Building Construction	12/9/2020	12/22/2020	5	10	
16	Phase 10 - Highland Peak	Building Construction	12/23/2020	12/29/2020	5	5	
17	Phase 11 - Mt Oso	Building Construction	12/30/2020	1/5/2021	5	5	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Phase 1 - Site Preparation	Other Construction Equipment	1	10.00	9	0.42
Phase 1 - Site Preparation	Other Construction Equipment	1	10.00	20	0.42
Phase 5A - Substation Expansion	Cranes	1	6.00	231	0.29
Phase 5A - Substation Expansion	Excavators	2	8.00	50	0.38
Phase 5A - Substation Expansion	Excavators	1	6.00	158	0.38
Phase 5A - Substation Expansion	Graders	1	6.00	187	0.41
Phase 5A - Substation Expansion	Off-Highway Trucks	2	3.00	402	0.38
Phase 5A - Substation Expansion	Rollers	2	6.00	80	0.38
Phase 5A - Substation Expansion	Rubber Tired Dozers	1	6.00	247	0.40
Phase 5A - Substation Expansion	Scrapers	1	6.00	367	0.48
Phase 2 - Traffic Control	Excavators	0	7.00	158	0.38
Phase 3 - TSP Installation	Cranes	1	2.00	231	0.29
Phase 3 - TSP Installation	Cranes	1	4.00	231	0.29
Phase 3 - TSP Installation	Off-Highway Trucks	1	2.00	402	0.38
Phase 3 - TSP Installation	Off-Highway Trucks	1	6.00	250	0.38
Phase 3 - TSP Installation	Off-Highway Trucks	2	6.00	402	0.38
Phase 3 - TSP Installation	Tractors/Loaders/Backhoes	1	2.00	97	0.37
Phase 3 - TSP Installation	Trenchers	1	6.00	78	0.50
Phase 5B - Substation Expansion	Aerial Lifts	3	5.00	63	0.31
Phase 5B - Substation Expansion	Air Compressors	2	2.00	78	0.48
Phase 5B - Substation Expansion	Forklifts	2	5.00	89	0.20
Phase 5B - Substation Expansion	Generator Sets	1	4.00	84	0.74
Phase 5B - Substation Expansion	Skid Steer Loaders	2	4.00	65	0.37

Phase 5B - Substation Expansion	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Phase 5C - Substation Expansion	Excavators	0	7.00	158	0.38
Phase 4 - Conductor Installation	Cranes	3	6.00	231	0.29
Phase 4 - Conductor Installation	Forklifts	1	2.00	89	0.20
Phase 4 - Conductor Installation	Other General Industrial Equipment	3	6.00	88	0.34
Phase 5D - Substation Expansion	Excavators	0	7.00	158	0.38
Phase 6 - Vierra Substation	Tractors/Loaders/Backhoes	1	10.00	97	0.37
Phase 6 - Vierra Substation	Off-Highway Trucks	2	10.00	402	0.38
Phase 6 - Vierra Substation	Cranes	2	10.00	231	0.29
Phase 7 - Kasson Substation	Tractors/Loaders/Backhoes	1	10.00	97	0.37
Phase 7 - Kasson Substation	Off-Highway Trucks	2	10.00	402	0.38
Phase 7 - Kasson Substation	Cranes	2	10.00	231	0.29
Phase 8 - Tracy Substation	Tractors/Loaders/Backhoes	1	10.00	97	0.37
Phase 8 - Tracy Substation	Off-Highway Trucks	2	10.00	402	0.38
Phase 8 - Tracy Substation	Cranes	2	10.00	231	0.29
Phase 9 - Manteca Substation	Tractors/Loaders/Backhoes	1	10.00	97	0.37
Phase 9 - Manteca Substation	Off-Highway Trucks	2	10.00	402	0.38
Phase 9 - Manteca Substation	Cranes	2	10.00	231	0.29
Phase 10 - Highland Peak	Tractors/Loaders/Backhoes	0	10.00	97	0.37
Phase 11 - Mt Oso	Tractors/Loaders/Backhoes	0	10.00	97	0.37
Phase 12 - Howland Site Preparation	Bore/Drill Rigs	1	1.00	221	0.50
Phase 12 - Howland Site Preparation	Excavators	1	10.00	158	0.38
Phase 12 - Howland Site Preparation	Off-Highway Trucks	3	0.67	402	0.38
Phase 12 - Howland Site Preparation	Tractors/Loaders/Backhoes	2	10.00	97	0.37
Phase 13 - Howland Monopole	Tractors/Loaders/Backhoes	1	3.33	97	0.37
Phase 13 - Howland Monopole	Forklifts	1	1.67	89	0.20
Phase 14 - Howland Indoor Work	Forklifts	1	3.33	89	0.20

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Phase 1 - Site Preparation	2	4.00	2.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Phase 5A - Substation Expansion	11	38.00	4.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Phase 5A - Substation Expansion	11	0.00	2.00	0.00	10.80	30.00	20.00	LD_Mix	HDT_Mix	HHDT
Phase 2 - Traffic Control	0	8.00	4.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Phase 3 - TSP Installation	8	12.00	4.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Phase 5B - Substation Expansion	12	36.00	4.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Phase 5C - Substation Expansion	0	0.00	0.00	800.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Phase 4 - Conductor Installation	7	30.00	20.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Phase 5D - Substation Expansion	0	14.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Phase 6 - Vierra Substation	5	30.00	4.00	28.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Phase 7 - Kasson Substation	5	30.00	4.00	4.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Phase 8 - Tracy Substation	5	30.00	4.00	4.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Phase 9 - Manteca Substation	5	30.00	4.00	4.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Phase 10 - Highland Peak	0	6.00	2.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Phase 11 - Mt Oso	0	6.00	2.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Phase 12 - Howland Site Preparation	7	16.00	14.00	82.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Phase 13 - Howland Monopole	2	10.00	16.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Phase 14 - Howland Indoor Work	1	10.00	12.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Phase 1 - Site Preparation - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.4000e-004	6.8000e-004	7.3000e-004	0.0000		5.0000e-005	5.0000e-005		5.0000e-005	5.0000e-005	0.0000	0.0643	0.0643	2.0000e-005	0.0000	0.0648
Total	**1.4000e-004**	**6.8000e-004**	**7.3000e-004**	**0.0000**	**0.0000**	**5.0000e-005**	**5.0000e-005**	**0.0000**	**5.0000e-005**	**5.0000e-005**	**0.0000**	**0.0643**	**0.0643**	**2.0000e-005**	**0.0000**	**0.0648**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	1.2000e-004	3.0000e-005	0.0000	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0269	0.0269	0.0000	0.0000	0.0269
Worker	1.0000e-005	1.0000e-005	6.0000e-005	0.0000	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0141	0.0141	0.0000	0.0000	0.0141
Total	**1.0000e-005**	**1.3000e-004**	**9.0000e-005**	**0.0000**	**3.0000e-005**	**0.0000**	**3.0000e-005**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0410**	**0.0410**	**0.0000**	**0.0000**	**0.0410**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.4000e-004	6.8000e-004	7.3000e-004	0.0000		5.0000e-005	5.0000e-005		5.0000e-005	5.0000e-005	0.0000	0.0643	0.0643	2.0000e-005	0.0000	0.0648
Total	**1.4000e-004**	**6.8000e-004**	**7.3000e-004**	**0.0000**	**0.0000**	**5.0000e-005**	**5.0000e-005**	**0.0000**	**5.0000e-005**	**5.0000e-005**	**0.0000**	**0.0643**	**0.0643**	**2.0000e-005**	**0.0000**	**0.0648**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	1.2000e-004	3.0000e-005	0.0000	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0269	0.0269	0.0000	0.0000	0.0269
Worker	1.0000e-005	1.0000e-005	6.0000e-005	0.0000	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0141	0.0141	0.0000	0.0000	0.0141
Total	**1.0000e-005**	**1.3000e-004**	**9.0000e-005**	**0.0000**	**3.0000e-005**	**0.0000**	**3.0000e-005**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0410**	**0.0410**	**0.0000**	**0.0000**	**0.0410**

3.3 Phase 12 - Howland Site Preparation - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					8.0000e-005	0.0000	8.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0160	0.1598	0.1705	2.9000e-004		8.5200e-003	8.5200e-003		7.8400e-003	7.8400e-003	0.0000	25.4799	25.4799	8.2400e-003	0.0000	25.6859
Total	**0.0160**	**0.1598**	**0.1705**	**2.9000e-004**	**8.0000e-005**	**8.5200e-003**	**8.6000e-003**	**1.0000e-005**	**7.8400e-003**	**7.8500e-003**	**0.0000**	**25.4799**	**25.4799**	**8.2400e-003**	**0.0000**	**25.6859**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	tons/yr										MT/yr					
Hauling	3.4000e-004	0.0118	1.8000e-003	3.0000e-005	7.0000e-004	4.0000e-005	7.5000e-004	1.9000e-004	4.0000e-005	2.3000e-004	0.0000	3.2210	3.2210	1.4000e-004	0.0000	3.2246
Vendor	8.8000e-004	0.0257	5.4600e-003	6.0000e-005	1.4300e-003	1.4000e-004	1.5800e-003	4.1000e-004	1.4000e-004	5.5000e-004	0.0000	5.8286	5.8286	3.6000e-004	0.0000	5.8377
Worker	9.9000e-004	7.1000e-004	7.0100e-003	2.0000e-005	1.9800e-003	1.0000e-005	1.9900e-003	5.3000e-004	1.0000e-005	5.4000e-004	0.0000	1.7519	1.7519	5.0000e-005	0.0000	1.7531
Total	**2.2100e-003**	**0.0382**	**0.0143**	**1.1000e-004**	**4.1100e-003**	**1.9000e-004**	**4.3200e-003**	**1.1300e-003**	**1.9000e-004**	**1.3200e-003**	**0.0000**	**10.8015**	**10.8015**	**5.5000e-004**	**0.0000**	**10.8153**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					8.0000e-005	0.0000	8.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0160	0.1598	0.1705	2.9000e-004		8.5200e-003	8.5200e-003		7.8400e-003	7.8400e-003	0.0000	25.4799	25.4799	8.2400e-003	0.0000	25.6859
Total	**0.0160**	**0.1598**	**0.1705**	**2.9000e-004**	**8.0000e-005**	**8.5200e-003**	**8.6000e-003**	**1.0000e-005**	**7.8400e-003**	**7.8500e-003**	**0.0000**	**25.4799**	**25.4799**	**8.2400e-003**	**0.0000**	**25.6859**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	3.4000e-004	0.0118	1.8000e-003	3.0000e-005	7.0000e-004	4.0000e-005	7.5000e-004	1.9000e-004	4.0000e-005	2.3000e-004	0.0000	3.2210	3.2210	1.4000e-004	0.0000	3.2246
Vendor	8.8000e-004	0.0257	5.4600e-003	6.0000e-005	1.4300e-003	1.4000e-004	1.5800e-003	4.1000e-004	1.4000e-004	5.5000e-004	0.0000	5.8286	5.8286	3.6000e-004	0.0000	5.8377
Worker	9.9000e-004	7.1000e-004	7.0100e-003	2.0000e-005	1.9800e-003	1.0000e-005	1.9900e-003	5.3000e-004	1.0000e-005	5.4000e-004	0.0000	1.7519	1.7519	5.0000e-005	0.0000	1.7531

Total	**2.2100e-003**	**0.0382**	**0.0143**	**1.1000e-004**	**4.1100e-003**	**1.9000e-004**	**4.3200e-003**	**1.1300e-003**	**1.9000e-004**	**1.3200e-003**	**0.0000**	**10.8015**	**10.8015**	**5.5000e-004**	**0.0000**	**10.8153**

3.4 Phase 5A - Substation Expansion - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1121	0.0000	0.1121	0.0610	0.0000	0.0610	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0892	0.9427	0.5587	1.1900e-003		0.0413	0.0413		0.0380	0.0380	0.0000	104.2214	104.2214	0.0337	0.0000	105.0640
Total	**0.0892**	**0.9427**	**0.5587**	**1.1900e-003**	**0.1121**	**0.0413**	**0.1534**	**0.0610**	**0.0380**	**0.0990**	**0.0000**	**104.2214**	**104.2214**	**0.0337**	**0.0000**	**105.0640**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	9.7000e-004	0.0253	5.4400e-003	7.0000e-005	1.9700e-003	1.9000e-004	2.1600e-003	5.7000e-004	1.8000e-004	7.5000e-004	0.0000	7.0883	7.0883	2.7000e-004	0.0000	7.0951
Worker	3.7200e-003	2.6700e-003	0.0263	7.0000e-005	7.4200e-003	5.0000e-005	7.4700e-003	1.9700e-003	5.0000e-005	2.0200e-003	0.0000	6.5765	6.5765	1.8000e-004	0.0000	6.5810
Total	**4.6900e-003**	**0.0280**	**0.0318**	**1.4000e-004**	**9.3900e-003**	**2.4000e-004**	**9.6300e-003**	**2.5400e-003**	**2.3000e-004**	**2.7700e-003**	**0.0000**	**13.6648**	**13.6648**	**4.5000e-004**	**0.0000**	**13.6762**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1121	0.0000	0.1121	0.0610	0.0000	0.0610	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0892	0.9427	0.5587	1.1900e-003		0.0413	0.0413		0.0380	0.0380	0.0000	104.2212	104.2212	0.0337	0.0000	105.0639
Total	**0.0892**	**0.9427**	**0.5587**	**1.1900e-003**	**0.1121**	**0.0413**	**0.1534**	**0.0610**	**0.0380**	**0.0990**	**0.0000**	**104.2212**	**104.2212**	**0.0337**	**0.0000**	**105.0639**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	9.7000e-004	0.0253	5.4400e-003	7.0000e-005	1.9700e-003	1.9000e-004	2.1600e-003	5.7000e-004	1.8000e-004	7.5000e-004	0.0000	7.0883	7.0883	2.7000e-004	0.0000	7.0951
Worker	3.7200e-003	2.6700e-003	0.0263	7.0000e-005	7.4200e-003	5.0000e-005	7.4700e-003	1.9700e-003	5.0000e-005	2.0200e-003	0.0000	6.5765	6.5765	1.8000e-004	0.0000	6.5810
Total	**4.6900e-003**	**0.0280**	**0.0318**	**1.4000e-004**	**9.3900e-003**	**2.4000e-004**	**9.6300e-003**	**2.5400e-003**	**2.3000e-004**	**2.7700e-003**	**0.0000**	**13.6648**	**13.6648**	**4.5000e-004**	**0.0000**	**13.6762**

3.5 Phase 2 - Traffic Control - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	5.8000e-004	0.0170	3.6200e-003	4.0000e-005	9.5000e-004	9.0000e-005	1.0500e-003	2.7000e-004	9.0000e-005	3.6000e-004	0.0000	3.8678	3.8678	2.4000e-004	0.0000	3.8738
Worker	1.1500e-003	8.3000e-004	8.1400e-003	2.0000e-005	2.2900e-003	2.0000e-005	2.3100e-003	6.1000e-004	1.0000e-005	6.2000e-004	0.0000	2.0344	2.0344	6.0000e-005	0.0000	2.0358
Total	**1.7300e-003**	**0.0179**	**0.0118**	**6.0000e-005**	**3.2400e-003**	**1.1000e-004**	**3.3600e-003**	**8.8000e-004**	**1.0000e-004**	**9.8000e-004**	**0.0000**	**5.9023**	**5.9023**	**3.0000e-004**	**0.0000**	**5.9097**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	5.8000e-004	0.0170	3.6200e-003	4.0000e-005	9.5000e-004	9.0000e-005	1.0500e-003	2.7000e-004	9.0000e-005	3.6000e-004	0.0000	3.8678	3.8678	2.4000e-004	0.0000	3.8738
Worker	1.1500e-003	8.3000e-004	8.1400e-003	2.0000e-005	2.2900e-003	2.0000e-005	2.3100e-003	6.1000e-004	1.0000e-005	6.2000e-004	0.0000	2.0344	2.0344	6.0000e-005	0.0000	2.0358
Total	**1.7300e-003**	**0.0179**	**0.0118**	**6.0000e-005**	**3.2400e-003**	**1.1000e-004**	**3.3600e-003**	**8.8000e-004**	**1.0000e-004**	**9.8000e-004**	**0.0000**	**5.9023**	**5.9023**	**3.0000e-004**	**0.0000**	**5.9097**

3.6 Phase 3 - TSP Installation - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0520	0.5084	0.2949	8.7000e-004		0.0221	0.0221		0.0203	0.0203	0.0000	76.0616	76.0616	0.0246	0.0000	76.6766
Total	**0.0520**	**0.5084**	**0.2949**	**8.7000e-004**		**0.0221**	**0.0221**		**0.0203**	**0.0203**	**0.0000**	**76.0616**	**76.0616**	**0.0246**	**0.0000**	**76.6766**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	3.8000e-004	0.0111	2.3700e-003	3.0000e-005	6.2000e-004	6.0000e-005	6.8000e-004	1.8000e-004	6.0000e-005	2.4000e-004	0.0000	2.5248	2.5248	1.6000e-004	0.0000	2.5288
Worker	1.1300e-003	8.1000e-004	7.9700e-003	2.0000e-005	2.2500e-003	2.0000e-005	2.2600e-003	6.0000e-004	1.0000e-005	6.1000e-004	0.0000	1.9920	1.9920	5.0000e-005	0.0000	1.9934
Total	**1.5100e-003**	**0.0119**	**0.0103**	**5.0000e-005**	**2.8700e-003**	**8.0000e-005**	**2.9400e-003**	**7.8000e-004**	**7.0000e-005**	**8.5000e-004**	**0.0000**	**4.5169**	**4.5169**	**2.1000e-004**	**0.0000**	**4.5222**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0520	0.5084	0.2949	8.7000e-004		0.0221	0.0221		0.0203	0.0203	0.0000	76.0615	76.0615	0.0246	0.0000	76.6765
Total	**0.0520**	**0.5084**	**0.2949**	**8.7000e-004**		**0.0221**	**0.0221**		**0.0203**	**0.0203**	**0.0000**	**76.0615**	**76.0615**	**0.0246**	**0.0000**	**76.6765**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	3.8000e-004	0.0111	2.3700e-003	3.0000e-005	6.2000e-004	6.0000e-005	6.8000e-004	1.8000e-004	6.0000e-005	2.4000e-004	0.0000	2.5248	2.5248	1.6000e-004	0.0000	2.5288
Worker	1.1300e-003	8.1000e-004	7.9700e-003	2.0000e-005	2.2500e-003	2.0000e-005	2.2600e-003	6.0000e-004	1.0000e-005	6.1000e-004	0.0000	1.9920	1.9920	5.0000e-005	0.0000	1.9934

Total	**1.5100e-003**	**0.0119**	**0.0103**	**5.0000e-005**	**2.8700e-003**	**8.0000e-005**	**2.9400e-003**	**7.8000e-004**	**7.0000e-005**	**8.5000e-004**	**0.0000**	**4.5169**	**4.5169**	**2.1000e-004**	**0.0000**	**4.5222**

3.7 Phase 5B - Substation Expansion - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0830	0.8168	0.9350	1.3900e-003		0.0471	0.0471		0.0443	0.0443	0.0000	121.0321	121.0321	0.0304	0.0000	121.7921
Total	**0.0830**	**0.8168**	**0.9350**	**1.3900e-003**		**0.0471**	**0.0471**		**0.0443**	**0.0443**	**0.0000**	**121.0321**	**121.0321**	**0.0304**	**0.0000**	**121.7921**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.2100e-003	0.0352	7.5000e-003	8.0000e-005	1.9700e-003	1.9000e-004	2.1600e-003	5.7000e-004	1.9000e-004	7.5000e-004	0.0000	8.0043	8.0043	5.0000e-004	0.0000	8.0167
Worker	0.0107	7.6900e-003	0.0758	2.1000e-004	0.0214	1.5000e-004	0.0215	5.6800e-003	1.3000e-004	5.8100e-003	0.0000	18.9454	18.9454	5.2000e-004	0.0000	18.9585
Total	**0.0119**	**0.0429**	**0.0833**	**2.9000e-004**	**0.0233**	**3.4000e-004**	**0.0237**	**6.2500e-003**	**3.2000e-004**	**6.5600e-003**	**0.0000**	**26.9497**	**26.9497**	**1.0200e-003**	**0.0000**	**26.9752**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0830	0.8168	0.9350	1.3900e-003		0.0471	0.0471		0.0443	0.0443	0.0000	121.0319	121.0319	0.0304	0.0000	121.7920
Total	**0.0830**	**0.8168**	**0.9350**	**1.3900e-003**		**0.0471**	**0.0471**		**0.0443**	**0.0443**	**0.0000**	**121.0319**	**121.0319**	**0.0304**	**0.0000**	**121.7920**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.2100e-003	0.0352	7.5000e-003	8.0000e-005	1.9700e-003	1.9000e-004	2.1600e-003	5.7000e-004	1.9000e-004	7.5000e-004	0.0000	8.0043	8.0043	5.0000e-004	0.0000	8.0167
Worker	0.0107	7.6900e-003	0.0758	2.1000e-004	0.0214	1.5000e-004	0.0215	5.6800e-003	1.3000e-004	5.8100e-003	0.0000	18.9454	18.9454	5.2000e-004	0.0000	18.9585
Total	**0.0119**	**0.0429**	**0.0833**	**2.9000e-004**	**0.0233**	**3.4000e-004**	**0.0237**	**6.2500e-003**	**3.2000e-004**	**6.5600e-003**	**0.0000**	**26.9497**	**26.9497**	**1.0200e-003**	**0.0000**	**26.9752**

3.8 Phase 5D - Substation Expansion - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.8900e-003	3.5100e-003	0.0346	1.0000e-004	9.7600e-003	7.0000e-005	9.8200e-003	2.5900e-003	6.0000e-005	2.6600e-003	0.0000	8.6533	8.6533	2.4000e-004	0.0000	8.6593
Total	**4.8900e-003**	**3.5100e-003**	**0.0346**	**1.0000e-004**	**9.7600e-003**	**7.0000e-005**	**9.8200e-003**	**2.5900e-003**	**6.0000e-005**	**2.6600e-003**	**0.0000**	**8.6533**	**8.6533**	**2.4000e-004**	**0.0000**	**8.6593**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.8900e-003	3.5100e-003	0.0346	1.0000e-004	9.7600e-003	7.0000e-005	9.8200e-003	2.5900e-003	6.0000e-005	2.6600e-003	0.0000	8.6533	8.6533	2.4000e-004	0.0000	8.6593
Total	**4.8900e-003**	**3.5100e-003**	**0.0346**	**1.0000e-004**	**9.7600e-003**	**7.0000e-005**	**9.8200e-003**	**2.5900e-003**	**6.0000e-005**	**2.6600e-003**	**0.0000**	**8.6533**	**8.6533**	**2.4000e-004**	**0.0000**	**8.6593**

3.8 Phase 5D - Substation Expansion - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.1700e-003	1.5000e-003	0.0151	4.0000e-005	4.6800e-003	3.0000e-005	4.7100e-003	1.2500e-003	3.0000e-005	1.2700e-003	0.0000	3.9970	3.9970	1.0000e-004	0.0000	3.9995
Total	**2.1700e-003**	**1.5000e-003**	**0.0151**	**4.0000e-005**	**4.6800e-003**	**3.0000e-005**	**4.7100e-003**	**1.2500e-003**	**3.0000e-005**	**1.2700e-003**	**0.0000**	**3.9970**	**3.9970**	**1.0000e-004**	**0.0000**	**3.9995**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.1700e-003	1.5000e-003	0.0151	4.0000e-005	4.6800e-003	3.0000e-005	4.7100e-003	1.2500e-003	3.0000e-005	1.2700e-003	0.0000	3.9970	3.9970	1.0000e-004	0.0000	3.9995

Total	**2.1700e-003**	**1.5000e-003**	**0.0151**	**4.0000e-005**	**4.6800e-003**	**3.0000e-005**	**4.7100e-003**	**1.2500e-003**	**3.0000e-005**	**1.2700e-003**	**0.0000**	**3.9970**	**3.9970**	**1.0000e-004**	**0.0000**	**3.9995**

3.9 Phase 13 - Howland Monopole - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.8200e-003	0.0178	0.0185	2.0000e-005		1.1700e-003	1.1700e-003		1.0800e-003	1.0800e-003	0.0000	2.1949	2.1949	7.1000e-004	0.0000	2.2127
Total	**1.8200e-003**	**0.0178**	**0.0185**	**2.0000e-005**		**1.1700e-003**	**1.1700e-003**		**1.0800e-003**	**1.0800e-003**	**0.0000**	**2.1949**	**2.1949**	**7.1000e-004**	**0.0000**	**2.2127**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.0100e-003	0.0293	6.2400e-003	7.0000e-005	1.6400e-003	1.6000e-004	1.8000e-003	4.7000e-004	1.5000e-004	6.3000e-004	0.0000	6.6613	6.6613	4.1000e-004	0.0000	6.6716
Worker	6.2000e-004	4.4000e-004	4.3800e-003	1.0000e-005	1.2300e-003	1.0000e-005	1.2400e-003	3.3000e-004	1.0000e-005	3.4000e-004	0.0000	1.0949	1.0949	3.0000e-005	0.0000	1.0957
Total	**1.6300e-003**	**0.0298**	**0.0106**	**8.0000e-005**	**2.8700e-003**	**1.7000e-004**	**3.0400e-003**	**8.0000e-004**	**1.6000e-004**	**9.7000e-004**	**0.0000**	**7.7562**	**7.7562**	**4.4000e-004**	**0.0000**	**7.7673**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.8200e-003	0.0178	0.0185	2.0000e-005		1.1700e-003	1.1700e-003		1.0800e-003	1.0800e-003	0.0000	2.1949	2.1949	7.1000e-004	0.0000	2.2127
Total	**1.8200e-003**	**0.0178**	**0.0185**	**2.0000e-005**		**1.1700e-003**	**1.1700e-003**		**1.0800e-003**	**1.0800e-003**	**0.0000**	**2.1949**	**2.1949**	**7.1000e-004**	**0.0000**	**2.2127**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.0100e-003	0.0293	6.2400e-003	7.0000e-005	1.6400e-003	1.6000e-004	1.8000e-003	4.7000e-004	1.5000e-004	6.3000e-004	0.0000	6.6613	6.6613	4.1000e-004	0.0000	6.6716
Worker	6.2000e-004	4.4000e-004	4.3800e-003	1.0000e-005	1.2300e-003	1.0000e-005	1.2400e-003	3.3000e-004	1.0000e-005	3.4000e-004	0.0000	1.0949	1.0949	3.0000e-005	0.0000	1.0957
Total	**1.6300e-003**	**0.0298**	**0.0106**	**8.0000e-005**	**2.8700e-003**	**1.7000e-004**	**3.0400e-003**	**8.0000e-004**	**1.6000e-004**	**9.7000e-004**	**0.0000**	**7.7562**	**7.7562**	**4.4000e-004**	**0.0000**	**7.7673**

3.10 Phase 14 - Howland Indoor Work - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

Off-Road	4.8000e-004	4.3200e-003	3.9300e-003	1.0000e-005		3.2000e-004	3.2000e-004		3.0000e-004	3.0000e-004	0.0000	0.4472	0.4472	1.4000e-004	0.0000	0.4508
Total	**4.8000e-004**	**4.3200e-003**	**3.9300e-003**	**1.0000e-005**		**3.2000e-004**	**3.2000e-004**		**3.0000e-004**	**3.0000e-004**	**0.0000**	**0.4472**	**0.4472**	**1.4000e-004**	**0.0000**	**0.4508**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	3.9000e-004	0.0114	2.4200e-003	3.0000e-005	6.3000e-004	6.0000e-005	7.0000e-004	1.8000e-004	6.0000e-005	2.4000e-004	0.0000	2.5786	2.5786	1.6000e-004	0.0000	2.5826
Worker	3.2000e-004	2.3000e-004	2.2600e-003	1.0000e-005	6.4000e-004	0.0000	6.4000e-004	1.7000e-004	0.0000	1.7000e-004	0.0000	0.5651	0.5651	2.0000e-005	0.0000	0.5655
Total	**7.1000e-004**	**0.0116**	**4.6800e-003**	**4.0000e-005**	**1.2700e-003**	**6.0000e-005**	**1.3400e-003**	**3.5000e-004**	**6.0000e-005**	**4.1000e-004**	**0.0000**	**3.1437**	**3.1437**	**1.8000e-004**	**0.0000**	**3.1481**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	4.8000e-004	4.3200e-003	3.9300e-003	1.0000e-005		3.2000e-004	3.2000e-004		3.0000e-004	3.0000e-004	0.0000	0.4472	0.4472	1.4000e-004	0.0000	0.4508
Total	**4.8000e-004**	**4.3200e-003**	**3.9300e-003**	**1.0000e-005**		**3.2000e-004**	**3.2000e-004**		**3.0000e-004**	**3.0000e-004**	**0.0000**	**0.4472**	**0.4472**	**1.4000e-004**	**0.0000**	**0.4508**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	3.9000e-004	0.0114	2.4200e-003	3.0000e-005	6.3000e-004	6.0000e-005	7.0000e-004	1.8000e-004	6.0000e-005	2.4000e-004	0.0000	2.5786	2.5786	1.6000e-004	0.0000	2.5826
Worker	3.2000e-004	2.3000e-004	2.2600e-003	1.0000e-005	6.4000e-004	0.0000	6.4000e-004	1.7000e-004	0.0000	1.7000e-004	0.0000	0.5651	0.5651	2.0000e-005	0.0000	0.5655
Total	**7.1000e-004**	**0.0116**	**4.6800e-003**	**4.0000e-005**	**1.2700e-003**	**6.0000e-005**	**1.3400e-003**	**3.5000e-004**	**6.0000e-005**	**4.1000e-004**	**0.0000**	**3.1437**	**3.1437**	**1.8000e-004**	**0.0000**	**3.1481**

3.11 Phase 4 - Conductor Installation - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0238	0.2592	0.1430	2.9000e-004		0.0131	0.0131		0.0121	0.0121	0.0000	25.2060	25.2060	8.1500e-003	0.0000	25.4098
Total	**0.0238**	**0.2592**	**0.1430**	**2.9000e-004**		**0.0131**	**0.0131**		**0.0121**	**0.0121**	**0.0000**	**25.2060**	**25.2060**	**8.1500e-003**	**0.0000**	**25.4098**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.2200e-003	0.0355	7.5500e-003	8.0000e-005	4.7800e-003	2.0000e-004	4.9700e-003	1.2600e-003	1.9000e-004	1.4500e-003	0.0000	8.0580	8.0580	5.0000e-004	0.0000	8.0705
Worker	1.8000e-003	1.2900e-003	0.0127	4.0000e-005	9.7900e-003	2.0000e-005	9.8100e-003	2.4800e-003	2.0000e-005	2.5000e-003	0.0000	3.1788	3.1788	9.0000e-005	0.0000	3.1810
Total	**3.0200e-003**	**0.0368**	**0.0203**	**1.2000e-004**	**0.0146**	**2.2000e-004**	**0.0148**	**3.7400e-003**	**2.1000e-004**	**3.9500e-003**	**0.0000**	**11.2368**	**11.2368**	**5.9000e-004**	**0.0000**	**11.2515**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0238	0.2592	0.1430	2.9000e-004		0.0131	0.0131		0.0121	0.0121	0.0000	25.2060	25.2060	8.1500e-003	0.0000	25.4098
Total	**0.0238**	**0.2592**	**0.1430**	**2.9000e-004**		**0.0131**	**0.0131**		**0.0121**	**0.0121**	**0.0000**	**25.2060**	**25.2060**	**8.1500e-003**	**0.0000**	**25.4098**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.2200e-003	0.0355	7.5500e-003	8.0000e-005	4.7800e-003	2.0000e-004	4.9700e-003	1.2600e-003	1.9000e-004	1.4500e-003	0.0000	8.0580	8.0580	5.0000e-004	0.0000	8.0705
Worker	1.8000e-003	1.2900e-003	0.0127	4.0000e-005	9.7900e-003	2.0000e-005	9.8100e-003	2.4800e-003	2.0000e-005	2.5000e-003	0.0000	3.1788	3.1788	9.0000e-005	0.0000	3.1810

Total	**3.0200e-003**	**0.0368**	**0.0203**	**1.2000e-004**	**0.0146**	**2.2000e-004**	**0.0148**	**3.7400e-003**	**2.1000e-004**	**3.9500e-003**	**0.0000**	**11.2368**	**11.2368**	**5.9000e-004**	**0.0000**	**11.2515**

3.12 Phase 5C - Substation Expansion - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					6.6000e-004	0.0000	6.6000e-004	1.0000e-004	0.0000	1.0000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**6.6000e-004**	**0.0000**	**6.6000e-004**	**1.0000e-004**	**0.0000**	**1.0000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.8800e-003	0.1003	0.0153	2.9000e-004	6.6500e-003	3.4000e-004	6.9900e-003	1.8100e-003	3.3000e-004	2.1400e-003	0.0000	27.3697	27.3697	1.2200e-003	0.0000	27.4002
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**2.8800e-003**	**0.1003**	**0.0153**	**2.9000e-004**	**6.6500e-003**	**3.4000e-004**	**6.9900e-003**	**1.8100e-003**	**3.3000e-004**	**2.1400e-003**	**0.0000**	**27.3697**	**27.3697**	**1.2200e-003**	**0.0000**	**27.4002**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					6.6000e-004	0.0000	6.6000e-004	1.0000e-004	0.0000	1.0000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**6.6000e-004**	**0.0000**	**6.6000e-004**	**1.0000e-004**	**0.0000**	**1.0000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.8800e-003	0.1003	0.0153	2.9000e-004	6.6500e-003	3.4000e-004	6.9900e-003	1.8100e-003	3.3000e-004	2.1400e-003	0.0000	27.3697	27.3697	1.2200e-003	0.0000	27.4002
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**2.8800e-003**	**0.1003**	**0.0153**	**2.9000e-004**	**6.6500e-003**	**3.4000e-004**	**6.9900e-003**	**1.8100e-003**	**3.3000e-004**	**2.1400e-003**	**0.0000**	**27.3697**	**27.3697**	**1.2200e-003**	**0.0000**	**27.4002**

3.13 Phase 6 - Vierra Substation - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

Off-Road	0.0153	0.1596	0.0883	2.6000e-004		6.4900e-003	6.4900e-003		5.9700e-003	5.9700e-003	0.0000	22.5412	22.5412	7.2900e-003	0.0000	22.7235
Total	**0.0153**	**0.1596**	**0.0883**	**2.6000e-004**		**6.4900e-003**	**6.4900e-003**		**5.9700e-003**	**5.9700e-003**	**0.0000**	**22.5412**	**22.5412**	**7.2900e-003**	**0.0000**	**22.7235**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.1000e-004	3.9000e-003	5.9000e-004	1.0000e-005	2.4000e-004	1.0000e-005	2.5000e-004	7.0000e-005	1.0000e-005	8.0000e-005	0.0000	1.0644	1.0644	5.0000e-005	0.0000	1.0656
Vendor	8.0000e-005	2.3700e-003	5.0000e-004	1.0000e-005	1.3000e-004	1.0000e-005	1.5000e-004	4.0000e-005	1.0000e-005	5.0000e-005	0.0000	0.5372	0.5372	3.0000e-005	0.0000	0.5380
Worker	6.0000e-004	4.3000e-004	4.2400e-003	1.0000e-005	1.1900e-003	1.0000e-005	1.2000e-003	3.2000e-004	1.0000e-005	3.3000e-004	0.0000	1.0596	1.0596	3.0000e-005	0.0000	1.0603
Total	**7.9000e-004**	**6.7000e-003**	**5.3300e-003**	**3.0000e-005**	**1.5600e-003**	**3.0000e-005**	**1.6000e-003**	**4.3000e-004**	**3.0000e-005**	**4.6000e-004**	**0.0000**	**2.6612**	**2.6612**	**1.1000e-004**	**0.0000**	**2.6639**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0153	0.1596	0.0883	2.6000e-004		6.4900e-003	6.4900e-003		5.9700e-003	5.9700e-003	0.0000	22.5412	22.5412	7.2900e-003	0.0000	22.7235
Total	**0.0153**	**0.1596**	**0.0883**	**2.6000e-004**		**6.4900e-003**	**6.4900e-003**		**5.9700e-003**	**5.9700e-003**	**0.0000**	**22.5412**	**22.5412**	**7.2900e-003**	**0.0000**	**22.7235**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.1000e-004	3.9000e-003	5.9000e-004	1.0000e-005	2.4000e-004	1.0000e-005	2.5000e-004	7.0000e-005	1.0000e-005	8.0000e-005	0.0000	1.0644	1.0644	5.0000e-005	0.0000	1.0656
Vendor	8.0000e-005	2.3700e-003	5.0000e-004	1.0000e-005	1.3000e-004	1.0000e-005	1.5000e-004	4.0000e-005	1.0000e-005	5.0000e-005	0.0000	0.5372	0.5372	3.0000e-005	0.0000	0.5380
Worker	6.0000e-004	4.3000e-004	4.2400e-003	1.0000e-005	1.1900e-003	1.0000e-005	1.2000e-003	3.2000e-004	1.0000e-005	3.3000e-004	0.0000	1.0596	1.0596	3.0000e-005	0.0000	1.0603
Total	**7.9000e-004**	**6.7000e-003**	**5.3300e-003**	**3.0000e-005**	**1.5600e-003**	**3.0000e-005**	**1.6000e-003**	**4.3000e-004**	**3.0000e-005**	**4.6000e-004**	**0.0000**	**2.6612**	**2.6612**	**1.1000e-004**	**0.0000**	**2.6639**

3.14 Phase 7 - Kasson Substation - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0153	0.1596	0.0883	2.6000e-004		6.4900e-003	6.4900e-003		5.9700e-003	5.9700e-003	0.0000	22.5412	22.5412	7.2900e-003	0.0000	22.7235
Total	**0.0153**	**0.1596**	**0.0883**	**2.6000e-004**		**6.4900e-003**	**6.4900e-003**		**5.9700e-003**	**5.9700e-003**	**0.0000**	**22.5412**	**22.5412**	**7.2900e-003**	**0.0000**	**22.7235**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	tons/yr										MT/yr					
Hauling	2.0000e-005	5.6000e-004	8.0000e-005	0.0000	3.0000e-005	0.0000	4.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.1521	0.1521	1.0000e-005	0.0000	0.1522
Vendor	8.0000e-005	2.3700e-003	5.0000e-004	1.0000e-005	1.3000e-004	1.0000e-005	1.5000e-004	4.0000e-005	1.0000e-005	5.0000e-005	0.0000	0.5372	0.5372	3.0000e-005	0.0000	0.5380
Worker	6.0000e-004	4.3000e-004	4.2400e-003	1.0000e-005	1.1900e-003	1.0000e-005	1.2000e-003	3.2000e-004	1.0000e-005	3.3000e-004	0.0000	1.0596	1.0596	3.0000e-005	0.0000	1.0603
Total	**7.0000e-004**	**3.3600e-003**	**4.8200e-003**	**2.0000e-005**	**1.3500e-003**	**2.0000e-005**	**1.3900e-003**	**3.7000e-004**	**2.0000e-005**	**3.9000e-004**	**0.0000**	**1.7488**	**1.7488**	**7.0000e-005**	**0.0000**	**1.7506**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0153	0.1596	0.0883	2.6000e-004		6.4900e-003	6.4900e-003		5.9700e-003	5.9700e-003	0.0000	22.5412	22.5412	7.2900e-003	0.0000	22.7235
Total	**0.0153**	**0.1596**	**0.0883**	**2.6000e-004**		**6.4900e-003**	**6.4900e-003**		**5.9700e-003**	**5.9700e-003**	**0.0000**	**22.5412**	**22.5412**	**7.2900e-003**	**0.0000**	**22.7235**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.0000e-005	5.6000e-004	8.0000e-005	0.0000	3.0000e-005	0.0000	4.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.1521	0.1521	1.0000e-005	0.0000	0.1522
Vendor	8.0000e-005	2.3700e-003	5.0000e-004	1.0000e-005	1.3000e-004	1.0000e-005	1.5000e-004	4.0000e-005	1.0000e-005	5.0000e-005	0.0000	0.5372	0.5372	3.0000e-005	0.0000	0.5380
Worker	6.0000e-004	4.3000e-004	4.2400e-003	1.0000e-005	1.1900e-003	1.0000e-005	1.2000e-003	3.2000e-004	1.0000e-005	3.3000e-004	0.0000	1.0596	1.0596	3.0000e-005	0.0000	1.0603

Total	**7.0000e-004**	**3.3600e-003**	**4.8200e-003**	**2.0000e-005**	**1.3500e-003**	**2.0000e-005**	**1.3900e-003**	**3.7000e-004**	**2.0000e-005**	**3.9000e-004**	**0.0000**	**1.7488**	**1.7488**	**7.0000e-005**	**0.0000**	**1.7506**

3.15 Phase 8 - Tracy Substation - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0153	0.1596	0.0883	2.6000e-004		6.4900e-003	6.4900e-003		5.9700e-003	5.9700e-003	0.0000	22.5412	22.5412	7.2900e-003	0.0000	22.7235
Total	**0.0153**	**0.1596**	**0.0883**	**2.6000e-004**		**6.4900e-003**	**6.4900e-003**		**5.9700e-003**	**5.9700e-003**	**0.0000**	**22.5412**	**22.5412**	**7.2900e-003**	**0.0000**	**22.7235**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.0000e-005	5.6000e-004	8.0000e-005	0.0000	3.0000e-005	0.0000	4.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.1521	0.1521	1.0000e-005	0.0000	0.1522
Vendor	8.0000e-005	2.3700e-003	5.0000e-004	1.0000e-005	1.3000e-004	1.0000e-005	1.5000e-004	4.0000e-005	1.0000e-005	5.0000e-005	0.0000	0.5372	0.5372	3.0000e-005	0.0000	0.5380
Worker	6.0000e-004	4.3000e-004	4.2400e-003	1.0000e-005	1.1900e-003	1.0000e-005	1.2000e-003	3.2000e-004	1.0000e-005	3.3000e-004	0.0000	1.0596	1.0596	3.0000e-005	0.0000	1.0603
Total	**7.0000e-004**	**3.3600e-003**	**4.8200e-003**	**2.0000e-005**	**1.3500e-003**	**2.0000e-005**	**1.3900e-003**	**3.7000e-004**	**2.0000e-005**	**3.9000e-004**	**0.0000**	**1.7488**	**1.7488**	**7.0000e-005**	**0.0000**	**1.7506**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0153	0.1596	0.0883	2.6000e-004		6.4900e-003	6.4900e-003		5.9700e-003	5.9700e-003	0.0000	22.5412	22.5412	7.2900e-003	0.0000	22.7235
Total	**0.0153**	**0.1596**	**0.0883**	**2.6000e-004**		**6.4900e-003**	**6.4900e-003**		**5.9700e-003**	**5.9700e-003**	**0.0000**	**22.5412**	**22.5412**	**7.2900e-003**	**0.0000**	**22.7235**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.0000e-005	5.6000e-004	8.0000e-005	0.0000	3.0000e-005	0.0000	4.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.1521	0.1521	1.0000e-005	0.0000	0.1522
Vendor	8.0000e-005	2.3700e-003	5.0000e-004	1.0000e-005	1.3000e-004	1.0000e-005	1.5000e-004	4.0000e-005	1.0000e-005	5.0000e-005	0.0000	0.5372	0.5372	3.0000e-005	0.0000	0.5380
Worker	6.0000e-004	4.3000e-004	4.2400e-003	1.0000e-005	1.1900e-003	1.0000e-005	1.2000e-003	3.2000e-004	1.0000e-005	3.3000e-004	0.0000	1.0596	1.0596	3.0000e-005	0.0000	1.0603
Total	**7.0000e-004**	**3.3600e-003**	**4.8200e-003**	**2.0000e-005**	**1.3500e-003**	**2.0000e-005**	**1.3900e-003**	**3.7000e-004**	**2.0000e-005**	**3.9000e-004**	**0.0000**	**1.7488**	**1.7488**	**7.0000e-005**	**0.0000**	**1.7506**

3.16 Phase 9 - Manteca Substation - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

Off-Road	0.0153	0.1596	0.0883	2.6000e-004		6.4900e-003	6.4900e-003		5.9700e-003	5.9700e-003	0.0000	22.5412	22.5412	7.2900e-003	0.0000	22.7235
Total	**0.0153**	**0.1596**	**0.0883**	**2.6000e-004**		**6.4900e-003**	**6.4900e-003**		**5.9700e-003**	**5.9700e-003**	**0.0000**	**22.5412**	**22.5412**	**7.2900e-003**	**0.0000**	**22.7235**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.0000e-005	5.6000e-004	8.0000e-005	0.0000	3.0000e-005	0.0000	4.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.1521	0.1521	1.0000e-005	0.0000	0.1522
Vendor	8.0000e-005	2.3700e-003	5.0000e-004	1.0000e-005	1.3000e-004	1.0000e-005	1.5000e-004	4.0000e-005	1.0000e-005	5.0000e-005	0.0000	0.5372	0.5372	3.0000e-005	0.0000	0.5380
Worker	6.0000e-004	4.3000e-004	4.2400e-003	1.0000e-005	1.1900e-003	1.0000e-005	1.2000e-003	3.2000e-004	1.0000e-005	3.3000e-004	0.0000	1.0596	1.0596	3.0000e-005	0.0000	1.0603
Total	**7.0000e-004**	**3.3600e-003**	**4.8200e-003**	**2.0000e-005**	**1.3500e-003**	**2.0000e-005**	**1.3900e-003**	**3.7000e-004**	**2.0000e-005**	**3.9000e-004**	**0.0000**	**1.7488**	**1.7488**	**7.0000e-005**	**0.0000**	**1.7506**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0153	0.1596	0.0883	2.6000e-004		6.4900e-003	6.4900e-003		5.9700e-003	5.9700e-003	0.0000	22.5412	22.5412	7.2900e-003	0.0000	22.7235
Total	**0.0153**	**0.1596**	**0.0883**	**2.6000e-004**		**6.4900e-003**	**6.4900e-003**		**5.9700e-003**	**5.9700e-003**	**0.0000**	**22.5412**	**22.5412**	**7.2900e-003**	**0.0000**	**22.7235**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.0000e-005	5.6000e-004	8.0000e-005	0.0000	3.0000e-005	0.0000	4.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.1521	0.1521	1.0000e-005	0.0000	0.1522
Vendor	8.0000e-005	2.3700e-003	5.0000e-004	1.0000e-005	1.3000e-004	1.0000e-005	1.5000e-004	4.0000e-005	1.0000e-005	5.0000e-005	0.0000	0.5372	0.5372	3.0000e-005	0.0000	0.5380
Worker	6.0000e-004	4.3000e-004	4.2400e-003	1.0000e-005	1.1900e-003	1.0000e-005	1.2000e-003	3.2000e-004	1.0000e-005	3.3000e-004	0.0000	1.0596	1.0596	3.0000e-005	0.0000	1.0603
Total	**7.0000e-004**	**3.3600e-003**	**4.8200e-003**	**2.0000e-005**	**1.3500e-003**	**2.0000e-005**	**1.3900e-003**	**3.7000e-004**	**2.0000e-005**	**3.9000e-004**	**0.0000**	**1.7488**	**1.7488**	**7.0000e-005**	**0.0000**	**1.7506**

3.17 Phase 10 - Highland Peak - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.0000e-005	5.9000e-004	1.3000e-004	0.0000	3.0000e-005	0.0000	4.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.1343	0.1343	1.0000e-005	0.0000	0.1345
Worker	6.0000e-005	4.0000e-005	4.2000e-004	0.0000	1.2000e-004	0.0000	1.2000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.1060	0.1060	0.0000	0.0000	0.1060
Total	**8.0000e-005**	**6.3000e-004**	**5.5000e-004**	**0.0000**	**1.5000e-004**	**0.0000**	**1.6000e-004**	**4.0000e-005**	**0.0000**	**4.0000e-005**	**0.0000**	**0.2403**	**0.2403**	**1.0000e-005**	**0.0000**	**0.2405**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.0000e-005	5.9000e-004	1.3000e-004	0.0000	3.0000e-005	0.0000	4.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.1343	0.1343	1.0000e-005	0.0000	0.1345
Worker	6.0000e-005	4.0000e-005	4.2000e-004	0.0000	1.2000e-004	0.0000	1.2000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.1060	0.1060	0.0000	0.0000	0.1060

Total	**8.0000e-005**	**6.3000e-004**	**5.5000e-004**	**0.0000**	**1.5000e-004**	**0.0000**	**1.6000e-004**	**4.0000e-005**	**0.0000**	**4.0000e-005**	**0.0000**	**0.2403**	**0.2403**	**1.0000e-005**	**0.0000**	**0.2405**

3.18 Phase 11 - Mt Oso - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.0000e-005	2.4000e-004	5.0000e-005	0.0000	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0000	1.0000e-005	0.0000	0.0537	0.0537	0.0000	0.0000	0.0538
Worker	2.0000e-005	2.0000e-005	1.7000e-004	0.0000	5.0000e-005	0.0000	5.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0424	0.0424	0.0000	0.0000	0.0424
Total	**3.0000e-005**	**2.6000e-004**	**2.2000e-004**	**0.0000**	**6.0000e-005**	**0.0000**	**6.0000e-005**	**1.0000e-005**	**0.0000**	**2.0000e-005**	**0.0000**	**0.0961**	**0.0961**	**0.0000**	**0.0000**	**0.0962**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.0000e-005	2.4000e-004	5.0000e-005	0.0000	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0000	1.0000e-005	0.0000	0.0537	0.0537	0.0000	0.0000	0.0538
Worker	2.0000e-005	2.0000e-005	1.7000e-004	0.0000	5.0000e-005	0.0000	5.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0424	0.0424	0.0000	0.0000	0.0424
Total	**3.0000e-005**	**2.6000e-004**	**2.2000e-004**	**0.0000**	**6.0000e-005**	**0.0000**	**6.0000e-005**	**1.0000e-005**	**0.0000**	**2.0000e-005**	**0.0000**	**0.0961**	**0.0961**	**0.0000**	**0.0000**	**0.0962**

3.18 Phase 11 - Mt Oso - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.0000e-005	3.2000e-004	7.0000e-005	0.0000	2.0000e-005	0.0000	2.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0798	0.0798	0.0000	0.0000	0.0800
Worker	3.0000e-005	2.0000e-005	2.3000e-004	0.0000	7.0000e-005	0.0000	7.0000e-005	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0612	0.0612	0.0000	0.0000	0.0612
Total	**4.0000e-005**	**3.4000e-004**	**3.0000e-004**	**0.0000**	**9.0000e-005**	**0.0000**	**9.0000e-005**	**3.0000e-005**	**0.0000**	**3.0000e-005**	**0.0000**	**0.1410**	**0.1410**	**0.0000**	**0.0000**	**0.1412**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.0000e-005	3.2000e-004	7.0000e-005	0.0000	2.0000e-005	0.0000	2.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0798	0.0798	0.0000	0.0000	0.0800
Worker	3.0000e-005	2.0000e-005	2.3000e-004	0.0000	7.0000e-005	0.0000	7.0000e-005	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0612	0.0612	0.0000	0.0000	0.0612
Total	**4.0000e-005**	**3.4000e-004**	**3.0000e-004**	**0.0000**	**9.0000e-005**	**0.0000**	**9.0000e-005**	**3.0000e-005**	**0.0000**	**3.0000e-005**	**0.0000**	**0.1410**	**0.1410**	**0.0000**	**0.0000**	**0.1412**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Other Asphalt Surfaces	0.00	0.00	0.00		
User Defined Commercial	0.00	0.00	0.00		
User Defined Residential	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Other Asphalt Surfaces	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
User Defined Commercial	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
User Defined Residential	10.80	7.30	7.50	45.60	19.00	35.40	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Other Asphalt Surfaces	0.561380	0.034626	0.184829	0.116141	0.016642	0.004535	0.016185	0.056706	0.001192	0.001407	0.004983	0.000606	0.000767
User Defined Commercial	0.561380	0.034626	0.184829	0.116141	0.016642	0.004535	0.016185	0.056706	0.001192	0.001407	0.004983	0.000606	0.000767
User Defined Residential	0.561380	0.034626	0.184829	0.116141	0.016642	0.004535	0.016185	0.056706	0.001192	0.001407	0.004983	0.000606	0.000767

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
User Defined Commercial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
User Defined Residential	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
User Defined Commercial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
User Defined Residential	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
User Defined Commercial	0	0.0000	0.0000	0.0000	0.0000
User Defined Residential	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
User Defined Commercial	0	0.0000	0.0000	0.0000	0.0000
User Defined Residential	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e

Land Use	Mgal	MT/yr			
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
User Defined Commercial	0 / 0	0.0000	0.0000	0.0000	0.0000
User Defined Residential	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
User Defined Commercial	0 / 0	0.0000	0.0000	0.0000	0.0000
User Defined Residential	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e

	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
User Defined Commercial	0	0.0000	0.0000	0.0000	0.0000
User Defined Residential	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
User Defined Commercial	0	0.0000	0.0000	0.0000	0.0000
User Defined Residential	0	0.0000	0.0000	0.0000	0.0000

Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Vierra Reinforcement Project

San Joaquin County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Commercial	0.00	User Defined Unit	0.00	0.00	0
Other Asphalt Surfaces	0.00	Acre	0.00	0.00	0
User Defined Residential	0.00	Dwelling Unit	0.00	0.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.7	**Precipitation Freq (Days)**	51
Climate Zone	2			**Operational Year**	2023
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Substation expansion area

Construction Phase - Project specific inputs

Off-road Equipment - Project specific inputs.

Off-road Equipment - Project specific inputs

Off-road Equipment - Project specific inputs

Off-road Equipment - Project specific inputs

Trips and VMT - Project specific inputs.

Grading - Only substation expansion area being graded.

Vehicle Emission Factors -

Vehicle Emission Factors -

Vehicle Emission Factors -

Table Name	Column Name	Default Value	New Value
tblFleetMix	FleetMixLandUseSubType	User Defined Commercial	Other Asphalt Surfaces
tblFleetMix	FleetMixLandUseSubType	Other Asphalt Surfaces	User Defined Commercial
tblGrading	AcresOfGrading	56.25	2.80
tblGrading	MaterialExported	0.00	1,020.00
tblGrading	MaterialImported	0.00	10,000.00
tblOffRoadEquipment	HorsePower	158.00	50.00
tblOffRoadEquipment	HorsePower	402.00	250.00
tblOffRoadEquipment	HorsePower	172.00	9.00
tblOffRoadEquipment	HorsePower	172.00	20.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	3.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00

tblOffRoadEquipment	UsageHours	4.00	6.00
tblOffRoadEquipment	UsageHours	4.00	10.00
tblOffRoadEquipment	UsageHours	4.00	10.00
tblOffRoadEquipment	UsageHours	4.00	10.00
tblOffRoadEquipment	UsageHours	4.00	10.00
tblOffRoadEquipment	UsageHours	4.00	2.00
tblOffRoadEquipment	UsageHours	6.00	2.00
tblOffRoadEquipment	UsageHours	6.00	5.00
tblOffRoadEquipment	UsageHours	6.00	1.67
tblOffRoadEquipment	UsageHours	6.00	3.33
tblOffRoadEquipment	UsageHours	1.00	6.00
tblOffRoadEquipment	UsageHours	8.00	10.00
tblOffRoadEquipment	UsageHours	8.00	10.00
tblOffRoadEquipment	UsageHours	8.00	10.00
tblOffRoadEquipment	UsageHours	8.00	10.00
tblOffRoadEquipment	UsageHours	8.00	10.00
tblOffRoadEquipment	UsageHours	8.00	10.00
tblOffRoadEquipment	UsageHours	8.00	2.00
tblOffRoadEquipment	UsageHours	8.00	3.33
tblOffRoadEquipment	UsageHours	8.00	10.00
tblProjectCharacteristics	OperationalYear	2018	2023
tblTripsAndVMT	HaulingTripNumber	0.00	800.00
tblTripsAndVMT	HaulingTripNumber	0.00	28.00
tblTripsAndVMT	HaulingTripNumber	0.00	4.00
tblTripsAndVMT	HaulingTripNumber	0.00	4.00
tblTripsAndVMT	HaulingTripNumber	0.00	4.00
tblTripsAndVMT	HaulingTripNumber	0.00	82.00
tblTripsAndVMT	VendorTripLength	7.30	30.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	VendorTripNumber	0.00	20.00

tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	VendorTripNumber	0.00	14.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	0.00	16.00
tblTripsAndVMT	VendorTripNumber	0.00	12.00
tblTripsAndVMT	WorkerTripNumber	5.00	4.00
tblTripsAndVMT	WorkerTripNumber	0.00	30.00
tblTripsAndVMT	WorkerTripNumber	0.00	30.00
tblTripsAndVMT	WorkerTripNumber	0.00	30.00
tblTripsAndVMT	WorkerTripNumber	0.00	30.00
tblTripsAndVMT	WorkerTripNumber	0.00	30.00
tblTripsAndVMT	WorkerTripNumber	0.00	6.00
tblTripsAndVMT	WorkerTripNumber	0.00	6.00
tblTripsAndVMT	WorkerTripNumber	18.00	16.00
tblTripsAndVMT	WorkerTripNumber	28.00	38.00
tblTripsAndVMT	WorkerTripNumber	28.00	0.00
tblTripsAndVMT	WorkerTripNumber	0.00	8.00
tblTripsAndVMT	WorkerTripNumber	0.00	12.00
tblTripsAndVMT	WorkerTripNumber	0.00	36.00
tblTripsAndVMT	WorkerTripNumber	0.00	14.00
tblTripsAndVMT	WorkerTripNumber	0.00	10.00

tblTripsAndVMT	WorkerTripNumber	0.00	10.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2020	9.0267	89.5207	65.6780	0.1529	6.6682	3.9513	10.0230	3.0397	3.6500	6.5287	0.0000	14,962.87 12	14,962.871 2	3.8832	0.0000	15,059.95 03
2021	0.0881	0.2577	0.6228	2.2100e-003	0.1779	1.6400e-003	0.1795	0.0475	1.5400e-003	0.0490	0.0000	222.4363	222.4363	7.4700e-003	0.0000	222.6232
Maximum	**9.0267**	**89.5207**	**65.6780**	**0.1529**	**6.6682**	**3.9513**	**10.0230**	**3.0397**	**3.6500**	**6.5287**	**0.0000**	**14,962.87 12**	**14,962.871 2**	**3.8832**	**0.0000**	**15,059.95 03**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2020	9.0267	89.5207	65.6780	0.1529	6.6682	3.9513	10.0230	3.0397	3.6500	6.5287	0.0000	14,962.87 12	14,962.871 2	3.8832	0.0000	15,059.95 03
2021	0.0881	0.2577	0.6228	2.2100e-003	0.1779	1.6400e-003	0.1795	0.0475	1.5400e-003	0.0490	0.0000	222.4363	222.4363	7.4700e-003	0.0000	222.6232
Maximum	**9.0267**	**89.5207**	**65.6780**	**0.1529**	**6.6682**	**3.9513**	**10.0230**	**3.0397**	**3.6500**	**6.5287**	**0.0000**	**14,962.87 12**	**14,962.871 2**	**3.8832**	**0.0000**	**15,059.95 03**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Phase 1 - Site Preparation	Site Preparation	5/1/2020	5/2/2020	5	2	
2	Phase 12 - Howland Site Preparation	Site Preparation	5/1/2020	6/5/2020	6	30	
3	Phase 5A - Substation Expansion	Grading	5/1/2020	7/8/2020	5	50	
4	Phase 2 - Traffic Control	Building Construction	5/1/2020	7/23/2020	6	72	
5	Phase 3 - TSP Installation	Building Construction	5/1/2020	6/24/2020	6	48	
6	Phase 5B - Substation Expansion	Building Construction	5/1/2020	11/25/2020	5	150	
7	Phase 5D - Substation Expansion	Building Construction	5/1/2020	4/28/2021	5	260	
8	Phase 13 - Howland Monopole	Building Construction	5/15/2020	6/19/2020	6	30	
9	Phase 14 - Howland Indoor Work	Building Construction	6/19/2020	7/7/2020	6	15	
10	Phase 4 - Conductor Installation	Building Construction	6/26/2020	7/30/2020	6	30	
11	Phase 5C - Substation Expansion	Grading	9/12/2020	10/7/2020	5	20	
12	Phase 6 - Vierra Substation	Building Construction	10/28/2020	11/10/2020	5	10	
13	Phase 7 - Kasson Substation	Building Construction	11/11/2020	11/24/2020	5	10	
14	Phase 8 - Tracy Substation	Building Construction	11/25/2020	12/8/2020	5	10	
15	Phase 9 - Manteca Substation	Building Construction	12/9/2020	12/22/2020	5	10	
16	Phase 10 - Highland Peak	Building Construction	12/23/2020	12/29/2020	5	5	
17	Phase 11 - Mt Oso	Building Construction	12/30/2020	1/5/2021	5	5	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor

Phase 1 - Site Preparation	Other Construction Equipment	1	10.00	9	0.42
Phase 1 - Site Preparation	Other Construction Equipment	1	10.00	20	0.42
Phase 5A - Substation Expansion	Cranes	1	6.00	231	0.29
Phase 5A - Substation Expansion	Excavators	2	8.00	50	0.38
Phase 5A - Substation Expansion	Excavators	1	6.00	158	0.38
Phase 5A - Substation Expansion	Graders	1	6.00	187	0.41
Phase 5A - Substation Expansion	Off-Highway Trucks	2	3.00	402	0.38
Phase 5A - Substation Expansion	Rollers	2	6.00	80	0.38
Phase 5A - Substation Expansion	Rubber Tired Dozers	1	6.00	247	0.40
Phase 5A - Substation Expansion	Scrapers	1	6.00	367	0.48
Phase 2 - Traffic Control	Excavators	0	7.00	158	0.38
Phase 3 - TSP Installation	Cranes	1	2.00	231	0.29
Phase 3 - TSP Installation	Cranes	1	4.00	231	0.29
Phase 3 - TSP Installation	Off-Highway Trucks	1	2.00	402	0.38
Phase 3 - TSP Installation	Off-Highway Trucks	1	6.00	250	0.38
Phase 3 - TSP Installation	Off-Highway Trucks	2	6.00	402	0.38
Phase 3 - TSP Installation	Tractors/Loaders/Backhoes	1	2.00	97	0.37
Phase 3 - TSP Installation	Trenchers	1	6.00	78	0.50
Phase 5B - Substation Expansion	Aerial Lifts	3	5.00	63	0.31
Phase 5B - Substation Expansion	Air Compressors	2	2.00	78	0.48
Phase 5B - Substation Expansion	Forklifts	2	5.00	89	0.20
Phase 5B - Substation Expansion	Generator Sets	1	4.00	84	0.74
Phase 5B - Substation Expansion	Skid Steer Loaders	2	4.00	65	0.37
Phase 5B - Substation Expansion	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Phase 5C - Substation Expansion	Excavators	0	7.00	158	0.38
Phase 4 - Conductor Installation	Cranes	3	6.00	231	0.29
Phase 4 - Conductor Installation	Forklifts	1	2.00	89	0.20
Phase 4 - Conductor Installation	Other General Industrial Equipment	3	6.00	88	0.34
Phase 5D - Substation Expansion	Excavators	0	7.00	158	0.38
Phase 6 - Vierra Substation	Tractors/Loaders/Backhoes	1	10.00	97	0.37

Phase 6 - Vierra Substation	Off-Highway Trucks	2	10.00	402	0.38
Phase 6 - Vierra Substation	Cranes	2	10.00	231	0.29
Phase 7 - Kasson Substation	Tractors/Loaders/Backhoes	1	10.00	97	0.37
Phase 7 - Kasson Substation	Off-Highway Trucks	2	10.00	402	0.38
Phase 7 - Kasson Substation	Cranes	2	10.00	231	0.29
Phase 8 - Tracy Substation	Tractors/Loaders/Backhoes	1	10.00	97	0.37
Phase 8 - Tracy Substation	Off-Highway Trucks	2	10.00	402	0.38
Phase 8 - Tracy Substation	Cranes	2	10.00	231	0.29
Phase 9 - Manteca Substation	Tractors/Loaders/Backhoes	1	10.00	97	0.37
Phase 9 - Manteca Substation	Off-Highway Trucks	2	10.00	402	0.38
Phase 9 - Manteca Substation	Cranes	2	10.00	231	0.29
Phase 10 - Highland Peak	Tractors/Loaders/Backhoes	0	10.00	97	0.37
Phase 11 - Mt Oso	Tractors/Loaders/Backhoes	0	10.00	97	0.37
Phase 12 - Howland Site Preparation	Bore/Drill Rigs	1	1.00	221	0.50
Phase 12 - Howland Site Preparation	Excavators	1	10.00	158	0.38
Phase 12 - Howland Site Preparation	Off-Highway Trucks	3	0.67	402	0.38
Phase 12 - Howland Site Preparation	Tractors/Loaders/Backhoes	2	10.00	97	0.37
Phase 13 - Howland Monopole	Tractors/Loaders/Backhoes	1	3.33	97	0.37
Phase 13 - Howland Monopole	Forklifts	1	1.67	89	0.20
Phase 14 - Howland Indoor Work	Forklifts	1	3.33	89	0.20

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Phase 1 - Site Preparation	2	4.00	2.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Phase 5A - Substation Expansion	11	38.00	4.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Phase 5A - Substation Expansion	11	0.00	2.00	0.00	10.80	30.00	20.00	LD_Mix	HDT_Mix	HHDT
Phase 2 - Traffic Control	0	8.00	4.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Phase 3 - TSP Installation	8	12.00	4.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Phase 5B - Substation Expansion	12	36.00	4.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

Phase 5C - Substation Expansion	0	0.00	0.00	800.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Phase 4 - Conductor Installation	7	30.00	20.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Phase 5D - Substation Expansion	0	14.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Phase 6 - Vierra Substation	5	30.00	4.00	28.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Phase 7 - Kasson Substation	5	30.00	4.00	4.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Phase 8 - Tracy Substation	5	30.00	4.00	4.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Phase 9 - Manteca Substation	5	30.00	4.00	4.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Phase 10 - Highland Peak	0	6.00	2.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Phase 11 - Mt Oso	0	6.00	2.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Phase 12 - Howland Site Preparation	7	16.00	14.00	82.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Phase 13 - Howland Monopole	2	10.00	16.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Phase 14 - Howland Indoor Work	1	10.00	12.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Phase 1 - Site Preparation - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.2879	1.3524	1.4512	1.4600e-003		0.1088	0.1088		0.1001	0.1001		141.7709	141.7709	0.0459		142.9172
Total	**0.2879**	**1.3524**	**1.4512**	**1.4600e-003**	**0.0000**	**0.1088**	**0.1088**	**0.0000**	**0.1001**	**0.1001**		**141.7709**	**141.7709**	**0.0459**		**142.9172**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	7.9700e-003	0.2331	0.0468	5.7000e-004	0.0136	1.2900e-003	0.0148	3.9000e-003	1.2400e-003	5.1400e-003		59.9825	59.9825	3.4900e-003		60.0699
Worker	0.0177	0.0104	0.1275	3.4000e-004	0.0329	2.2000e-004	0.0331	8.7200e-003	2.0000e-004	8.9200e-003		33.8806	33.8806	9.4000e-004		33.9040
Total	**0.0257**	**0.2435**	**0.1743**	**9.1000e-004**	**0.0464**	**1.5100e-003**	**0.0479**	**0.0126**	**1.4400e-003**	**0.0141**		**93.8631**	**93.8631**	**4.4300e-003**		**93.9739**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.2879	1.3524	1.4512	1.4600e-003		0.1088	0.1088		0.1001	0.1001	0.0000	141.7709	141.7709	0.0459		142.9172
Total	**0.2879**	**1.3524**	**1.4512**	**1.4600e-003**	**0.0000**	**0.1088**	**0.1088**	**0.0000**	**0.1001**	**0.1001**	**0.0000**	**141.7709**	**141.7709**	**0.0459**		**142.9172**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					

Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	7.9700e-003	0.2331	0.0468	5.7000e-004	0.0136	1.2900e-003	0.0148	3.9000e-003	1.2400e-003	5.1400e-003		59.9825	59.9825	3.4900e-003		60.0699
Worker	0.0177	0.0104	0.1275	3.4000e-004	0.0329	2.2000e-004	0.0331	8.7200e-003	2.0000e-004	8.9200e-003		33.8806	33.8806	9.4000e-004		33.9040
Total	**0.0257**	**0.2435**	**0.1743**	**9.1000e-004**	**0.0464**	**1.5100e-003**	**0.0479**	**0.0126**	**1.4400e-003**	**0.0141**		**93.8631**	**93.8631**	**4.4300e-003**		**93.9739**

3.3 Phase 12 - Howland Site Preparation - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					5.0200e-003	0.0000	5.0200e-003	7.6000e-004	0.0000	7.6000e-004			0.0000			0.0000
Off-Road	1.0313	10.3075	11.0014	0.0187		0.5494	0.5494		0.5055	0.5055		1,812.0489	1,812.0489	0.5861		1,826.7003
Total	**1.0313**	**10.3075**	**11.0014**	**0.0187**	**5.0200e-003**	**0.5494**	**0.5545**	**7.6000e-004**	**0.5055**	**0.5063**		**1,812.0489**	**1,812.0489**	**0.5861**		**1,826.7003**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0216	0.7436	0.1104	2.2000e-003	0.0467	2.5900e-003	0.0493	0.0128	2.4800e-003	0.0153		231.1019	231.1019	9.7300e-003		231.3451
Vendor	0.0558	1.6317	0.3279	4.0100e-003	0.0949	9.0500e-003	0.1039	0.0273	8.6600e-003	0.0360		419.8775	419.8775	0.0245		420.4890
Worker	0.0707	0.0415	0.5099	1.3600e-003	0.1314	8.7000e-004	0.1323	0.0349	8.0000e-004	0.0357		135.5224	135.5224	3.7500e-003		135.6162
Total	**0.1481**	**2.4168**	**0.9482**	**7.5700e-003**	**0.2730**	**0.0125**	**0.2855**	**0.0750**	**0.0119**	**0.0869**		**786.5018**	**786.5018**	**0.0379**		**787.4502**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					5.0200e-003	0.0000	5.0200e-003	7.6000e-004	0.0000	7.6000e-004			0.0000			0.0000
Off-Road	1.0313	10.3075	11.0014	0.0187		0.5494	0.5494		0.5055	0.5055	0.0000	1,812.0489	1,812.0489	0.5861		1,826.7003
Total	**1.0313**	**10.3075**	**11.0014**	**0.0187**	**5.0200e-003**	**0.5494**	**0.5545**	**7.6000e-004**	**0.5055**	**0.5063**	**0.0000**	**1,812.0489**	**1,812.0489**	**0.5861**		**1,826.7003**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0216	0.7436	0.1104	2.2000e-003	0.0467	2.5900e-003	0.0493	0.0128	2.4800e-003	0.0153		231.1019	231.1019	9.7300e-003		231.3451
Vendor	0.0558	1.6317	0.3279	4.0100e-003	0.0949	9.0500e-003	0.1039	0.0273	8.6600e-003	0.0360		419.8775	419.8775	0.0245		420.4890
Worker	0.0707	0.0415	0.5099	1.3600e-003	0.1314	8.7000e-004	0.1323	0.0349	8.0000e-004	0.0357		135.5224	135.5224	3.7500e-003		135.6162
Total	**0.1481**	**2.4168**	**0.9482**	**7.5700e-003**	**0.2730**	**0.0125**	**0.2855**	**0.0750**	**0.0119**	**0.0869**		**786.5018**	**786.5018**	**0.0379**		**787.4502**

3.4 Phase 5A - Substation Expansion - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					4.5760	0.0000	4.5760	2.4891	0.0000	2.4891			0.0000			0.0000
Off-Road	3.6421	38.4761	22.8047	0.0484		1.6867	1.6867		1.5518	1.5518		4,689.1585	4,689.1585	1.5166		4,727.0727
Total	**3.6421**	**38.4761**	**22.8047**	**0.0484**	**4.5760**	**1.6867**	**6.2627**	**2.4891**	**1.5518**	**4.0409**		**4,689.1585**	**4,689.1585**	**1.5166**		**4,727.0727**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0392	1.0078	0.2124	3.0700e-003	0.0826	7.6300e-003	0.0903	0.0238	7.2900e-003	0.0311		321.2163	321.2163	0.0118		321.5119
Worker	0.1680	0.0985	1.2111	3.2300e-003	0.3122	2.0600e-003	0.3142	0.0828	1.9000e-003	0.0847		321.8657	321.8657	8.9100e-003		322.0884
Total	**0.2072**	**1.1063**	**1.4234**	**6.3000e-003**	**0.3948**	**9.6900e-003**	**0.4045**	**0.1066**	**9.1900e-003**	**0.1158**		**643.0820**	**643.0820**	**0.0207**		**643.6003**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					4.5760	0.0000	4.5760	2.4891	0.0000	2.4891			0.0000			0.0000

Off-Road	3.6421	38.4761	22.8047	0.0484		1.6867	1.6867		1.5518	1.5518	0.0000	4,689.1585	4,689.1585	1.5166		4,727.0727
Total	**3.6421**	**38.4761**	**22.8047**	**0.0484**	**4.5760**	**1.6867**	**6.2627**	**2.4891**	**1.5518**	**4.0409**	**0.0000**	**4,689.1585**	**4,689.1585**	**1.5166**		**4,727.0727**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0392	1.0078	0.2124	3.0700e-003	0.0826	7.6300e-003	0.0903	0.0238	7.2900e-003	0.0311		321.2163	321.2163	0.0118		321.5119
Worker	0.1680	0.0985	1.2111	3.2300e-003	0.3122	2.0600e-003	0.3142	0.0828	1.9000e-003	0.0847		321.8657	321.8657	8.9100e-003		322.0884
Total	**0.2072**	**1.1063**	**1.4234**	**6.3000e-003**	**0.3948**	**9.6900e-003**	**0.4045**	**0.1066**	**9.1900e-003**	**0.1158**		**643.0820**	**643.0820**	**0.0207**		**643.6003**

3.5 Phase 2 - Traffic Control - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0159	0.4662	0.0937	1.1500e-003	0.0271	2.5900e-003	0.0297	7.8000e-003	2.4700e-003	0.0103		119.9650	119.9650	6.9900e-003		120.1397
Worker	0.0354	0.0207	0.2550	6.8000e-004	0.0657	4.3000e-004	0.0662	0.0174	4.0000e-004	0.0178		67.7612	67.7612	1.8800e-003		67.8081
Total	**0.0513**	**0.4870**	**0.3486**	**1.8300e-003**	**0.0928**	**3.0200e-003**	**0.0958**	**0.0252**	**2.8700e-003**	**0.0281**		**187.7262**	**187.7262**	**8.8700e-003**		**187.9478**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					

Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0159	0.4662	0.0937	1.1500e-003	0.0271	2.5900e-003	0.0297	7.8000e-003	2.4700e-003	0.0103		119.9650	119.9650	6.9900e-003		120.1397
Worker	0.0354	0.0207	0.2550	6.8000e-004	0.0657	4.3000e-004	0.0662	0.0174	4.0000e-004	0.0178		67.7612	67.7612	1.8800e-003		67.8081
Total	**0.0513**	**0.4870**	**0.3486**	**1.8300e-003**	**0.0928**	**3.0200e-003**	**0.0958**	**0.0252**	**2.8700e-003**	**0.0281**		**187.7262**	**187.7262**	**8.8700e-003**		**187.9478**

3.6 Phase 3 - TSP Installation - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.2130	21.6329	12.5494	0.0368		0.9391	0.9391		0.8639	0.8639		3,567.8108	3,567.8108	1.1539		3,596.6584
Total	**2.2130**	**21.6329**	**12.5494**	**0.0368**		**0.9391**	**0.9391**		**0.8639**	**0.8639**		**3,567.8108**	**3,567.8108**	**1.1539**		**3,596.6584**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0159	0.4662	0.0937	1.1500e-003	0.0271	2.5900e-003	0.0297	7.8000e-003	2.4700e-003	0.0103		119.9650	119.9650	6.9900e-003		120.1397
Worker	0.0531	0.0311	0.3824	1.0200e-003	0.0986	6.5000e-004	0.0992	0.0262	6.0000e-004	0.0268		101.6418	101.6418	2.8100e-003		101.7121
Total	**0.0690**	**0.4973**	**0.4761**	**2.1700e-003**	**0.1257**	**3.2400e-003**	**0.1289**	**0.0340**	**3.0700e-003**	**0.0370**		**221.6068**	**221.6068**	**9.8000e-003**		**221.8518**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.2130	21.6329	12.5494	0.0368		0.9391	0.9391		0.8639	0.8639	0.0000	3,567.8108	3,567.8108	1.1539		3,596.6584
Total	**2.2130**	**21.6329**	**12.5494**	**0.0368**		**0.9391**	**0.9391**		**0.8639**	**0.8639**	**0.0000**	**3,567.8108**	**3,567.8108**	**1.1539**		**3,596.6584**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0159	0.4662	0.0937	1.1500e-003	0.0271	2.5900e-003	0.0297	7.8000e-003	2.4700e-003	0.0103		119.9650	119.9650	6.9900e-003		120.1397
Worker	0.0531	0.0311	0.3824	1.0200e-003	0.0986	6.5000e-004	0.0992	0.0262	6.0000e-004	0.0268		101.6418	101.6418	2.8100e-003		101.7121
Total	**0.0690**	**0.4973**	**0.4761**	**2.1700e-003**	**0.1257**	**3.2400e-003**	**0.1289**	**0.0340**	**3.0700e-003**	**0.0370**		**221.6068**	**221.6068**	**9.8000e-003**		**221.8518**

3.7 Phase 5B - Substation Expansion - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.1141	10.9632	12.5502	0.0186		0.6320	0.6320		0.5952	0.5952		1,790.8058	1,790.8058	0.4498		1,802.0512
Total	**1.1141**	**10.9632**	**12.5502**	**0.0186**		**0.6320**	**0.6320**		**0.5952**	**0.5952**		**1,790.8058**	**1,790.8058**	**0.4498**		**1,802.0512**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0159	0.4662	0.0937	1.1500e-003	0.0271	2.5900e-003	0.0297	7.8000e-003	2.4700e-003	0.0103		119.9650	119.9650	6.9900e-003		120.1397
Worker	0.1592	0.0933	1.1473	3.0600e-003	0.2957	1.9500e-003	0.2977	0.0784	1.8000e-003	0.0802		304.9254	304.9254	8.4400e-003		305.1364
Total	**0.1751**	**0.5595**	**1.2410**	**4.2100e-003**	**0.3228**	**4.5400e-003**	**0.3274**	**0.0862**	**4.2700e-003**	**0.0905**		**424.8904**	**424.8904**	**0.0154**		**425.2761**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.1141	10.9632	12.5502	0.0186		0.6320	0.6320		0.5952	0.5952	0.0000	1,790.8058	1,790.8058	0.4498		1,802.0512

Total	**1.1141**	**10.9632**	**12.5502**	**0.0186**		**0.6320**	**0.6320**		**0.5952**	**0.5952**	**0.0000**	**1,790.8058**	**1,790.8058**	**0.4498**		**1,802.0512**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0159	0.4662	0.0937	1.1500e-003	0.0271	2.5900e-003	0.0297	7.8000e-003	2.4700e-003	0.0103		119.9650	119.9650	6.9900e-003		120.1397
Worker	0.1592	0.0933	1.1473	3.0600e-003	0.2957	1.9500e-003	0.2977	0.0784	1.8000e-003	0.0802		304.9254	304.9254	8.4400e-003		305.1364
Total	**0.1751**	**0.5595**	**1.2410**	**4.2100e-003**	**0.3228**	**4.5400e-003**	**0.3274**	**0.0862**	**4.2700e-003**	**0.0905**		**424.8904**	**424.8904**	**0.0154**		**425.2761**

3.8 Phase 5D - Substation Expansion - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0619	0.0363	0.4462	1.1900e-003	0.1150	7.6000e-004	0.1158	0.0305	7.0000e-004	0.0312		118.5821	118.5821	3.2800e-003		118.6641
Total	**0.0619**	**0.0363**	**0.4462**	**1.1900e-003**	**0.1150**	**7.6000e-004**	**0.1158**	**0.0305**	**7.0000e-004**	**0.0312**		**118.5821**	**118.5821**	**3.2800e-003**		**118.6641**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					

Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0619	0.0363	0.4462	1.1900e-003	0.1150	7.6000e-004	0.1158	0.0305	7.0000e-004	0.0312		118.5821	118.5821	3.2800e-003		118.6641
Total	**0.0619**	**0.0363**	**0.4462**	**1.1900e-003**	**0.1150**	**7.6000e-004**	**0.1158**	**0.0305**	**7.0000e-004**	**0.0312**		**118.5821**	**118.5821**	**3.2800e-003**		**118.6641**

3.8 Phase 5D - Substation Expansion - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0571	0.0323	0.4073	1.1500e-003	0.1150	7.3000e-004	0.1157	0.0305	6.7000e-004	0.0312		114.1071	114.1071	2.9300e-003		114.1803
Total	**0.0571**	**0.0323**	**0.4073**	**1.1500e-003**	**0.1150**	**7.3000e-004**	**0.1157**	**0.0305**	**6.7000e-004**	**0.0312**		**114.1071**	**114.1071**	**2.9300e-003**		**114.1803**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0571	0.0323	0.4073	1.1500e-003	0.1150	7.3000e-004	0.1157	0.0305	6.7000e-004	0.0312		114.1071	114.1071	2.9300e-003		114.1803
Total	**0.0571**	**0.0323**	**0.4073**	**1.1500e-003**	**0.1150**	**7.3000e-004**	**0.1157**	**0.0305**	**6.7000e-004**	**0.0312**		**114.1071**	**114.1071**	**2.9300e-003**		**114.1803**

3.9 Phase 13 - Howland Monopole - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.1173	1.1471	1.1953	1.6100e-003		0.0756	0.0756		0.0695	0.0695		156.0963	156.0963	0.0505		157.3585
Total	**0.1173**	**1.1471**	**1.1953**	**1.6100e-003**		**0.0756**	**0.0756**		**0.0695**	**0.0695**		**156.0963**	**156.0963**	**0.0505**		**157.3585**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0638	1.8648	0.3747	4.5800e-003	0.1084	0.0104	0.1188	0.0312	9.9000e-003	0.0411		479.8600	479.8600	0.0280		480.5588
Worker	0.0442	0.0259	0.3187	8.5000e-004	0.0822	5.4000e-004	0.0827	0.0218	5.0000e-004	0.0223		84.7015	84.7015	2.3400e-003		84.7601
Total	**0.1080**	**1.8908**	**0.6934**	**5.4300e-003**	**0.1906**	**0.0109**	**0.2014**	**0.0530**	**0.0104**	**0.0634**		**564.5615**	**564.5615**	**0.0303**		**565.3189**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.1173	1.1471	1.1953	1.6100e-003		0.0756	0.0756		0.0695	0.0695	0.0000	156.0963	156.0963	0.0505		157.3585

Total	**0.1173**	**1.1471**	**1.1953**	**1.6100e-003**		**0.0756**	**0.0756**		**0.0695**	**0.0695**	**0.0000**	**156.0963**	**156.0963**	**0.0505**		**157.3585**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0638	1.8648	0.3747	4.5800e-003	0.1084	0.0104	0.1188	0.0312	9.9000e-003	0.0411		479.8600	479.8600	0.0280		480.5588
Worker	0.0442	0.0259	0.3187	8.5000e-004	0.0822	5.4000e-004	0.0827	0.0218	5.0000e-004	0.0223		84.7015	84.7015	2.3400e-003		84.7601
Total	**0.1080**	**1.8908**	**0.6934**	**5.4300e-003**	**0.1906**	**0.0109**	**0.2014**	**0.0530**	**0.0104**	**0.0634**		**564.5615**	**564.5615**	**0.0303**		**565.3189**

3.10 Phase 14 - Howland Indoor Work - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0599	0.5401	0.4913	6.4000e-004		0.0402	0.0402		0.0370	0.0370		61.6178	61.6178	0.0199		62.1160
Total	**0.0599**	**0.5401**	**0.4913**	**6.4000e-004**		**0.0402**	**0.0402**		**0.0370**	**0.0370**		**61.6178**	**61.6178**	**0.0199**		**62.1160**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0478	1.3986	0.2810	3.4400e-003	0.0813	7.7600e-003	0.0891	0.0234	7.4200e-003	0.0308		359.8950	359.8950	0.0210		360.4191
Worker	0.0442	0.0259	0.3187	8.5000e-004	0.0822	5.4000e-004	0.0827	0.0218	5.0000e-004	0.0223		84.7015	84.7015	2.3400e-003		84.7601
Total	**0.0920**	**1.4245**	**0.5997**	**4.2900e-003**	**0.1635**	**8.3000e-003**	**0.1718**	**0.0452**	**7.9200e-003**	**0.0531**		**444.5965**	**444.5965**	**0.0233**		**445.1792**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0599	0.5401	0.4913	6.4000e-004		0.0402	0.0402		0.0370	0.0370	0.0000	61.6178	61.6178	0.0199		62.1160
Total	**0.0599**	**0.5401**	**0.4913**	**6.4000e-004**		**0.0402**	**0.0402**		**0.0370**	**0.0370**	**0.0000**	**61.6178**	**61.6178**	**0.0199**		**62.1160**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					

Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0478	1.3986	0.2810	3.4400e-003	0.0813	7.7600e-003	0.0891	0.0234	7.4200e-003	0.0308		359.8950	359.8950	0.0210		360.4191
Worker	0.0442	0.0259	0.3187	8.5000e-004	0.0822	5.4000e-004	0.0827	0.0218	5.0000e-004	0.0223		84.7015	84.7015	2.3400e-003		84.7601
Total	**0.0920**	**1.4245**	**0.5997**	**4.2900e-003**	**0.1635**	**8.3000e-003**	**0.1718**	**0.0452**	**7.9200e-003**	**0.0531**		**444.5965**	**444.5965**	**0.0233**		**445.1792**

3.11 Phase 4 - Conductor Installation - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.5857	17.2768	9.5317	0.0191		0.8756	0.8756		0.8055	0.8055		1,852.3252	1,852.3252	0.5991		1,867.3022
Total	**1.5857**	**17.2768**	**9.5317**	**0.0191**		**0.8756**	**0.8756**		**0.8055**	**0.8055**		**1,852.3252**	**1,852.3252**	**0.5991**		**1,867.3022**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0797	2.3310	0.4684	5.7300e-003	0.3285	0.0129	0.3415	0.0864	0.0124	0.0988		599.8250	599.8250	0.0349		600.6986
Worker	0.1326	0.0778	0.9561	2.5500e-003	0.6748	1.6300e-003	0.6764	0.1705	1.5000e-003	0.1720		254.1045	254.1045	7.0300e-003		254.2803
Total	**0.2124**	**2.4088**	**1.4245**	**8.2800e-003**	**1.0033**	**0.0146**	**1.0179**	**0.2569**	**0.0139**	**0.2708**		**853.9295**	**853.9295**	**0.0420**		**854.9789**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.5857	17.2768	9.5317	0.0191		0.8756	0.8756		0.8055	0.8055	0.0000	1,852.3252	1,852.3252	0.5991		1,867.3022
Total	**1.5857**	**17.2768**	**9.5317**	**0.0191**		**0.8756**	**0.8756**		**0.8055**	**0.8055**	**0.0000**	**1,852.3252**	**1,852.3252**	**0.5991**		**1,867.3022**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0797	2.3310	0.4684	5.7300e-003	0.3285	0.0129	0.3415	0.0864	0.0124	0.0988		599.8250	599.8250	0.0349		600.6986
Worker	0.1326	0.0778	0.9561	2.5500e-003	0.6748	1.6300e-003	0.6764	0.1705	1.5000e-003	0.1720		254.1045	254.1045	7.0300e-003		254.2803
Total	**0.2124**	**2.4088**	**1.4245**	**8.2800e-003**	**1.0033**	**0.0146**	**1.0179**	**0.2569**	**0.0139**	**0.2708**		**853.9295**	**853.9295**	**0.0420**		**854.9789**

3.12 Phase 5C - Substation Expansion - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0738	0.0000	0.0738	0.0112	0.0000	0.0112			0.0000			0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0738**	**0.0000**	**0.0738**	**0.0112**	**0.0000**	**0.0112**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.3161	10.8822	1.6153	0.0322	0.7589	0.0379	0.7968	0.2064	0.0362	0.2426		3,381.9788	3,381.9788	0.1424		3,385.5379
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.3161**	**10.8822**	**1.6153**	**0.0322**	**0.7589**	**0.0379**	**0.7968**	**0.2064**	**0.0362**	**0.2426**		**3,381.9788**	**3,381.9788**	**0.1424**		**3,385.5379**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0738	0.0000	0.0738	0.0112	0.0000	0.0112			0.0000			0.0000

Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0738**	**0.0000**	**0.0738**	**0.0112**	**0.0000**	**0.0112**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.3161	10.8822	1.6153	0.0322	0.7589	0.0379	0.7968	0.2064	0.0362	0.2426		3,381.9788	3,381.9788	0.1424		3,385.5379
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.3161**	**10.8822**	**1.6153**	**0.0322**	**0.7589**	**0.0379**	**0.7968**	**0.2064**	**0.0362**	**0.2426**		**3,381.9788**	**3,381.9788**	**0.1424**		**3,385.5379**

3.13 Phase 6 - Vierra Substation - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.0531	31.9171	17.6633	0.0513		1.2980	1.2980		1.1941	1.1941		4,969.4897	4,969.4897	1.6072		5,009.6705
Total	**3.0531**	**31.9171**	**17.6633**	**0.0513**		**1.2980**	**1.2980**		**1.1941**	**1.1941**		**4,969.4897**	**4,969.4897**	**1.6072**		**5,009.6705**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0221	0.7618	0.1131	2.2500e-003	0.0490	2.6500e-003	0.0517	0.0134	2.5400e-003	0.0160		236.7385	236.7385	9.9700e-003		236.9877
Vendor	0.0159	0.4662	0.0937	1.1500e-003	0.0271	2.5900e-003	0.0297	7.8000e-003	2.4700e-003	0.0103		119.9650	119.9650	6.9900e-003		120.1397
Worker	0.1326	0.0778	0.9561	2.5500e-003	0.2464	1.6300e-003	0.2481	0.0654	1.5000e-003	0.0669		254.1045	254.1045	7.0300e-003		254.2803
Total	**0.1707**	**1.3057**	**1.1629**	**5.9500e-003**	**0.3226**	**6.8700e-003**	**0.3294**	**0.0866**	**6.5100e-003**	**0.0931**		**610.8080**	**610.8080**	**0.0240**		**611.4077**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.0531	31.9171	17.6633	0.0513		1.2980	1.2980		1.1941	1.1941	0.0000	4,969.4897	4,969.4897	1.6072		5,009.6705
Total	**3.0531**	**31.9171**	**17.6633**	**0.0513**		**1.2980**	**1.2980**		**1.1941**	**1.1941**	**0.0000**	**4,969.4897**	**4,969.4897**	**1.6072**		**5,009.6705**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					

Hauling	0.0221	0.7618	0.1131	2.2500e-003	0.0490	2.6500e-003	0.0517	0.0134	2.5400e-003	0.0160		236.7385	236.7385	9.9700e-003		236.9877
Vendor	0.0159	0.4662	0.0937	1.1500e-003	0.0271	2.5900e-003	0.0297	7.8000e-003	2.4700e-003	0.0103		119.9650	119.9650	6.9900e-003		120.1397
Worker	0.1326	0.0778	0.9561	2.5500e-003	0.2464	1.6300e-003	0.2481	0.0654	1.5000e-003	0.0669		254.1045	254.1045	7.0300e-003		254.2803
Total	**0.1707**	**1.3057**	**1.1629**	**5.9500e-003**	**0.3226**	**6.8700e-003**	**0.3294**	**0.0866**	**6.5100e-003**	**0.0931**		**610.8080**	**610.8080**	**0.0240**		**611.4077**

3.14 Phase 7 - Kasson Substation - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.0531	31.9171	17.6633	0.0513		1.2980	1.2980		1.1941	1.1941		4,969.4897	4,969.4897	1.6072		5,009.6705
Total	**3.0531**	**31.9171**	**17.6633**	**0.0513**		**1.2980**	**1.2980**		**1.1941**	**1.1941**		**4,969.4897**	**4,969.4897**	**1.6072**		**5,009.6705**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	3.1600e-003	0.1088	0.0162	3.2000e-004	7.0000e-003	3.8000e-004	7.3800e-003	1.9200e-003	3.6000e-004	2.2800e-003		33.8198	33.8198	1.4200e-003		33.8554
Vendor	0.0159	0.4662	0.0937	1.1500e-003	0.0271	2.5900e-003	0.0297	7.8000e-003	2.4700e-003	0.0103		119.9650	119.9650	6.9900e-003		120.1397
Worker	0.1326	0.0778	0.9561	2.5500e-003	0.2464	1.6300e-003	0.2481	0.0654	1.5000e-003	0.0669		254.1045	254.1045	7.0300e-003		254.2803
Total	**0.1517**	**0.6528**	**1.0659**	**4.0200e-003**	**0.2805**	**4.6000e-003**	**0.2851**	**0.0751**	**4.3300e-003**	**0.0794**		**407.8893**	**407.8893**	**0.0154**		**408.2754**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.0531	31.9171	17.6633	0.0513		1.2980	1.2980		1.1941	1.1941	0.0000	4,969.4897	4,969.4897	1.6072		5,009.6705
Total	**3.0531**	**31.9171**	**17.6633**	**0.0513**		**1.2980**	**1.2980**		**1.1941**	**1.1941**	**0.0000**	**4,969.4897**	**4,969.4897**	**1.6072**		**5,009.6705**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	3.1600e-003	0.1088	0.0162	3.2000e-004	7.0000e-003	3.8000e-004	7.3800e-003	1.9200e-003	3.6000e-004	2.2800e-003		33.8198	33.8198	1.4200e-003		33.8554
Vendor	0.0159	0.4662	0.0937	1.1500e-003	0.0271	2.5900e-003	0.0297	7.8000e-003	2.4700e-003	0.0103		119.9650	119.9650	6.9900e-003		120.1397
Worker	0.1326	0.0778	0.9561	2.5500e-003	0.2464	1.6300e-003	0.2481	0.0654	1.5000e-003	0.0669		254.1045	254.1045	7.0300e-003		254.2803
Total	**0.1517**	**0.6528**	**1.0659**	**4.0200e-003**	**0.2805**	**4.6000e-003**	**0.2851**	**0.0751**	**4.3300e-003**	**0.0794**		**407.8893**	**407.8893**	**0.0154**		**408.2754**

3.15 Phase 8 - Tracy Substation - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.0531	31.9171	17.6633	0.0513		1.2980	1.2980		1.1941	1.1941		4,969.4897	4,969.4897	1.6072		5,009.6705
Total	**3.0531**	**31.9171**	**17.6633**	**0.0513**		**1.2980**	**1.2980**		**1.1941**	**1.1941**		**4,969.4897**	**4,969.4897**	**1.6072**		**5,009.6705**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	3.1600e-003	0.1088	0.0162	3.2000e-004	7.0000e-003	3.8000e-004	7.3800e-003	1.9200e-003	3.6000e-004	2.2800e-003		33.8198	33.8198	1.4200e-003		33.8554
Vendor	0.0159	0.4662	0.0937	1.1500e-003	0.0271	2.5900e-003	0.0297	7.8000e-003	2.4700e-003	0.0103		119.9650	119.9650	6.9900e-003		120.1397
Worker	0.1326	0.0778	0.9561	2.5500e-003	0.2464	1.6300e-003	0.2481	0.0654	1.5000e-003	0.0669		254.1045	254.1045	7.0300e-003		254.2803
Total	**0.1517**	**0.6528**	**1.0659**	**4.0200e-003**	**0.2805**	**4.6000e-003**	**0.2851**	**0.0751**	**4.3300e-003**	**0.0794**		**407.8893**	**407.8893**	**0.0154**		**408.2754**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.0531	31.9171	17.6633	0.0513		1.2980	1.2980		1.1941	1.1941	0.0000	4,969.4897	4,969.4897	1.6072		5,009.6705

Total	**3.0531**	**31.9171**	**17.6633**	**0.0513**		**1.2980**	**1.2980**		**1.1941**	**1.1941**	**0.0000**	**4,969.4897**	**4,969.4897**	**1.6072**		**5,009.6705**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	3.1600e-003	0.1088	0.0162	3.2000e-004	7.0000e-003	3.8000e-004	7.3800e-003	1.9200e-003	3.6000e-004	2.2800e-003		33.8198	33.8198	1.4200e-003		33.8554
Vendor	0.0159	0.4662	0.0937	1.1500e-003	0.0271	2.5900e-003	0.0297	7.8000e-003	2.4700e-003	0.0103		119.9650	119.9650	6.9900e-003		120.1397
Worker	0.1326	0.0778	0.9561	2.5500e-003	0.2464	1.6300e-003	0.2481	0.0654	1.5000e-003	0.0669		254.1045	254.1045	7.0300e-003		254.2803
Total	**0.1517**	**0.6528**	**1.0659**	**4.0200e-003**	**0.2805**	**4.6000e-003**	**0.2851**	**0.0751**	**4.3300e-003**	**0.0794**		**407.8893**	**407.8893**	**0.0154**		**408.2754**

3.16 Phase 9 - Manteca Substation - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.0531	31.9171	17.6633	0.0513		1.2980	1.2980		1.1941	1.1941		4,969.4897	4,969.4897	1.6072		5,009.6705
Total	**3.0531**	**31.9171**	**17.6633**	**0.0513**		**1.2980**	**1.2980**		**1.1941**	**1.1941**		**4,969.4897**	**4,969.4897**	**1.6072**		**5,009.6705**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	3.1600e-003	0.1088	0.0162	3.2000e-004	7.0000e-003	3.8000e-004	7.3800e-003	1.9200e-003	3.6000e-004	2.2800e-003		33.8198	33.8198	1.4200e-003		33.8554
Vendor	0.0159	0.4662	0.0937	1.1500e-003	0.0271	2.5900e-003	0.0297	7.8000e-003	2.4700e-003	0.0103		119.9650	119.9650	6.9900e-003		120.1397
Worker	0.1326	0.0778	0.9561	2.5500e-003	0.2464	1.6300e-003	0.2481	0.0654	1.5000e-003	0.0669		254.1045	254.1045	7.0300e-003		254.2803
Total	**0.1517**	**0.6528**	**1.0659**	**4.0200e-003**	**0.2805**	**4.6000e-003**	**0.2851**	**0.0751**	**4.3300e-003**	**0.0794**		**407.8893**	**407.8893**	**0.0154**		**408.2754**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.0531	31.9171	17.6633	0.0513		1.2980	1.2980		1.1941	1.1941	0.0000	4,969.4897	4,969.4897	1.6072		5,009.6705
Total	**3.0531**	**31.9171**	**17.6633**	**0.0513**		**1.2980**	**1.2980**		**1.1941**	**1.1941**	**0.0000**	**4,969.4897**	**4,969.4897**	**1.6072**		**5,009.6705**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					

Hauling	3.1600e-003	0.1088	0.0162	3.2000e-004	7.0000e-003	3.8000e-004	7.3800e-003	1.9200e-003	3.6000e-004	2.2800e-003		33.8198	33.8198	1.4200e-003		33.8554
Vendor	0.0159	0.4662	0.0937	1.1500e-003	0.0271	2.5900e-003	0.0297	7.8000e-003	2.4700e-003	0.0103		119.9650	119.9650	6.9900e-003		120.1397
Worker	0.1326	0.0778	0.9561	2.5500e-003	0.2464	1.6300e-003	0.2481	0.0654	1.5000e-003	0.0669		254.1045	254.1045	7.0300e-003		254.2803
Total	**0.1517**	**0.6528**	**1.0659**	**4.0200e-003**	**0.2805**	**4.6000e-003**	**0.2851**	**0.0751**	**4.3300e-003**	**0.0794**		**407.8893**	**407.8893**	**0.0154**		**408.2754**

3.17 Phase 10 - Highland Peak - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	7.9700e-003	0.2331	0.0468	5.7000e-004	0.0136	1.2900e-003	0.0148	3.9000e-003	1.2400e-003	5.1400e-003		59.9825	59.9825	3.4900e-003		60.0699
Worker	0.0265	0.0156	0.1912	5.1000e-004	0.0493	3.3000e-004	0.0496	0.0131	3.0000e-004	0.0134		50.8209	50.8209	1.4100e-003		50.8561
Total	**0.0345**	**0.2487**	**0.2381**	**1.0800e-003**	**0.0628**	**1.6200e-003**	**0.0645**	**0.0170**	**1.5400e-003**	**0.0185**		**110.8034**	**110.8034**	**4.9000e-003**		**110.9259**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	7.9700e-003	0.2331	0.0468	5.7000e-004	0.0136	1.2900e-003	0.0148	3.9000e-003	1.2400e-003	5.1400e-003		59.9825	59.9825	3.4900e-003		60.0699
Worker	0.0265	0.0156	0.1912	5.1000e-004	0.0493	3.3000e-004	0.0496	0.0131	3.0000e-004	0.0134		50.8209	50.8209	1.4100e-003		50.8561
Total	**0.0345**	**0.2487**	**0.2381**	**1.0800e-003**	**0.0628**	**1.6200e-003**	**0.0645**	**0.0170**	**1.5400e-003**	**0.0185**		**110.8034**	**110.8034**	**4.9000e-003**		**110.9259**

3.18 Phase 11 - Mt Oso - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	7.9700e-003	0.2331	0.0468	5.7000e-004	0.0136	1.2900e-003	0.0148	3.9000e-003	1.2400e-003	5.1400e-003		59.9825	59.9825	3.4900e-003		60.0699
Worker	0.0265	0.0156	0.1912	5.1000e-004	0.0493	3.3000e-004	0.0496	0.0131	3.0000e-004	0.0134		50.8209	50.8209	1.4100e-003		50.8561
Total	**0.0345**	**0.2487**	**0.2381**	**1.0800e-003**	**0.0628**	**1.6200e-003**	**0.0645**	**0.0170**	**1.5400e-003**	**0.0185**		**110.8034**	**110.8034**	**4.9000e-003**		**110.9259**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000

Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	7.9700e-003	0.2331	0.0468	5.7000e-004	0.0136	1.2900e-003	0.0148	3.9000e-003	1.2400e-003	5.1400e-003		59.9825	59.9825	3.4900e-003		60.0699
Worker	0.0265	0.0156	0.1912	5.1000e-004	0.0493	3.3000e-004	0.0496	0.0131	3.0000e-004	0.0134		50.8209	50.8209	1.4100e-003		50.8561
Total	**0.0345**	**0.2487**	**0.2381**	**1.0800e-003**	**0.0628**	**1.6200e-003**	**0.0645**	**0.0170**	**1.5400e-003**	**0.0185**		**110.8034**	**110.8034**	**4.9000e-003**		**110.9259**

3.18 Phase 11 - Mt Oso - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	6.5000e-003	0.2116	0.0409	5.7000e-004	0.0136	6.0000e-004	0.0142	3.9000e-003	5.7000e-004	4.4700e-003		59.4261	59.4261	3.2900e-003		59.5084
Worker	0.0245	0.0139	0.1746	4.9000e-004	0.0493	3.1000e-004	0.0496	0.0131	2.9000e-004	0.0134		48.9031	48.9031	1.2500e-003		48.9344
Total	**0.0310**	**0.2254**	**0.2155**	**1.0600e-003**	**0.0628**	**9.1000e-004**	**0.0638**	**0.0170**	**8.6000e-004**	**0.0178**		**108.3292**	**108.3292**	**4.5400e-003**		**108.4428**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					

Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	6.5000e-003	0.2116	0.0409	5.7000e-004	0.0136	6.0000e-004	0.0142	3.9000e-003	5.7000e-004	4.4700e-003		59.4261	59.4261	3.2900e-003		59.5084
Worker	0.0245	0.0139	0.1746	4.9000e-004	0.0493	3.1000e-004	0.0496	0.0131	2.9000e-004	0.0134		48.9031	48.9031	1.2500e-003		48.9344
Total	**0.0310**	**0.2254**	**0.2155**	**1.0600e-003**	**0.0628**	**9.1000e-004**	**0.0638**	**0.0170**	**8.6000e-004**	**0.0178**		**108.3292**	**108.3292**	**4.5400e-003**		**108.4428**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Other Asphalt Surfaces	0.00	0.00	0.00		
User Defined Commercial	0.00	0.00	0.00		
User Defined Residential	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles	Trip %	Trip Purpose %

Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Other Asphalt Surfaces	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
User Defined Commercial	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
User Defined Residential	10.80	7.30	7.50	45.60	19.00	35.40	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Other Asphalt Surfaces	0.561380	0.034626	0.184829	0.116141	0.016642	0.004535	0.016185	0.056706	0.001192	0.001407	0.004983	0.000606	0.000767
User Defined Commercial	0.561380	0.034626	0.184829	0.116141	0.016642	0.004535	0.016185	0.056706	0.001192	0.001407	0.004983	0.000606	0.000767
User Defined Residential	0.561380	0.034626	0.184829	0.116141	0.016642	0.004535	0.016185	0.056706	0.001192	0.001407	0.004983	0.000606	0.000767

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
User Defined Commercial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
User Defined Residential	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
User Defined Commercial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
User Defined Residential	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000

Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Vierra Reinforcement Project

San Joaquin County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Commercial	0.00	User Defined Unit	0.00	0.00	0
Other Asphalt Surfaces	0.00	Acre	0.00	0.00	0
User Defined Residential	0.00	Dwelling Unit	0.00	0.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.7	**Precipitation Freq (Days)**	51
Climate Zone	2			**Operational Year**	2023
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Substation expansion area

Construction Phase - Project specific inputs

Off-road Equipment - Project specific inputs.

Off-road Equipment - Project specific inputs

Off-road Equipment - Project specific inputs

Off-road Equipment - Project specific inputs

Trips and VMT - Project specific inputs.

Grading - Only substation expansion area being graded.

Vehicle Emission Factors -

Vehicle Emission Factors -

Vehicle Emission Factors -

Table Name	Column Name	Default Value	New Value
tblFleetMix	FleetMixLandUseSubType	User Defined Commercial	Other Asphalt Surfaces
tblFleetMix	FleetMixLandUseSubType	Other Asphalt Surfaces	User Defined Commercial
tblGrading	AcresOfGrading	56.25	2.80
tblGrading	MaterialExported	0.00	1,020.00
tblGrading	MaterialImported	0.00	10,000.00
tblOffRoadEquipment	HorsePower	158.00	50.00
tblOffRoadEquipment	HorsePower	402.00	250.00
tblOffRoadEquipment	HorsePower	172.00	9.00
tblOffRoadEquipment	HorsePower	172.00	20.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	3.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00

tblOffRoadEquipment	UsageHours	4.00	6.00
tblOffRoadEquipment	UsageHours	4.00	10.00
tblOffRoadEquipment	UsageHours	4.00	10.00
tblOffRoadEquipment	UsageHours	4.00	10.00
tblOffRoadEquipment	UsageHours	4.00	10.00
tblOffRoadEquipment	UsageHours	4.00	2.00
tblOffRoadEquipment	UsageHours	6.00	2.00
tblOffRoadEquipment	UsageHours	6.00	5.00
tblOffRoadEquipment	UsageHours	6.00	1.67
tblOffRoadEquipment	UsageHours	6.00	3.33
tblOffRoadEquipment	UsageHours	1.00	6.00
tblOffRoadEquipment	UsageHours	8.00	10.00
tblOffRoadEquipment	UsageHours	8.00	10.00
tblOffRoadEquipment	UsageHours	8.00	10.00
tblOffRoadEquipment	UsageHours	8.00	10.00
tblOffRoadEquipment	UsageHours	8.00	10.00
tblOffRoadEquipment	UsageHours	8.00	10.00
tblOffRoadEquipment	UsageHours	8.00	2.00
tblOffRoadEquipment	UsageHours	8.00	3.33
tblOffRoadEquipment	UsageHours	8.00	10.00
tblProjectCharacteristics	OperationalYear	2018	2023
tblTripsAndVMT	HaulingTripNumber	0.00	800.00
tblTripsAndVMT	HaulingTripNumber	0.00	28.00
tblTripsAndVMT	HaulingTripNumber	0.00	4.00
tblTripsAndVMT	HaulingTripNumber	0.00	4.00
tblTripsAndVMT	HaulingTripNumber	0.00	4.00
tblTripsAndVMT	HaulingTripNumber	0.00	82.00
tblTripsAndVMT	VendorTripLength	7.30	30.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	VendorTripNumber	0.00	20.00

tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	VendorTripNumber	0.00	14.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	0.00	16.00
tblTripsAndVMT	VendorTripNumber	0.00	12.00
tblTripsAndVMT	WorkerTripNumber	5.00	4.00
tblTripsAndVMT	WorkerTripNumber	0.00	30.00
tblTripsAndVMT	WorkerTripNumber	0.00	30.00
tblTripsAndVMT	WorkerTripNumber	0.00	30.00
tblTripsAndVMT	WorkerTripNumber	0.00	30.00
tblTripsAndVMT	WorkerTripNumber	0.00	30.00
tblTripsAndVMT	WorkerTripNumber	0.00	6.00
tblTripsAndVMT	WorkerTripNumber	0.00	6.00
tblTripsAndVMT	WorkerTripNumber	18.00	16.00
tblTripsAndVMT	WorkerTripNumber	28.00	38.00
tblTripsAndVMT	WorkerTripNumber	28.00	0.00
tblTripsAndVMT	WorkerTripNumber	0.00	8.00
tblTripsAndVMT	WorkerTripNumber	0.00	12.00
tblTripsAndVMT	WorkerTripNumber	0.00	36.00
tblTripsAndVMT	WorkerTripNumber	0.00	14.00
tblTripsAndVMT	WorkerTripNumber	0.00	10.00

tblTripsAndVMT	WorkerTripNumber	0.00	10.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2020	9.0195	89.7106	65.4036	0.1512	6.6682	3.9518	10.0237	3.0397	3.6505	6.5294	0.0000	14,793.7965	14,793.7965	3.8913	0.0000	14,891.0804
2021	0.0864	0.2697	0.5631	2.0100e-003	0.1779	1.6700e-003	0.1795	0.0475	1.5600e-003	0.0490	0.0000	203.3321	203.3321	7.4700e-003	0.0000	203.5189
Maximum	**9.0195**	**89.7106**	**65.4036**	**0.1512**	**6.6682**	**3.9518**	**10.0237**	**3.0397**	**3.6505**	**6.5294**	**0.0000**	**14,793.7965**	**14,793.7965**	**3.8913**	**0.0000**	**14,891.0804**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2020	9.0195	89.7106	65.4036	0.1512	6.6682	3.9518	10.0237	3.0397	3.6505	6.5294	0.0000	14,793.7965	14,793.7965	3.8913	0.0000	14,891.0804
2021	0.0864	0.2697	0.5631	2.0100e-003	0.1779	1.6700e-003	0.1795	0.0475	1.5600e-003	0.0490	0.0000	203.3321	203.3321	7.4700e-003	0.0000	203.5189
Maximum	**9.0195**	**89.7106**	**65.4036**	**0.1512**	**6.6682**	**3.9518**	**10.0237**	**3.0397**	**3.6505**	**6.5294**	**0.0000**	**14,793.7965**	**14,793.7965**	**3.8913**	**0.0000**	**14,891.0804**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Phase 1 - Site Preparation	Site Preparation	5/1/2020	5/2/2020	5	2	
2	Phase 12 - Howland Site Preparation	Site Preparation	5/1/2020	6/5/2020	6	30	
3	Phase 5A - Substation Expansion	Grading	5/1/2020	7/8/2020	5	50	
4	Phase 2 - Traffic Control	Building Construction	5/1/2020	7/23/2020	6	72	
5	Phase 3 - TSP Installation	Building Construction	5/1/2020	6/24/2020	6	48	
6	Phase 5B - Substation Expansion	Building Construction	5/1/2020	11/25/2020	5	150	
7	Phase 5D - Substation Expansion	Building Construction	5/1/2020	4/28/2021	5	260	
8	Phase 13 - Howland Monopole	Building Construction	5/15/2020	6/19/2020	6	30	
9	Phase 14 - Howland Indoor Work	Building Construction	6/19/2020	7/7/2020	6	15	
10	Phase 4 - Conductor Installation	Building Construction	6/26/2020	7/30/2020	6	30	
11	Phase 5C - Substation Expansion	Grading	9/12/2020	10/7/2020	5	20	
12	Phase 6 - Vierra Substation	Building Construction	10/28/2020	11/10/2020	5	10	
13	Phase 7 - Kasson Substation	Building Construction	11/11/2020	11/24/2020	5	10	
14	Phase 8 - Tracy Substation	Building Construction	11/25/2020	12/8/2020	5	10	
15	Phase 9 - Manteca Substation	Building Construction	12/9/2020	12/22/2020	5	10	
16	Phase 10 - Highland Peak	Building Construction	12/23/2020	12/29/2020	5	5	
17	Phase 11 - Mt Oso	Building Construction	12/30/2020	1/5/2021	5	5	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor

Phase 1 - Site Preparation	Other Construction Equipment	1	10.00	9	0.42
Phase 1 - Site Preparation	Other Construction Equipment	1	10.00	20	0.42
Phase 5A - Substation Expansion	Cranes	1	6.00	231	0.29
Phase 5A - Substation Expansion	Excavators	2	8.00	50	0.38
Phase 5A - Substation Expansion	Excavators	1	6.00	158	0.38
Phase 5A - Substation Expansion	Graders	1	6.00	187	0.41
Phase 5A - Substation Expansion	Off-Highway Trucks	2	3.00	402	0.38
Phase 5A - Substation Expansion	Rollers	2	6.00	80	0.38
Phase 5A - Substation Expansion	Rubber Tired Dozers	1	6.00	247	0.40
Phase 5A - Substation Expansion	Scrapers	1	6.00	367	0.48
Phase 2 - Traffic Control	Excavators	0	7.00	158	0.38
Phase 3 - TSP Installation	Cranes	1	2.00	231	0.29
Phase 3 - TSP Installation	Cranes	1	4.00	231	0.29
Phase 3 - TSP Installation	Off-Highway Trucks	1	2.00	402	0.38
Phase 3 - TSP Installation	Off-Highway Trucks	1	6.00	250	0.38
Phase 3 - TSP Installation	Off-Highway Trucks	2	6.00	402	0.38
Phase 3 - TSP Installation	Tractors/Loaders/Backhoes	1	2.00	97	0.37
Phase 3 - TSP Installation	Trenchers	1	6.00	78	0.50
Phase 5B - Substation Expansion	Aerial Lifts	3	5.00	63	0.31
Phase 5B - Substation Expansion	Air Compressors	2	2.00	78	0.48
Phase 5B - Substation Expansion	Forklifts	2	5.00	89	0.20
Phase 5B - Substation Expansion	Generator Sets	1	4.00	84	0.74
Phase 5B - Substation Expansion	Skid Steer Loaders	2	4.00	65	0.37
Phase 5B - Substation Expansion	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Phase 5C - Substation Expansion	Excavators	0	7.00	158	0.38
Phase 4 - Conductor Installation	Cranes	3	6.00	231	0.29
Phase 4 - Conductor Installation	Forklifts	1	2.00	89	0.20
Phase 4 - Conductor Installation	Other General Industrial Equipment	3	6.00	88	0.34
Phase 5D - Substation Expansion	Excavators	0	7.00	158	0.38
Phase 6 - Vierra Substation	Tractors/Loaders/Backhoes	1	10.00	97	0.37

Phase 6 - Vierra Substation	Off-Highway Trucks	2	10.00	402	0.38
Phase 6 - Vierra Substation	Cranes	2	10.00	231	0.29
Phase 7 - Kasson Substation	Tractors/Loaders/Backhoes	1	10.00	97	0.37
Phase 7 - Kasson Substation	Off-Highway Trucks	2	10.00	402	0.38
Phase 7 - Kasson Substation	Cranes	2	10.00	231	0.29
Phase 8 - Tracy Substation	Tractors/Loaders/Backhoes	1	10.00	97	0.37
Phase 8 - Tracy Substation	Off-Highway Trucks	2	10.00	402	0.38
Phase 8 - Tracy Substation	Cranes	2	10.00	231	0.29
Phase 9 - Manteca Substation	Tractors/Loaders/Backhoes	1	10.00	97	0.37
Phase 9 - Manteca Substation	Off-Highway Trucks	2	10.00	402	0.38
Phase 9 - Manteca Substation	Cranes	2	10.00	231	0.29
Phase 10 - Highland Peak	Tractors/Loaders/Backhoes	0	10.00	97	0.37
Phase 11 - Mt Oso	Tractors/Loaders/Backhoes	0	10.00	97	0.37
Phase 12 - Howland Site Preparation	Bore/Drill Rigs	1	1.00	221	0.50
Phase 12 - Howland Site Preparation	Excavators	1	10.00	158	0.38
Phase 12 - Howland Site Preparation	Off-Highway Trucks	3	0.67	402	0.38
Phase 12 - Howland Site Preparation	Tractors/Loaders/Backhoes	2	10.00	97	0.37
Phase 13 - Howland Monopole	Tractors/Loaders/Backhoes	1	3.33	97	0.37
Phase 13 - Howland Monopole	Forklifts	1	1.67	89	0.20
Phase 14 - Howland Indoor Work	Forklifts	1	3.33	89	0.20

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Phase 1 - Site Preparation	2	4.00	2.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Phase 5A - Substation Expansion	11	38.00	4.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Phase 5A - Substation Expansion	11	0.00	2.00	0.00	10.80	30.00	20.00	LD_Mix	HDT_Mix	HHDT
Phase 2 - Traffic Control	0	8.00	4.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Phase 3 - TSP Installation	8	12.00	4.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Phase 5B - Substation Expansion	12	36.00	4.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

Phase 5C - Substation Expansion	0	0.00	0.00	800.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Phase 4 - Conductor Installation	7	30.00	20.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Phase 5D - Substation Expansion	0	14.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Phase 6 - Vierra Substation	5	30.00	4.00	28.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Phase 7 - Kasson Substation	5	30.00	4.00	4.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Phase 8 - Tracy Substation	5	30.00	4.00	4.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Phase 9 - Manteca Substation	5	30.00	4.00	4.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Phase 10 - Highland Peak	0	6.00	2.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Phase 11 - Mt Oso	0	6.00	2.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Phase 12 - Howland Site Preparation	7	16.00	14.00	82.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Phase 13 - Howland Monopole	2	10.00	16.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Phase 14 - Howland Indoor Work	1	10.00	12.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Phase 1 - Site Preparation - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.2879	1.3524	1.4512	1.4600e-003		0.1088	0.1088		0.1001	0.1001		141.7709	141.7709	0.0459		142.9172
Total	**0.2879**	**1.3524**	**1.4512**	**1.4600e-003**	**0.0000**	**0.1088**	**0.1088**	**0.0000**	**0.1001**	**0.1001**		**141.7709**	**141.7709**	**0.0459**		**142.9172**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	8.3600e-003	0.2361	0.0548	5.6000e-004	0.0136	1.3200e-003	0.0149	3.9000e-003	1.2600e-003	5.1600e-003		58.1585	58.1585	3.9200e-003		58.2564
Worker	0.0172	0.0126	0.1133	3.0000e-004	0.0329	2.2000e-004	0.0331	8.7200e-003	2.0000e-004	8.9200e-003		30.2849	30.2849	8.5000e-004		30.3061
Total	**0.0256**	**0.2487**	**0.1680**	**8.6000e-004**	**0.0464**	**1.5400e-003**	**0.0480**	**0.0126**	**1.4600e-003**	**0.0141**		**88.4434**	**88.4434**	**4.7700e-003**		**88.5625**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.2879	1.3524	1.4512	1.4600e-003		0.1088	0.1088		0.1001	0.1001	0.0000	141.7709	141.7709	0.0459		142.9172
Total	**0.2879**	**1.3524**	**1.4512**	**1.4600e-003**	**0.0000**	**0.1088**	**0.1088**	**0.0000**	**0.1001**	**0.1001**	**0.0000**	**141.7709**	**141.7709**	**0.0459**		**142.9172**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					

Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	8.3600e-003	0.2361	0.0548	5.6000e-004	0.0136	1.3200e-003	0.0149	3.9000e-003	1.2600e-003	5.1600e-003		58.1585	58.1585	3.9200e-003		58.2564
Worker	0.0172	0.0126	0.1133	3.0000e-004	0.0329	2.2000e-004	0.0331	8.7200e-003	2.0000e-004	8.9200e-003		30.2849	30.2849	8.5000e-004		30.3061
Total	**0.0256**	**0.2487**	**0.1680**	**8.6000e-004**	**0.0464**	**1.5400e-003**	**0.0480**	**0.0126**	**1.4600e-003**	**0.0141**		**88.4434**	**88.4434**	**4.7700e-003**		**88.5625**

3.3 Phase 12 - Howland Site Preparation - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					5.0200e-003	0.0000	5.0200e-003	7.6000e-004	0.0000	7.6000e-004			0.0000			0.0000
Off-Road	1.0313	10.3075	11.0014	0.0187		0.5494	0.5494		0.5055	0.5055		1,812.0489	1,812.0489	0.5861		1,826.7003
Total	**1.0313**	**10.3075**	**11.0014**	**0.0187**	**5.0200e-003**	**0.5494**	**0.5545**	**7.6000e-004**	**0.5055**	**0.5063**		**1,812.0489**	**1,812.0489**	**0.5861**		**1,826.7003**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0223	0.7640	0.1235	2.1500e-003	0.0467	2.6400e-003	0.0493	0.0128	2.5300e-003	0.0154		226.2597	226.2597	0.0108		226.5304
Vendor	0.0586	1.6529	0.3835	3.8900e-003	0.0949	9.2400e-003	0.1041	0.0273	8.8400e-003	0.0362		407.1096	407.1096	0.0274		407.7951
Worker	0.0689	0.0504	0.4530	1.2200e-003	0.1314	8.7000e-004	0.1323	0.0349	8.0000e-004	0.0357		121.1395	121.1395	3.3900e-003		121.2242
Total	**0.1498**	**2.4674**	**0.9600**	**7.2600e-003**	**0.2730**	**0.0128**	**0.2857**	**0.0750**	**0.0122**	**0.0872**		**754.5088**	**754.5088**	**0.0416**		**755.5497**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					5.0200e-003	0.0000	5.0200e-003	7.6000e-004	0.0000	7.6000e-004			0.0000			0.0000
Off-Road	1.0313	10.3075	11.0014	0.0187		0.5494	0.5494		0.5055	0.5055	0.0000	1,812.0489	1,812.0489	0.5861		1,826.7003
Total	**1.0313**	**10.3075**	**11.0014**	**0.0187**	**5.0200e-003**	**0.5494**	**0.5545**	**7.6000e-004**	**0.5055**	**0.5063**	**0.0000**	**1,812.0489**	**1,812.0489**	**0.5861**		**1,826.7003**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0223	0.7640	0.1235	2.1500e-003	0.0467	2.6400e-003	0.0493	0.0128	2.5300e-003	0.0154		226.2597	226.2597	0.0108		226.5304
Vendor	0.0586	1.6529	0.3835	3.8900e-003	0.0949	9.2400e-003	0.1041	0.0273	8.8400e-003	0.0362		407.1096	407.1096	0.0274		407.7951
Worker	0.0689	0.0504	0.4530	1.2200e-003	0.1314	8.7000e-004	0.1323	0.0349	8.0000e-004	0.0357		121.1395	121.1395	3.3900e-003		121.2242
Total	**0.1498**	**2.4674**	**0.9600**	**7.2600e-003**	**0.2730**	**0.0128**	**0.2857**	**0.0750**	**0.0122**	**0.0872**		**754.5088**	**754.5088**	**0.0416**		**755.5497**

3.4 Phase 5A - Substation Expansion - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					4.5760	0.0000	4.5760	2.4891	0.0000	2.4891			0.0000			0.0000
Off-Road	3.6421	38.4761	22.8047	0.0484		1.6867	1.6867		1.5518	1.5518		4,689.1585	4,689.1585	1.5166		4,727.0727
Total	**3.6421**	**38.4761**	**22.8047**	**0.0484**	**4.5760**	**1.6867**	**6.2627**	**2.4891**	**1.5518**	**4.0409**		**4,689.1585**	**4,689.1585**	**1.5166**		**4,727.0727**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0405	1.0386	0.2349	3.0200e-003	0.0826	7.7000e-003	0.0903	0.0238	7.3700e-003	0.0311		315.7443	315.7443	0.0131		316.0711
Worker	0.1637	0.1198	1.0759	2.8900e-003	0.3122	2.0600e-003	0.3142	0.0828	1.9000e-003	0.0847		287.7063	287.7063	8.0400e-003		287.9075
Total	**0.2042**	**1.1584**	**1.3107**	**5.9100e-003**	**0.3948**	**9.7600e-003**	**0.4046**	**0.1066**	**9.2700e-003**	**0.1158**		**603.4507**	**603.4507**	**0.0211**		**603.9786**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					4.5760	0.0000	4.5760	2.4891	0.0000	2.4891			0.0000			0.0000

Off-Road	3.6421	38.4761	22.8047	0.0484		1.6867	1.6867		1.5518	1.5518	0.0000	4,689.1585	4,689.1585	1.5166		4,727.0727
Total	**3.6421**	**38.4761**	**22.8047**	**0.0484**	**4.5760**	**1.6867**	**6.2627**	**2.4891**	**1.5518**	**4.0409**	**0.0000**	**4,689.1585**	**4,689.1585**	**1.5166**		**4,727.0727**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0405	1.0386	0.2349	3.0200e-003	0.0826	7.7000e-003	0.0903	0.0238	7.3700e-003	0.0311		315.7443	315.7443	0.0131		316.0711
Worker	0.1637	0.1198	1.0759	2.8900e-003	0.3122	2.0600e-003	0.3142	0.0828	1.9000e-003	0.0847		287.7063	287.7063	8.0400e-003		287.9075
Total	**0.2042**	**1.1584**	**1.3107**	**5.9100e-003**	**0.3948**	**9.7600e-003**	**0.4046**	**0.1066**	**9.2700e-003**	**0.1158**		**603.4507**	**603.4507**	**0.0211**		**603.9786**

3.5 Phase 2 - Traffic Control - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0167	0.4723	0.1096	1.1100e-003	0.0271	2.6400e-003	0.0297	7.8000e-003	2.5300e-003	0.0103		116.3170	116.3170	7.8300e-003		116.5129
Worker	0.0345	0.0252	0.2265	6.1000e-004	0.0657	4.3000e-004	0.0662	0.0174	4.0000e-004	0.0178		60.5698	60.5698	1.6900e-003		60.6121
Total	**0.0512**	**0.4975**	**0.3361**	**1.7200e-003**	**0.0928**	**3.0700e-003**	**0.0959**	**0.0252**	**2.9300e-003**	**0.0282**		**176.8868**	**176.8868**	**9.5200e-003**		**177.1250**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					

Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0167	0.4723	0.1096	1.1100e-003	0.0271	2.6400e-003	0.0297	7.8000e-003	2.5300e-003	0.0103		116.3170	116.3170	7.8300e-003		116.5129
Worker	0.0345	0.0252	0.2265	6.1000e-004	0.0657	4.3000e-004	0.0662	0.0174	4.0000e-004	0.0178		60.5698	60.5698	1.6900e-003		60.6121
Total	**0.0512**	**0.4975**	**0.3361**	**1.7200e-003**	**0.0928**	**3.0700e-003**	**0.0959**	**0.0252**	**2.9300e-003**	**0.0282**		**176.8868**	**176.8868**	**9.5200e-003**		**177.1250**

3.6 Phase 3 - TSP Installation - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.2130	21.6329	12.5494	0.0368		0.9391	0.9391		0.8639	0.8639		3,567.8108	3,567.8108	1.1539		3,596.6584
Total	**2.2130**	**21.6329**	**12.5494**	**0.0368**		**0.9391**	**0.9391**		**0.8639**	**0.8639**		**3,567.8108**	**3,567.8108**	**1.1539**		**3,596.6584**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0167	0.4723	0.1096	1.1100e-003	0.0271	2.6400e-003	0.0297	7.8000e-003	2.5300e-003	0.0103		116.3170	116.3170	7.8300e-003		116.5129
Worker	0.0517	0.0378	0.3397	9.1000e-004	0.0986	6.5000e-004	0.0992	0.0262	6.0000e-004	0.0268		90.8546	90.8546	2.5400e-003		90.9182
Total	**0.0684**	**0.5101**	**0.4493**	**2.0200e-003**	**0.1257**	**3.2900e-003**	**0.1290**	**0.0340**	**3.1300e-003**	**0.0371**		**207.1717**	**207.1717**	**0.0104**		**207.4310**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.2130	21.6329	12.5494	0.0368		0.9391	0.9391		0.8639	0.8639	0.0000	3,567.8108	3,567.8108	1.1539		3,596.6584
Total	**2.2130**	**21.6329**	**12.5494**	**0.0368**		**0.9391**	**0.9391**		**0.8639**	**0.8639**	**0.0000**	**3,567.8108**	**3,567.8108**	**1.1539**		**3,596.6584**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0167	0.4723	0.1096	1.1100e-003	0.0271	2.6400e-003	0.0297	7.8000e-003	2.5300e-003	0.0103		116.3170	116.3170	7.8300e-003		116.5129
Worker	0.0517	0.0378	0.3397	9.1000e-004	0.0986	6.5000e-004	0.0992	0.0262	6.0000e-004	0.0268		90.8546	90.8546	2.5400e-003		90.9182
Total	**0.0684**	**0.5101**	**0.4493**	**2.0200e-003**	**0.1257**	**3.2900e-003**	**0.1290**	**0.0340**	**3.1300e-003**	**0.0371**		**207.1717**	**207.1717**	**0.0104**		**207.4310**

3.7 Phase 5B - Substation Expansion - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.1141	10.9632	12.5502	0.0186		0.6320	0.6320		0.5952	0.5952		1,790.8058	1,790.8058	0.4498		1,802.0512
Total	**1.1141**	**10.9632**	**12.5502**	**0.0186**		**0.6320**	**0.6320**		**0.5952**	**0.5952**		**1,790.8058**	**1,790.8058**	**0.4498**		**1,802.0512**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0167	0.4723	0.1096	1.1100e-003	0.0271	2.6400e-003	0.0297	7.8000e-003	2.5300e-003	0.0103		116.3170	116.3170	7.8300e-003		116.5129
Worker	0.1550	0.1135	1.0192	2.7400e-003	0.2957	1.9500e-003	0.2977	0.0784	1.8000e-003	0.0802		272.5639	272.5639	7.6200e-003		272.7544
Total	**0.1718**	**0.5857**	**1.1288**	**3.8500e-003**	**0.3228**	**4.5900e-003**	**0.3274**	**0.0862**	**4.3300e-003**	**0.0906**		**388.8809**	**388.8809**	**0.0155**		**389.2673**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.1141	10.9632	12.5502	0.0186		0.6320	0.6320		0.5952	0.5952	0.0000	1,790.8058	1,790.8058	0.4498		1,802.0512

Total	**1.1141**	**10.9632**	**12.5502**	**0.0186**		**0.6320**	**0.6320**		**0.5952**	**0.5952**	**0.0000**	**1,790.8058**	**1,790.8058**	**0.4498**		**1,802.0512**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0167	0.4723	0.1096	1.1100e-003	0.0271	2.6400e-003	0.0297	7.8000e-003	2.5300e-003	0.0103		116.3170	116.3170	7.8300e-003		116.5129
Worker	0.1550	0.1135	1.0192	2.7400e-003	0.2957	1.9500e-003	0.2977	0.0784	1.8000e-003	0.0802		272.5639	272.5639	7.6200e-003		272.7544
Total	**0.1718**	**0.5857**	**1.1288**	**3.8500e-003**	**0.3228**	**4.5900e-003**	**0.3274**	**0.0862**	**4.3300e-003**	**0.0906**		**388.8809**	**388.8809**	**0.0155**		**389.2673**

3.8 Phase 5D - Substation Expansion - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0603	0.0441	0.3964	1.0600e-003	0.1150	7.6000e-004	0.1158	0.0305	7.0000e-004	0.0312		105.9971	105.9971	2.9600e-003		106.0712
Total	**0.0603**	**0.0441**	**0.3964**	**1.0600e-003**	**0.1150**	**7.6000e-004**	**0.1158**	**0.0305**	**7.0000e-004**	**0.0312**		**105.9971**	**105.9971**	**2.9600e-003**		**106.0712**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					

Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0603	0.0441	0.3964	1.0600e-003	0.1150	7.6000e-004	0.1158	0.0305	7.0000e-004	0.0312		105.9971	105.9971	2.9600e-003		106.0712
Total	**0.0603**	**0.0441**	**0.3964**	**1.0600e-003**	**0.1150**	**7.6000e-004**	**0.1158**	**0.0305**	**7.0000e-004**	**0.0312**		**105.9971**	**105.9971**	**2.9600e-003**		**106.0712**

3.8 Phase 5D - Substation Expansion - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0557	0.0393	0.3604	1.0200e-003	0.1150	7.3000e-004	0.1157	0.0305	6.7000e-004	0.0312		102.0015	102.0015	2.6400e-003		102.0675
Total	**0.0557**	**0.0393**	**0.3604**	**1.0200e-003**	**0.1150**	**7.3000e-004**	**0.1157**	**0.0305**	**6.7000e-004**	**0.0312**		**102.0015**	**102.0015**	**2.6400e-003**		**102.0675**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0557	0.0393	0.3604	1.0200e-003	0.1150	7.3000e-004	0.1157	0.0305	6.7000e-004	0.0312		102.0015	102.0015	2.6400e-003		102.0675
Total	**0.0557**	**0.0393**	**0.3604**	**1.0200e-003**	**0.1150**	**7.3000e-004**	**0.1157**	**0.0305**	**6.7000e-004**	**0.0312**		**102.0015**	**102.0015**	**2.6400e-003**		**102.0675**

3.9 Phase 13 - Howland Monopole - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.1173	1.1471	1.1953	1.6100e-003		0.0756	0.0756		0.0695	0.0695		156.0963	156.0963	0.0505		157.3585
Total	**0.1173**	**1.1471**	**1.1953**	**1.6100e-003**		**0.0756**	**0.0756**		**0.0695**	**0.0695**		**156.0963**	**156.0963**	**0.0505**		**157.3585**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0669	1.8891	0.4383	4.4400e-003	0.1084	0.0106	0.1190	0.0312	0.0101	0.0413		465.2681	465.2681	0.0313		466.0515
Worker	0.0431	0.0315	0.2831	7.6000e-004	0.0822	5.4000e-004	0.0827	0.0218	5.0000e-004	0.0223		75.7122	75.7122	2.1200e-003		75.7651
Total	**0.1100**	**1.9206**	**0.7214**	**5.2000e-003**	**0.1906**	**0.0111**	**0.2017**	**0.0530**	**0.0106**	**0.0636**		**540.9803**	**540.9803**	**0.0335**		**541.8167**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.1173	1.1471	1.1953	1.6100e-003		0.0756	0.0756		0.0695	0.0695	0.0000	156.0963	156.0963	0.0505		157.3585

Total	**0.1173**	**1.1471**	**1.1953**	**1.6100e-003**		**0.0756**	**0.0756**		**0.0695**	**0.0695**	**0.0000**	**156.0963**	**156.0963**	**0.0505**		**157.3585**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0669	1.8891	0.4383	4.4400e-003	0.1084	0.0106	0.1190	0.0312	0.0101	0.0413		465.2681	465.2681	0.0313		466.0515
Worker	0.0431	0.0315	0.2831	7.6000e-004	0.0822	5.4000e-004	0.0827	0.0218	5.0000e-004	0.0223		75.7122	75.7122	2.1200e-003		75.7651
Total	**0.1100**	**1.9206**	**0.7214**	**5.2000e-003**	**0.1906**	**0.0111**	**0.2017**	**0.0530**	**0.0106**	**0.0636**		**540.9803**	**540.9803**	**0.0335**		**541.8167**

3.10 Phase 14 - Howland Indoor Work - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0599	0.5401	0.4913	6.4000e-004		0.0402	0.0402		0.0370	0.0370		61.6178	61.6178	0.0199		62.1160
Total	**0.0599**	**0.5401**	**0.4913**	**6.4000e-004**		**0.0402**	**0.0402**		**0.0370**	**0.0370**		**61.6178**	**61.6178**	**0.0199**		**62.1160**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0502	1.4168	0.3287	3.3300e-003	0.0813	7.9200e-003	0.0892	0.0234	7.5800e-003	0.0310		348.9511	348.9511	0.0235		349.5386
Worker	0.0431	0.0315	0.2831	7.6000e-004	0.0822	5.4000e-004	0.0827	0.0218	5.0000e-004	0.0223		75.7122	75.7122	2.1200e-003		75.7651
Total	**0.0933**	**1.4483**	**0.6118**	**4.0900e-003**	**0.1635**	**8.4600e-003**	**0.1719**	**0.0452**	**8.0800e-003**	**0.0533**		**424.6633**	**424.6633**	**0.0256**		**425.3038**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0599	0.5401	0.4913	6.4000e-004		0.0402	0.0402		0.0370	0.0370	0.0000	61.6178	61.6178	0.0199		62.1160
Total	**0.0599**	**0.5401**	**0.4913**	**6.4000e-004**		**0.0402**	**0.0402**		**0.0370**	**0.0370**	**0.0000**	**61.6178**	**61.6178**	**0.0199**		**62.1160**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					

Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0502	1.4168	0.3287	3.3300e-003	0.0813	7.9200e-003	0.0892	0.0234	7.5800e-003	0.0310		348.9511	348.9511	0.0235		349.5386
Worker	0.0431	0.0315	0.2831	7.6000e-004	0.0822	5.4000e-004	0.0827	0.0218	5.0000e-004	0.0223		75.7122	75.7122	2.1200e-003		75.7651
Total	**0.0933**	**1.4483**	**0.6118**	**4.0900e-003**	**0.1635**	**8.4600e-003**	**0.1719**	**0.0452**	**8.0800e-003**	**0.0533**		**424.6633**	**424.6633**	**0.0256**		**425.3038**

3.11 Phase 4 - Conductor Installation - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.5857	17.2768	9.5317	0.0191		0.8756	0.8756		0.8055	0.8055		1,852.3252	1,852.3252	0.5991		1,867.3022
Total	**1.5857**	**17.2768**	**9.5317**	**0.0191**		**0.8756**	**0.8756**		**0.8055**	**0.8055**		**1,852.3252**	**1,852.3252**	**0.5991**		**1,867.3022**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0836	2.3613	0.5479	5.5600e-003	0.3285	0.0132	0.3417	0.0864	0.0126	0.0990		581.5851	581.5851	0.0392		582.5644
Worker	0.1292	0.0945	0.8494	2.2800e-003	0.6748	1.6300e-003	0.6764	0.1705	1.5000e-003	0.1720		227.1366	227.1366	6.3500e-003		227.2954
Total	**0.2128**	**2.4559**	**1.3972**	**7.8400e-003**	**1.0033**	**0.0148**	**1.0182**	**0.2569**	**0.0141**	**0.2710**		**808.7217**	**808.7217**	**0.0455**		**809.8598**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.5857	17.2768	9.5317	0.0191		0.8756	0.8756		0.8055	0.8055	0.0000	1,852.3252	1,852.3252	0.5991		1,867.3022
Total	**1.5857**	**17.2768**	**9.5317**	**0.0191**		**0.8756**	**0.8756**		**0.8055**	**0.8055**	**0.0000**	**1,852.3252**	**1,852.3252**	**0.5991**		**1,867.3022**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0836	2.3613	0.5479	5.5600e-003	0.3285	0.0132	0.3417	0.0864	0.0126	0.0990		581.5851	581.5851	0.0392		582.5644
Worker	0.1292	0.0945	0.8494	2.2800e-003	0.6748	1.6300e-003	0.6764	0.1705	1.5000e-003	0.1720		227.1366	227.1366	6.3500e-003		227.2954
Total	**0.2128**	**2.4559**	**1.3972**	**7.8400e-003**	**1.0033**	**0.0148**	**1.0182**	**0.2569**	**0.0141**	**0.2710**		**808.7217**	**808.7217**	**0.0455**		**809.8598**

3.12 Phase 5C - Substation Expansion - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0738	0.0000	0.0738	0.0112	0.0000	0.0112			0.0000			0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0738**	**0.0000**	**0.0738**	**0.0112**	**0.0000**	**0.0112**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.3264	11.1810	1.8066	0.0315	0.7589	0.0387	0.7976	0.2064	0.0370	0.2434		3,311.1172	3,311.1172	0.1585		3,315.0784
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.3264**	**11.1810**	**1.8066**	**0.0315**	**0.7589**	**0.0387**	**0.7976**	**0.2064**	**0.0370**	**0.2434**		**3,311.1172**	**3,311.1172**	**0.1585**		**3,315.0784**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0738	0.0000	0.0738	0.0112	0.0000	0.0112			0.0000			0.0000

Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0738**	**0.0000**	**0.0738**	**0.0112**	**0.0000**	**0.0112**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.3264	11.1810	1.8066	0.0315	0.7589	0.0387	0.7976	0.2064	0.0370	0.2434		3,311.1172	3,311.1172	0.1585		3,315.0784
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.3264**	**11.1810**	**1.8066**	**0.0315**	**0.7589**	**0.0387**	**0.7976**	**0.2064**	**0.0370**	**0.2434**		**3,311.1172**	**3,311.1172**	**0.1585**		**3,315.0784**

3.13 Phase 6 - Vierra Substation - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.0531	31.9171	17.6633	0.0513		1.2980	1.2980		1.1941	1.1941		4,969.4897	4,969.4897	1.6072		5,009.6705
Total	**3.0531**	**31.9171**	**17.6633**	**0.0513**		**1.2980**	**1.2980**		**1.1941**	**1.1941**		**4,969.4897**	**4,969.4897**	**1.6072**		**5,009.6705**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0229	0.7827	0.1265	2.2100e-003	0.0490	2.7100e-003	0.0517	0.0134	2.5900e-003	0.0160		231.7782	231.7782	0.0111		232.0555
Vendor	0.0167	0.4723	0.1096	1.1100e-003	0.0271	2.6400e-003	0.0297	7.8000e-003	2.5300e-003	0.0103		116.3170	116.3170	7.8300e-003		116.5129
Worker	0.1292	0.0945	0.8494	2.2800e-003	0.2464	1.6300e-003	0.2481	0.0654	1.5000e-003	0.0669		227.1366	227.1366	6.3500e-003		227.2954
Total	**0.1688**	**1.3495**	**1.0854**	**5.6000e-003**	**0.3226**	**6.9800e-003**	**0.3295**	**0.0866**	**6.6200e-003**	**0.0932**		**575.2318**	**575.2318**	**0.0253**		**575.8637**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.0531	31.9171	17.6633	0.0513		1.2980	1.2980		1.1941	1.1941	0.0000	4,969.4897	4,969.4897	1.6072		5,009.6705
Total	**3.0531**	**31.9171**	**17.6633**	**0.0513**		**1.2980**	**1.2980**		**1.1941**	**1.1941**	**0.0000**	**4,969.4897**	**4,969.4897**	**1.6072**		**5,009.6705**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					

Hauling	0.0229	0.7827	0.1265	2.2100e-003	0.0490	2.7100e-003	0.0517	0.0134	2.5900e-003	0.0160		231.7782	231.7782	0.0111		232.0555
Vendor	0.0167	0.4723	0.1096	1.1100e-003	0.0271	2.6400e-003	0.0297	7.8000e-003	2.5300e-003	0.0103		116.3170	116.3170	7.8300e-003		116.5129
Worker	0.1292	0.0945	0.8494	2.2800e-003	0.2464	1.6300e-003	0.2481	0.0654	1.5000e-003	0.0669		227.1366	227.1366	6.3500e-003		227.2954
Total	**0.1688**	**1.3495**	**1.0854**	**5.6000e-003**	**0.3226**	**6.9800e-003**	**0.3295**	**0.0866**	**6.6200e-003**	**0.0932**		**575.2318**	**575.2318**	**0.0253**		**575.8637**

3.14 Phase 7 - Kasson Substation - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.0531	31.9171	17.6633	0.0513		1.2980	1.2980		1.1941	1.1941		4,969.4897	4,969.4897	1.6072		5,009.6705
Total	**3.0531**	**31.9171**	**17.6633**	**0.0513**		**1.2980**	**1.2980**		**1.1941**	**1.1941**		**4,969.4897**	**4,969.4897**	**1.6072**		**5,009.6705**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	3.2600e-003	0.1118	0.0181	3.2000e-004	7.0000e-003	3.9000e-004	7.3900e-003	1.9200e-003	3.7000e-004	2.2900e-003		33.1112	33.1112	1.5800e-003		33.1508
Vendor	0.0167	0.4723	0.1096	1.1100e-003	0.0271	2.6400e-003	0.0297	7.8000e-003	2.5300e-003	0.0103		116.3170	116.3170	7.8300e-003		116.5129
Worker	0.1292	0.0945	0.8494	2.2800e-003	0.2464	1.6300e-003	0.2481	0.0654	1.5000e-003	0.0669		227.1366	227.1366	6.3500e-003		227.2954
Total	**0.1492**	**0.6786**	**0.9770**	**3.7100e-003**	**0.2805**	**4.6600e-003**	**0.2852**	**0.0751**	**4.4000e-003**	**0.0795**		**376.5648**	**376.5648**	**0.0158**		**376.9590**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.0531	31.9171	17.6633	0.0513		1.2980	1.2980		1.1941	1.1941	0.0000	4,969.4897	4,969.4897	1.6072		5,009.6705
Total	**3.0531**	**31.9171**	**17.6633**	**0.0513**		**1.2980**	**1.2980**		**1.1941**	**1.1941**	**0.0000**	**4,969.4897**	**4,969.4897**	**1.6072**		**5,009.6705**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	3.2600e-003	0.1118	0.0181	3.2000e-004	7.0000e-003	3.9000e-004	7.3900e-003	1.9200e-003	3.7000e-004	2.2900e-003		33.1112	33.1112	1.5800e-003		33.1508
Vendor	0.0167	0.4723	0.1096	1.1100e-003	0.0271	2.6400e-003	0.0297	7.8000e-003	2.5300e-003	0.0103		116.3170	116.3170	7.8300e-003		116.5129
Worker	0.1292	0.0945	0.8494	2.2800e-003	0.2464	1.6300e-003	0.2481	0.0654	1.5000e-003	0.0669		227.1366	227.1366	6.3500e-003		227.2954
Total	**0.1492**	**0.6786**	**0.9770**	**3.7100e-003**	**0.2805**	**4.6600e-003**	**0.2852**	**0.0751**	**4.4000e-003**	**0.0795**		**376.5648**	**376.5648**	**0.0158**		**376.9590**

3.15 Phase 8 - Tracy Substation - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.0531	31.9171	17.6633	0.0513		1.2980	1.2980		1.1941	1.1941		4,969.4897	4,969.4897	1.6072		5,009.6705
Total	**3.0531**	**31.9171**	**17.6633**	**0.0513**		**1.2980**	**1.2980**		**1.1941**	**1.1941**		**4,969.4897**	**4,969.4897**	**1.6072**		**5,009.6705**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	3.2600e-003	0.1118	0.0181	3.2000e-004	7.0000e-003	3.9000e-004	7.3900e-003	1.9200e-003	3.7000e-004	2.2900e-003		33.1112	33.1112	1.5800e-003		33.1508
Vendor	0.0167	0.4723	0.1096	1.1100e-003	0.0271	2.6400e-003	0.0297	7.8000e-003	2.5300e-003	0.0103		116.3170	116.3170	7.8300e-003		116.5129
Worker	0.1292	0.0945	0.8494	2.2800e-003	0.2464	1.6300e-003	0.2481	0.0654	1.5000e-003	0.0669		227.1366	227.1366	6.3500e-003		227.2954
Total	**0.1492**	**0.6786**	**0.9770**	**3.7100e-003**	**0.2805**	**4.6600e-003**	**0.2852**	**0.0751**	**4.4000e-003**	**0.0795**		**376.5648**	**376.5648**	**0.0158**		**376.9590**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.0531	31.9171	17.6633	0.0513		1.2980	1.2980		1.1941	1.1941	0.0000	4,969.4897	4,969.4897	1.6072		5,009.6705

Total	**3.0531**	**31.9171**	**17.6633**	**0.0513**		**1.2980**	**1.2980**		**1.1941**	**1.1941**	**0.0000**	**4,969.4897**	**4,969.4897**	**1.6072**		**5,009.6705**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	3.2600e-003	0.1118	0.0181	3.2000e-004	7.0000e-003	3.9000e-004	7.3900e-003	1.9200e-003	3.7000e-004	2.2900e-003		33.1112	33.1112	1.5800e-003		33.1508
Vendor	0.0167	0.4723	0.1096	1.1100e-003	0.0271	2.6400e-003	0.0297	7.8000e-003	2.5300e-003	0.0103		116.3170	116.3170	7.8300e-003		116.5129
Worker	0.1292	0.0945	0.8494	2.2800e-003	0.2464	1.6300e-003	0.2481	0.0654	1.5000e-003	0.0669		227.1366	227.1366	6.3500e-003		227.2954
Total	**0.1492**	**0.6786**	**0.9770**	**3.7100e-003**	**0.2805**	**4.6600e-003**	**0.2852**	**0.0751**	**4.4000e-003**	**0.0795**		**376.5648**	**376.5648**	**0.0158**		**376.9590**

3.16 Phase 9 - Manteca Substation - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.0531	31.9171	17.6633	0.0513		1.2980	1.2980		1.1941	1.1941		4,969.4897	4,969.4897	1.6072		5,009.6705
Total	**3.0531**	**31.9171**	**17.6633**	**0.0513**		**1.2980**	**1.2980**		**1.1941**	**1.1941**		**4,969.4897**	**4,969.4897**	**1.6072**		**5,009.6705**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	3.2600e-003	0.1118	0.0181	3.2000e-004	7.0000e-003	3.9000e-004	7.3900e-003	1.9200e-003	3.7000e-004	2.2900e-003		33.1112	33.1112	1.5800e-003		33.1508
Vendor	0.0167	0.4723	0.1096	1.1100e-003	0.0271	2.6400e-003	0.0297	7.8000e-003	2.5300e-003	0.0103		116.3170	116.3170	7.8300e-003		116.5129
Worker	0.1292	0.0945	0.8494	2.2800e-003	0.2464	1.6300e-003	0.2481	0.0654	1.5000e-003	0.0669		227.1366	227.1366	6.3500e-003		227.2954
Total	**0.1492**	**0.6786**	**0.9770**	**3.7100e-003**	**0.2805**	**4.6600e-003**	**0.2852**	**0.0751**	**4.4000e-003**	**0.0795**		**376.5648**	**376.5648**	**0.0158**		**376.9590**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.0531	31.9171	17.6633	0.0513		1.2980	1.2980		1.1941	1.1941	0.0000	4,969.4897	4,969.4897	1.6072		5,009.6705
Total	**3.0531**	**31.9171**	**17.6633**	**0.0513**		**1.2980**	**1.2980**		**1.1941**	**1.1941**	**0.0000**	**4,969.4897**	**4,969.4897**	**1.6072**		**5,009.6705**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					

Hauling	3.2600e-003	0.1118	0.0181	3.2000e-004	7.0000e-003	3.9000e-004	7.3900e-003	1.9200e-003	3.7000e-004	2.2900e-003		33.1112	33.1112	1.5800e-003		33.1508
Vendor	0.0167	0.4723	0.1096	1.1100e-003	0.0271	2.6400e-003	0.0297	7.8000e-003	2.5300e-003	0.0103		116.3170	116.3170	7.8300e-003		116.5129
Worker	0.1292	0.0945	0.8494	2.2800e-003	0.2464	1.6300e-003	0.2481	0.0654	1.5000e-003	0.0669		227.1366	227.1366	6.3500e-003		227.2954
Total	**0.1492**	**0.6786**	**0.9770**	**3.7100e-003**	**0.2805**	**4.6600e-003**	**0.2852**	**0.0751**	**4.4000e-003**	**0.0795**		**376.5648**	**376.5648**	**0.0158**		**376.9590**

3.17 Phase 10 - Highland Peak - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	8.3600e-003	0.2361	0.0548	5.6000e-004	0.0136	1.3200e-003	0.0149	3.9000e-003	1.2600e-003	5.1600e-003		58.1585	58.1585	3.9200e-003		58.2564
Worker	0.0258	0.0189	0.1699	4.6000e-004	0.0493	3.3000e-004	0.0496	0.0131	3.0000e-004	0.0134		45.4273	45.4273	1.2700e-003		45.4591
Total	**0.0342**	**0.2550**	**0.2247**	**1.0200e-003**	**0.0628**	**1.6500e-003**	**0.0645**	**0.0170**	**1.5600e-003**	**0.0185**		**103.5858**	**103.5858**	**5.1900e-003**		**103.7155**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	8.3600e-003	0.2361	0.0548	5.6000e-004	0.0136	1.3200e-003	0.0149	3.9000e-003	1.2600e-003	5.1600e-003		58.1585	58.1585	3.9200e-003		58.2564
Worker	0.0258	0.0189	0.1699	4.6000e-004	0.0493	3.3000e-004	0.0496	0.0131	3.0000e-004	0.0134		45.4273	45.4273	1.2700e-003		45.4591
Total	**0.0342**	**0.2550**	**0.2247**	**1.0200e-003**	**0.0628**	**1.6500e-003**	**0.0645**	**0.0170**	**1.5600e-003**	**0.0185**		**103.5858**	**103.5858**	**5.1900e-003**		**103.7155**

3.18 Phase 11 - Mt Oso - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	8.3600e-003	0.2361	0.0548	5.6000e-004	0.0136	1.3200e-003	0.0149	3.9000e-003	1.2600e-003	5.1600e-003		58.1585	58.1585	3.9200e-003		58.2564
Worker	0.0258	0.0189	0.1699	4.6000e-004	0.0493	3.3000e-004	0.0496	0.0131	3.0000e-004	0.0134		45.4273	45.4273	1.2700e-003		45.4591
Total	**0.0342**	**0.2550**	**0.2247**	**1.0200e-003**	**0.0628**	**1.6500e-003**	**0.0645**	**0.0170**	**1.5600e-003**	**0.0185**		**103.5858**	**103.5858**	**5.1900e-003**		**103.7155**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000

Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	8.3600e-003	0.2361	0.0548	5.6000e-004	0.0136	1.3200e-003	0.0149	3.9000e-003	1.2600e-003	5.1600e-003		58.1585	58.1585	3.9200e-003		58.2564
Worker	0.0258	0.0189	0.1699	4.6000e-004	0.0493	3.3000e-004	0.0496	0.0131	3.0000e-004	0.0134		45.4273	45.4273	1.2700e-003		45.4591
Total	**0.0342**	**0.2550**	**0.2247**	**1.0200e-003**	**0.0628**	**1.6500e-003**	**0.0645**	**0.0170**	**1.5600e-003**	**0.0185**		**103.5858**	**103.5858**	**5.1900e-003**		**103.7155**

3.18 Phase 11 - Mt Oso - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	6.8700e-003	0.2136	0.0483	5.5000e-004	0.0136	6.2000e-004	0.0142	3.9000e-003	6.0000e-004	4.5000e-003		57.6156	57.6156	3.7000e-003		57.7082
Worker	0.0239	0.0168	0.1544	4.4000e-004	0.0493	3.1000e-004	0.0496	0.0131	2.9000e-004	0.0134		43.7149	43.7149	1.1300e-003		43.7432
Total	**0.0307**	**0.2305**	**0.2027**	**9.9000e-004**	**0.0628**	**9.3000e-004**	**0.0638**	**0.0170**	**8.9000e-004**	**0.0179**		**101.3306**	**101.3306**	**4.8300e-003**		**101.4514**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					

Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	6.8700e-003	0.2136	0.0483	5.5000e-004	0.0136	6.2000e-004	0.0142	3.9000e-003	6.0000e-004	4.5000e-003		57.6156	57.6156	3.7000e-003		57.7082
Worker	0.0239	0.0168	0.1544	4.4000e-004	0.0493	3.1000e-004	0.0496	0.0131	2.9000e-004	0.0134		43.7149	43.7149	1.1300e-003		43.7432
Total	**0.0307**	**0.2305**	**0.2027**	**9.9000e-004**	**0.0628**	**9.3000e-004**	**0.0638**	**0.0170**	**8.9000e-004**	**0.0179**		**101.3306**	**101.3306**	**4.8300e-003**		**101.4514**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Other Asphalt Surfaces	0.00	0.00	0.00		
User Defined Commercial	0.00	0.00	0.00		
User Defined Residential	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles	Trip %	Trip Purpose %

Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Other Asphalt Surfaces	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
User Defined Commercial	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
User Defined Residential	10.80	7.30	7.50	45.60	19.00	35.40	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Other Asphalt Surfaces	0.561380	0.034626	0.184829	0.116141	0.016642	0.004535	0.016185	0.056706	0.001192	0.001407	0.004983	0.000606	0.000767
User Defined Commercial	0.561380	0.034626	0.184829	0.116141	0.016642	0.004535	0.016185	0.056706	0.001192	0.001407	0.004983	0.000606	0.000767
User Defined Residential	0.561380	0.034626	0.184829	0.116141	0.016642	0.004535	0.016185	0.056706	0.001192	0.001407	0.004983	0.000606	0.000767

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
User Defined Commercial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
User Defined Residential	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
User Defined Commercial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
User Defined Residential	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000

Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Attachment 3: Revisions to Vierra Reinforcement Project Summary Emissions to include Ripon Cogen and Tesla Substations and fugitive dust emissions associated with helicopter use (Source: ESA, 2019a)

Vierra Reinforcement Project Criteria Pollutants Summary for Construction Activities

Annual Emissions in SJVAB (tons/year)

	ROG	Nox	CO	SOx	Fugitive PM10	Exhaust PM10	PM10 total	Fugitive 2.5	Exhaust PM2.5	PM2.5 total
Total Emissions (see CalEEMod)	0.3657	3.6864	2.7361	0.00645	0.1968	0.1616	0.3584	0.0836	0.1497	0.2333
Helicopter Emissions*	0.0073	0.0033	0.0092	0.0007	0.0033	0.0001	0.0034	0.00033	0.0001	0.00043
Highland Peak Subtracted (located in SFBAAB) (see CalEEMod)	0.00008	0.00063	0.00055	0	0.00015	0	0.00016	0.00004	0	0.00004
Ripon Substation added - five times the amount as Highland Peak (see CalEEMod)	0.0004	0.00315	0.00275	0	0.00075	0	0.0008	0.0002	0	0.0002
Total Emissions in SJVAB	0.37332	3.69222	2.7475	0.00715	0.2007	0.1617	0.36244	0.08409	0.1498	0.23389
Total Emissions in SJVAB Rounded	0.4	3.7	2.7	0.0	0.2	0.2	0.4	0.1	0.1	0.2

Maximum Daily Emissions in SJVAB (pounds/day)

	ROG	Nox	CO	SOx	Fugitive PM10	Exhaust PM10	PM10 total	Fugitive 2.5	Exhaust PM2.5	PM2.5 total
Total Emissions (see CalEEMod)	9.0267	89.7106	65.678	0.1529	6.6682	3.9518	10.62	3.0397	3.6505	6.6902
Helicopter Emissions*	7.3	3.3	9.18	0.74	3.3	0.11	3.41	0.33	0.11	0.44
Highland Peak Subtracted (located in SFBAAB) (see CalEEMod)	0.0345	0.255	0.2381	0.00108	0.0628	0.00165	0.0645	0.0175	0.00156	0.0185
Ripon Substation added - same as Highland Peak (see CalEEMod)	0.0345	0.255	0.2381	0.00108	0.0628	0.00165	0.0645	0.0175	0.00156	0.0185
Total Emissions in SJVAB	16.3267	93.0106	74.858	0.8929	9.9682	4.0618	14.03	3.3697	3.7605	7.1302
Total Emissions in SJVAB Rounded	16.3	93.0	74.9	0.9	10.0	4.1	14.0	3.4	3.8	7.1

*PG&E's emissions were revised to include fugitive dust emissions for helicopter landings and takeoffs using SERDP, 2007. Particulate Matter Emissions for Dust from Unique Military Activities. Measurements indicated approximately 0.5 kg of PM10 during takeoff and 1 kg during landing.

Maximum Daily Emissions in SFBAAB (pounds/day)

	ROG	Nox	CO	SOx	Fugitive PM10	Exhaust PM10	PM10 total	Fugitive 2.5	Exhaust PM2.5	PM2.5 total
Highland Peak (see CalEEMod)	0.0345	0.255	0.2381	0.00108	0.0628	0.00165	0.0645	0.0175	0.00156	0.0185
Tesla Substation - same as Highland Peak (see CalEEMod)	0.0345	0.255	0.2381	0.00108	0.0628	0.00165	0.0645	0.0175	0.00156	0.0185
Combined emissions in SFBAAB	0.0690	0.5100	0.4762	0.0022	0.1256	0.0033	0.1290	0.0350	0.0031	0.0370
Total Emissions in SFBAAB Rounded	0.1	0.5	0.5	0.0	0.1	0.0	0.1	0.0	0.0	0.0

Attachment 4: Memorandum Regarding Review of the HRA conducted by TRC Solutions for the Vierra Reinforcement Project (Source: ESA, 2019b)

180 Grand Avenue
Suite 1050
Oakland, CA 94612
510.839.5066 phone
510.839.5822 fax

esassoc.com

memorandum

date September 19, 2019

to Matt Fagundes, Project Manager

cc File

from Jyothi Iyer, Air Quality Analyst

subject **Review of the HRA conducted by TRC Solutions for the Vierra Reinforcement Project**

This memo summarizes ESA's review of the Health Risk Assessment (HRA) dated December 13, 2018, conducted by TRC Solutions on behalf of PG&E for the Vierra Reinforcement Project (project). ESA agrees with the general methodology used in the HRA, which is consistent with the 2015 Office of Environmental Health Hazard Assessment (OEHHA) guidelines. However, there were some discrepancies as noted below.

Review of the PG&E HRA

Page 3 of the PG&E HRA states that construction activities not occurring at the substation, including material haul truck trips and worker commute trips, were excluded from the HRA "because they occur off-site or over the entire travel distance and would not be expected to significantly contribute to localized impacts of DPM." While the HRA does not specify if diesel particulate matter (DMP) emissions from vendor truck trips were included, it can be assumed that they were not due to the same reasons stated above.

The following table summarizes DPM emissions in the form of PM-10 exhaust from on-site construction. These numbers were extracted from the CalEEMod output included as part of the PG&E HRA.

Construction Phases	PM-10 Exhaust (tons/year)
	On-site Equipment
Phase 1 - Site Preparation	0.00009
Phase 5A - Substation Expansion	0.00814
Phase 2 - Traffic Control	0
Phase 5B - Substation Expansion	0.0242
Phase 5D - Substation Expansion	0
Phase 5C - Substation Expansion	0
Phase 6 - Vierra Substation	0.0019
Total tons/year	**0.03433**

Total pounds/year	**68.66**

The emission rate used in the PG&E HRA is 69.2 pounds per year, 0.54 pounds per year greater than what is identified above based on the CalEEMod output.

The dispersion modeling presented in the PG&E HRA was conducted using 69.2 pounds per year of PM-10 exhaust emissions, and identified an estimated maximum annual concentration of 0.0551 $\mu g/m^3$. Based on an emission rate of 68.66 pounds per year as calculated above, the maximum annual concentration would be 0.0547 $\mu g/m^3$.

ESA Revisions to Update HRA

ESA made further revisions to update the HRA findings to reflect the following:

- Mass emissions were remodeled using CalEEMod version 2016.3.2 to adjust the construction calendar year to 2020 to be consistent with the project description and the regional air quality analysis prepared subsequent to preparation of the PG&E HRA. The PG&E HRA incorrectly used a construction model year of 2022.

- Emissions were remodeled for the duration of Phase 5A, Substation Expansion, to be 50 days. The PG&E HRA used a duration of 40 days for Phase 5A. This revision was made to ensure consistency with the phase duration assumptions used for the revised mass emissions that were estimated for the regional air quality analysis prepared subsequent to preparation of the PG&E HRA.

- The daily usage hours for several pieces of equipment were refined for the CalEEMod modeling as identified by PG&E in its HRA to more accurately represent onsite average equipment use hours.

- Two pieces of equipment were changed in the modeling for Phase 5A. The PG&E HRA modeling included two plate compactors that are 8 horsepower each. ESA revised the modeling for Phase 5A to instead include two rollers that are 80 horsepower each, operating for the same 4.5 hours per day as assumed in the PG&E HRA. This revision was made to ensure consistency with the equipment assumptions for Phase 5A used for the revised mass emissions that were estimated for the regional air quality analysis prepared subsequent to preparation of the PG&E HRA.

The revised PM-10 mass emission rates, exposure assessment, and health risk based on ESA's revisions are shown below:

PM-10 exhaust emission rate from on-site construction equipment (pounds per year)	109.74
Maximum annual concentration (mg/m^3)	0.0874
Unmitigated Cancer Risk – 3rd trimester Residential Receptor (in a million)	1.0
Unmitigated Cancer Risk – Infant (0 to 2 years) Residential Receptor (in a million)	12.2
Unmitigated Cancer Risk – Child (2 to 9 years) Residential Receptor (in a million)	1.3

Unmitigated Cancer Risk – Adult Residential Receptor (in a million)	0.3
Non-Carcinogens - Chronic: Hazard Index	0.0175

As shown above, the cancer risk for an infant residential receptor would exceed the significance threshold of 10 in one million. It was estimated that using Tier 4 Final equipment for all construction equipment greater than 180 horsepower would mitigate the risk to below the significance threshold. The horsepower cut-off level for Tier 4 equipment was arrived at by assuming the largest construction equipment to use Tier 4 engines until the estimated cancer risk value dipped below 10 in one million. Based on the construction equipment data used for the analysis, this would amount to approximately 59 percent of the construction equipment horsepower-hours needing to be met using equipment meeting the Tier 4 Final standards as summarized in the table below.

Mitigated Scenario – Percentage of Tier 4 Final Equipment Needed

Phases	**Amt.**	**Hours/day**	**hp-hr**	**Mitigation**
Phase 1 - Site Preparation				
Other Construction Equipment	1	10	90	---
Other Construction Equipment	1	10	200	---
Phase 5A - Substation Expansion				
Crane	1	0.75	173.25	Tier 4 F
Excavator	2	8	800	---
Excavator	1	3	474	---
Grader	1	1.5	280.5	Tier 4 F
Off-Highway Truck	2	1.8	1447.2	Tier 4 F
Roller	2	4.5	720	---
Rubber tired dozers	1	1.5	370.5	Tier 4 F
Scrapers	1	1.5	550.5	Tier 4 F
Phase 2 - Traffic Control				
Excavator	0	7	0	---
Phase 5B - Substation Expansion				
Aerial Lift	3	3.3	623.7	---
Air Compressor	2	2	312	---
Forklift	2	3.3	587.4	---
Generator set	1	4	336	---
Skid Steer Loader	2	4	520	---
Tractor/Loader/Backhoe	2	4	776	---
Phase 5D - Substattion Expansion				
Excavator	0	7	0	---
Phase 5C - Substation Expansion				
Excavator	0	7	0	---
Phase 6 - Vierra Substation				
Tractor/Loaders/backhoe	1	8	776	---
Off highway trucks	2	2	1608	Tier 4 F

Cranes	2	10	4620	Tier 4 F
Total horsepower-hours			15,265.05	
Tier 4 Final horsepower-hours			9,049.95	
Tier 4 as Percent of Total			59%	

The mitigated emission rate, exposure and health risk estimates are shown below.

Mitigated PM-10 exhaust emission rate from on-site construction equipment (pounds per year)	86.68
Mitigated Maximum annual concentration (mg/m^3)	0.069
Mitigated Cancer Risk – 3rd trimester Residential Receptor (in a million)	0.8
Mitigated Cancer Risk – Infant (0 to 2 years) Residential Receptor (in a million)	9.6
Mitigated Cancer Risk – Child (2 to 9 years) Residential Receptor (in a million)	1.1
Mitigated Cancer Risk – Adult Residential Receptor (in a million)	0.2

Appendix C

Californian Native American Tribal Consultation Documentation

Cultural Resources Table 1

California Native American Tribes Contacted for this Project

Tribe	Cultural Affiliation	Communication to Date
Amah Mutsun Tribal Band	Costanoan, Northern Valley Yokuts	Letter 1/9/2019, Phone 1/16/2019 Chair Lopez said this project is outside of the tribe's ancestral territory
Amah Mutsun Tribal Band of Mission San Juan Bautista	Costanoan	Letter 1/9/2019, Phone 1/16/2019 Chair requested email with letter and fact sheet (email sent same day)
Buena Vista Rancheria of Me-Wuk Indians	Me-Wuk/Miwok	Letter 10/11/2018, 1/19/2019. Phone 1/16/2019 left voicemail for James Sarmento
Calaveras Band of Mi-Wuk Indians	Mi-Wuk/Miwok	Letter 1/9/2019, Phone 1/16.2019 voicemail left, Email 1/16.2019
California Valley Miwok Tribe	Miwok	Letter 10/11/2018, 10/17/2018, 1/9/2019, Phone 10/15/2018 Lawrence Wilson Jr called to clarify title, 1/16/2019 voicemail left, Email 1/16/2019
California Valley Miwok Tribe (Sheep Rancheria of Me-Wuk Indians of Ca)	Miwok	Letter 10/11/2018, 1/9/2019, Phone 1/16/2019 voicemail left, 2/15/2019 voicemail box full, 3/7/2019 voicemail left, 3/13/2019 voicemail left, 3/14/2019 received call, Email 1/16/2019, 2/14/2019 email received requesting consultation, 2/15/2019 responded to 2/14 email, 2/28/2019 emailed FTP link, 3/13/2019 follow up email
Costanoan Rumsen Carmel Tribe	Costanoan	Letter 1/9/2019, Phone 1/16/2019 no voicemail, Email 1/16/2019
Ione Band of Miwok Indians	Miwok	Letter 10/11/2018, 1/9/2019, Phone 1/16/2019 busy tone, 3/7/2019 voicemail and call back that sharing information with the Cultural Committee, 3/14/2019 follow-up, Email 1/16/2019, 1/29/2019 email received with attachment from chairperson, asked for inventory report, 1/29/2019 sent follow-up email, 2/28/2019 emailed FTP link, 3/14/2019 email inquiry regarding interest in meeting
Indian Canyon Mutsun Band of Costanoan	Costanoan	Letter 1/9/2019, Phone 1/16/2019 asked for information to be emailed, Email 1/16/2019
Muwekma Ohlone Indian Tribe of the SF Bay Area	Costanoan	Letter 1/9/2019, Phone 1/16/2019 voicemail, Email 1/16/2019
North Valley Yokuts Tribe	Ohlone/Costanoan, Northern Valley Yokuts, Bay Miwok	Letter 10/11/2018, 1/9/2019, Phone 10/13/2018 voicemail left for Stephanie Green at CPUC, 1/16/2019 voicemail left, 3/7/2019 voicemail left to follow-up on

		interest, 3/13/12019 voicemail left, 3/14/2019 voicemail left, Email 10/13/2018 Stephanie Green of CPUC received email requesting consultation, concern for inadvertent discovery of burials, 1/7/2019 request to consult and asked for literature search, 1/18/2019 responded to email, 1/22/2019 tribe emailed expressing concern that proposed area is sensitive location and recommends monitoring, 2/28/2019 emailed FTP link, 3/13/2019 follow-up email to FTP link, 3/14/2019 follow-up email regarding meeting
Southern Sierra Miwuk Nation	Miwok, Paiute, Northern Valley Yokuts	Letter 1/9/2019, Phone 1/16/2019 voicemail left
The Ohlone Indian Tribe	Ohlone/Costanoan, Bay Miwok, Plains Miwok, Patwin	Letter 1/9/2019, Phone 1/16/2019 voicemail left, Email 1/16/2019.
Tule River Indian Tribe	Yokuts	Letter 1/9/2019, Phone 1/16/2019 given name and number of person to contact, Email 1/16/2019 emailed information, 1/17/2019 received email that tribe is not aware of any culturally sensitive items or sites but are interested in results of surveys and communication with closer tribes
Tuolumne Band of Me-Wuk Indians	Me-Wuk, Miwok	Letter 1/9/2019, Phone 1/16/2019 voicemail left, Email 1/16/2019 emailed information
United Auburn Indian Community of the Auburn Rancheria	Maidu, Miwok	Letter 10/11/2018 consultation letter, 11/2/2018 AB52 letter, 1/9/2019 certified mail AB52 letter, Meeting in person 3/11/2019, Phone 1/18/2019 voicemail left, 1/25/2019 voicemail left, 3/14/2019 voicemail left, Email 1/18/2019 emailed information, 2/28/2019 sent FTP link, 3/11/2019 follow-up email to in-person meeting, 3/14/2019 email sent inquiring if interested in another meeting. UAIC asserted and CPUC accepted UAIC as an AB52 tribe, but UAIC has withdrawn from consultation.
Wilton Rancheria	Miwok	Letter 10/11/2018, 1/9/2019, Phone 1/4/2019 voicemail, 1/16/2019 tribe requested shapefiles of APE and survey report, 3/7/2019 follow-up call, 3/11/2019 voicemail left, 3/13/2019 voicemail full, Email 10/17/2019 received that tribe requesting AB52 consultation regarding recommended mitigation

		measures, significant effects of the project, significance of tribal resources, significance of impacts on tribal resources, project alternatives, 1/16/2019 tribe request for shapefiles and survey report, 2/28/2019 sent FTP link, 3/13/2019 follow-up email. Wilton Rancheria asserted AB52 standing but did not provide proof of the original or resubmitted AB52 letter.

From:	Braun, Matthew@Energy
To:	NAHC NAHC
Bcc:	Bonitz, Jessica@Energy
Subject:	SLF and Native American Contact List Request
Date:	Wednesday, August 29, 2018 9:00:00 AM
Attachments:	Figure 2_0-2 Project Area Map.pdf Figure 2_0-3 Project Overview Map.pdf

Hello,
I am requesting a check of the Sacred Lands File and a list of potentially interested Native American Tribes for the following project.

Project: Vierra 115Kv Transmission Line Upgrade
County: San Joaquin
USGS Quad: Lathrop 7.5"
Township: 1 south Range: 6 east Section: 35
Agency: California Energy Commission on behalf of the California Public Utilities Commission
Street Address: 2131 Vierra Road
City: Lathrop Zip: 95330
Phone: 916-654-4543
Fax: 916-
Email: mbraun@energy.ca.gov
Project Description:
PG&E's Vierra Reinforcement Project (project) proposes to expand PG&E's existing Vierra Substation in the City of Lathrop and build a new, double-circuit power line west from the substation approximately 1 mile to the existing Tesla-Stockton Cogen Junction 115 kilovolt (kV) Power Line. The project consists of the following major components:

- **Power Line Construction.** An approximately 1-mile-long, double-circuit 115 kV power line will be installed on approximately 16 TSPs.
- **Substation Expansion**. Vierra Substation will be expanded approximately 340 feet to the west. The existing 115 kV equipment will be replaced, upgraded, and reconfigured to accommodate the new 115 kV double-circuit lines.

Matt Braun
California Energy Commission
Cultural Resources Unit
1516 9th St MS-40
Sacramento, CA 95814
916-654-4543

NATIVE AMERICAN HERITAGE COMMISSION
Cultural and Environmental Department
1550 Harbor Blvd., Suite 100
West Sacramento, CA 95691
Phone: (916) 373-3710
Email: nahc@nahc.ca.gov
Website: http://www.nahc.ca.gov
Twitter: @CA_NAHC

September 11, 2018

Matthew Braun
California Energy Commission

VIA Email to: mbraun@energy.ca.gov

RE: Vierra 115Kv Transmission Line Upgrade, Lathrop, San Joaquin County

Dear Mr. Braun:

A record search of the Native American Heritage Commission (NAHC) Sacred Lands File (SLF) was completed for the information you have submitted for the above referenced project. The results were negative. However, the absence of specific site information in the SLF does not indicate the absence of cultural resources in any project area. Other sources of cultural resources should also be contacted for information regarding known and recorded sites.

Attached is a list of Native American tribes who may also have knowledge of cultural resources in the project area. This list should provide a starting place in locating areas of potential adverse impact within the proposed project area. I suggest you contact all of those indicated; if they cannot supply information, they might recommend others with specific knowledge. By contacting all those listed, your organization will be better able to respond to claims of failure to consult with the appropriate tribe. If a response has not been received within two weeks of notification, the Commission requests that you follow-up with a telephone call or email to ensure that the project information has been received.

If you receive notification of change of addresses and phone numbers from tribes, please notify me. With your assistance we are able to assure that our lists contain current information. If you have any questions or need additional information, please contact me at my email address: Sharaya.Souza@nahc.ca.gov.

Sincerely,

for

Sharaya Souza
Staff Services Analyst
(916) 573-0168

Native American Heritage Commission
Native American Consultation List
9/11/2018

Buena Vista Rancheria of Me-Wuk Indians
Rhonda Morningstar Pope, Chairperson
1418 20th Street, Suite 200 — Me-Wuk / Miwok
Sacramento ,CA 95811
rhonda@buenavistatribe.com
(916) 491-0011 Office
(916) 491-0012 Fax

California Valley Miwok Tribe
Secretarial Election Pending
4620 Shippee Lane — Miwok
Stockton ,CA 95212
CalaverasMiwukPreservation@gmail.com
(209) 931-4567 Office
(209) 931-4333 Fax

California Valley Miwok Tribe
Secretarial Election Pending
P.O. Box 395 — Miwok
West Point ,CA 95255
Administration@CaliforniValleyMiwok.com
(209) 293-4179 Office

Ione Band of Miwok Indians
Sara Dutschke Setchwaelo, Chairperson
P.O. Box 699 — Miwok
Plymouth ,CA 95669
Sara@ionemiwok.net
(209) 245-5800 Office
(209) 245-6377 Fax

North Valley Yokuts Tribe
Katherine Erolinda Perez, Chairperson
P.O. Box 717 — Ohlone/Costanoan
Linden ,CA 95236 — Northern Valley Yokuts
canutes@verizon.net — Bay Miwok
(209) 887-3415

United Auburn Indian Community of the Auburn Rancheria
Gene Whitehouse, Chairperson
10720 Indian Hill Road — Maidu
Auburn ,CA 95603 — Miwok
(530) 883-2390 Office
(530) 883-2380 Fax

Wilton Rancheria
Raymond Hitchcock, Chairperson
9728 Kent Street — Miwok
Elk Grove ,CA 95624
rhitchcock@wiltonrancheria-nsn.gov
(916) 683-6000 Office
(916) 683-6015 Fax

This list is current only as of the date of this document and is based on the information available to the Commission on the date it was produced.

Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resource Code, or Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native American Tribes for the proposed:
Vierra 115Kv Transmission Line Upgrade, Lathrop, San Joaquin County

Sacred Lands File & Native American Contacts List Request

Native American Heritage Commission
1550 Harbor Blvd, Suite 100
West Sacramento, CA 95691
916-373-3710
916-373-5471 – Fax
nahc@nahc.ca.gov

Information Below is Required for a Sacred Lands File Search

Project: Vierra 115 kV Transmission Line Upgrade

County: San Joaquin

USGS Quadrangle Name: Lathrop 7.5"

Township: 1 South **Range:** 6 East **Section(s):** 35

Company/Firm/Agency: CA Energy Commission on behalf of CA Public Utilities Commission

Street Address: 1516 Ninth Street

City: Sacramento **Zip:** 95814

Phone: 916-653-2543

Fax:

Email: Jessica.bonitz@energy.ca.gov

Project Description:

The substation is located on Howland Road in Lathrop, CA, San Joaquin County.

Remote substation modifications would include installing a new circuit switcher with a three-pier foundation, and a new voltage transformer with a single-pier foundation; removing three 115 kV fuses; trenching to install a new conduit duct bank between the new circuit switcher and the existing control building; affixing one up-to-six-foot antenna on an existing pole; and updating protection and automation equipment in the control room.

From:	Braun, Matthew@Energy
To:	Bonitz, Jessica@Energy
Cc:	Gates, Thomas@Energy
Subject:	Fw: Highland Peak Communication Tower Upgrade, Tassajara, Contra Costa County
Date:	Wednesday, December 05, 2018 11:01:36 AM
Attachments:	SLFNoCostaBraun.pdf SFLNOCostaBraun-signed.pdf

From: Souza, Sharaya@NAHC <Sharaya.Souza@nahc.ca.gov>
Sent: Wednesday, December 5, 2018 11:01 AM
To: Braun, Matthew@Energy
Subject: Highland Peak Communication Tower Upgrade, Tassajara, Contra Costa County

Good morning,

Attached is a response to the project(s) referenced above.

Please send all SLF requests and follow-ups to the main email **(nahc@nahc.ca.gov)** for processing and monthly tracking.

Please don't hesitate to contact me if you have any questions.

Happy Holidays,

Sharaya Martinez-Souza
Native American Heritage Commission
1550 Harbor Blvd., Suite 100
West Sacramento, CA 95691
Sharaya.souza@nahc.ca.gov
Direct Line: 916-573-0168
Office: 916-373-3710
Fax: 916-373- 5471

From:	Braun, Matthew@Energy
To:	Bonitz, Jessica@Energy; Gates, Thomas@Energy
Subject:	Fw: Mt. Oso Communication Tower Upgrade, Copper Mountain, Stanislaus County
Date:	Wednesday, December 05, 2018 11:11:19 AM
Attachments:	SFLNOStanisBraun-signed.pdf SLFNOStanislausBraun.pdf

---

From: Souza, Sharaya@NAHC <Sharaya.Souza@nahc.ca.gov>
Sent: Wednesday, December 5, 2018 11:10 AM
To: Braun, Matthew@Energy
Subject: Mt. Oso Communication Tower Upgrade, Copper Mountain, Stanislaus County

Good morning,

Attached is a response to the project(s) referenced above.

Please send all SLF requests and follow-ups to the main email **(nahc@nahc.ca.gov)** for processing and monthly tracking.

Please don't hesitate to contact me if you have any questions.

Happy Holidays,

Sharaya Martinez-Souza
Native American Heritage Commission
1550 Harbor Blvd., Suite 100
West Sacramento, CA 95691
Sharaya.souza@nahc.ca.gov
Direct Line: 916-573-0168
Office: 916-373-3710
Fax: 916-373- 5471

From:	Braun, Matthew@Energy
To:	Bonitz, Jessica@Energy
Cc:	Gates, Thomas@Energy
Subject:	Fw: Substation Upgrades in San Joaquin County
Date:	Wednesday, December 05, 2018 11:16:48 AM
Attachments:	SLFSanJoquinProjectsBraun.pdf SFLNOJoaquinBraun1-signed.pdf SFLNOJoaquinBraun2-signed.pdf SFLNOJoaquinBraun3-signed.pdf SFLNOJoaquinBraun4-signed.pdf SFLNOJoaquinBraun5-signed.pdf SFLNOJoaquinBraun6-signed.pdf

---

From: Souza, Sharaya@NAHC <Sharaya.Souza@nahc.ca.gov>
Sent: Wednesday, December 5, 2018 11:12 AM
To: Braun, Matthew@Energy
Subject: Substation Upgrades in San Joaquin County

Good morning,

Attached is a response to the project(s) referenced above.

Please send all SLF requests and follow-ups to the main email **(nahc@nahc.ca.gov)** for processing and monthly tracking.

Please don't hesitate to contact me if you have any questions.

Happy Holidays,

Sharaya Martinez-Souza
Native American Heritage Commission
1550 Harbor Blvd., Suite 100
West Sacramento, CA 95691
Sharaya.souza@nahc.ca.gov
Direct Line: 916-573-0168
Office: 916-373-3710
Fax: 916-373- 5471

From:	Braun, Matthew@Energy
To:	Bonitz, Jessica@Energy
Cc:	Gates, Thomas@Energy
Subject:	Fw: Tesla Substation Upgrade
Date:	Wednesday, December 05, 2018 9:18:16 AM
Attachments:	TeslaSubstation-CaEnergy-Braun 11-28-18.pdf SFL.no TeslaSubstation-CaEnergy-Braun 11-28-18.pdf

Lisa was asking about these responses yesterday

From: Totton, Gayle@NAHC <Gayle.Totton@nahc.ca.gov>
Sent: Wednesday, November 28, 2018 10:10 AM
To: Braun, Matthew@Energy
Subject: Tesla Substation Upgrade

Good morning,
Attached please find your Sacred Lands File search letter and a Tribal Contacts list for the above referenced project.
Sincerely,

Gayle Totton, M.A., Ph.D.
Associate Governmental Program Analyst
Native American Heritage Commission
(916) 373-3714

From:	Braun, Matthew@Energy
To:	Bonitz, Jessica@Energy
Cc:	Gates, Thomas@Energy
Subject:	Fw: Tracy Substation Upgrade
Date:	Wednesday, December 05, 2018 9:17:45 AM
Attachments:	SFL.no TracySubstation-CaEnergy-Braun 11-28-18.pdf TracySubstation-CaEnergy-Braun 11-28-18.pdf

---

Forgot to forward this onto you. I got two responses so far, both of which took them less than a day. Still waiting on the other 6

From: Totton, Gayle@NAHC <Gayle.Totton@nahc.ca.gov>
Sent: Wednesday, November 28, 2018 9:39 AM
To: Braun, Matthew@Energy
Subject: Tracy Substation Upgrade

Good morning,
Attached please find your Sacred Lands File search letter and a Tribal Contacts list for the above referenced project.
Sincerely,

Gayle Totton, M.A., Ph.D.
Associate Governmental Program Analyst
Native American Heritage Commission
(916) 373-3714

PUBLIC UTILITIES COMMISSION
505 VAN NESS AVENUE
SAN FRANCISCO, CA 94102-3298

October 11, 2018

Chairperson Sara Dutschke Setcthwaelo
P.O. Box 699
Plymouth, CA 95669

Re: Invitation to Consult for Pacific Gas and Electric Company's Permit to Construct for the Vierra Reinforcement Project in San Joaquin County, California – Presently undergoing CEQA review by the California Public Utilities Commission

Dear Chairperson Dutschke Setchthwaelo,

Please find attached for your information and consideration a fact sheet for the Vierra Reinforcement Project (project). Pacific Gas and Electric Company (PG&E) is proposing to expand the existing Vierra Substation in the City of Lathrop and build a new, double-circuit power line west from the substation approximately one mile to the existing Tesla-Stockton Cogen Junction 115 kilovolt (kV) Power Line.

The proposed project would expand the existing Vierra Substation westward by approximately 340 feet. PG&E would also install 16 new poles to support the double-circuit power line. PG&E proposed associated work areas and laydown yards in the project's vicinity, including three potential staging areas. The proposed project would provide more electrical capacity and reliability for households and businesses in Lathrop, Manteca, and surrounding areas of San Joaquin County.

PG&E filed an application and Proponent's Environmental Assessment (PEA) for a Permit to Construct on June 6, 2018. Constructing the substation expansion will take approximately 12 to 18 months to complete and will likely begin prior to power line construction, which is estimated to take approximately 3 to 4 months to complete.

As the California Environmental Quality Act (CEQA) lead agency, the California Public Utilities Commission (CPUC) will be reviewing the PG&E proposal under CEQA. As part of that effort, it is important that we seek the input of California Native American tribes along with other CEQA interested parties.

The CPUC contacted the Native American Heritage Commission (NAHC) in August 2018 for a list of California Native American tribes traditionally and culturally affiliated with the project area. The NAHC provided your name as a representative of your tribe potentially interested in the activities associated with the proposed project. Previously, letters and phone calls about the project were made to a similar list of tribes by PG&E between July 2016 and October 2017.

Although the CPUC has not received any letters requesting formal notification of proposed projects within the project area under Assembly Bill 52, we would appreciate your comments on

this project. Should you have questions and inquiries on this project, you may email or call me at (415) 703-2579 or mike.rosauer@cpuc.ca.gov. Stephanie Green is the CPUC Tribal Liaison. Ms. Green is copied here and is also readily available to assist you with this or any other tribal matter. Ms. Green can be reached at 415-703-5245 and Stephanie.Green@cpuc.ca.gov. If you would benefit from a meeting with our environmental team, please let me know.

Thank you in advance for your time and input.

Sincerely,

Michael E. Rosauer

Mike Rosauer
CPUC Project Manager
California Public Utilities Commission
505 Van Ness Avenue
San Francisco, CA, 94102-3298

Attachments: Fact Sheet

cc: Stephanie Green, CPUC, Tribal Liaison
Mike Monasmith, CEC, Project Manager

PUBLIC UTILITIES COMMISSION
505 VAN NESS AVENUE
SAN FRANCISCO, CA 94102-3298

October 11, 2018

Chairperson Katherine Erolinda Perez
North Valley Yokuts Tribe
P.O. Box 717
Linden, CA 95236

Re: Invitation to Consult for Pacific Gas and Electric Company's Permit to Construct for the Vierra Reinforcement Project in San Joaquin County, California – Presently undergoing CEQA review by the California Public Utilities Commission

Dear Chairperson Erolinda Perez,

Please find attached for your information and consideration a fact sheet for the Vierra Reinforcement Project (project). Pacific Gas and Electric Company (PG&E) is proposing to expand the existing Vierra Substation in the City of Lathrop and build a new, double-circuit power line west from the substation approximately one mile to the existing Tesla-Stockton Cogen Junction 115 kilovolt (kV) Power Line.

The proposed project would expand the existing Vierra Substation westward by approximately 340 feet. PG&E would also install 16 new poles to support the double-circuit power line. PG&E proposed associated work areas and laydown yards in the project's vicinity, including three potential staging areas. The proposed project would provide more electrical capacity and reliability for households and businesses in Lathrop, Manteca, and surrounding areas of San Joaquin County.

PG&E filed an application and Proponent's Environmental Assessment (PEA) for a Permit to Construct on June 6, 2018. Constructing the substation expansion will take approximately 12 to 18 months to complete and will likely begin prior to power line construction, which is estimated to take approximately 3 to 4 months to complete.

As the California Environmental Quality Act (CEQA) lead agency, the California Public Utilities Commission (CPUC) will be reviewing the PG&E proposal under CEQA. As part of that effort, it is important that we seek the input of California Native American tribes along with other CEQA interested parties.

The CPUC contacted the Native American Heritage Commission (NAHC) in August 2018 for a list of California Native American tribes traditionally and culturally affiliated with the project area. The NAHC provided your name as a representative of your tribe potentially interested in the activities associated with the proposed project. Previously, letters and phone calls about the project were made to a similar list of tribes by PG&E between July 2016 and October 2017.

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Sincerely,

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Mike Rosauer
CPUC Project Manager
California Public Utilities Commission
505 Van Ness Avenue
San Francisco, CA, 94102-3298

Attachments: Fact Sheet

cc: Stephanie Green, CPUC, Tribal Liaison
Mike Monasmith, CEC, Project Manager

PUBLIC UTILITIES COMMISSION
505 VAN NESS AVENUE
SAN FRANCISCO, CA 94102-3298

October 11, 2018

Wilton Rancheria
Chairperson Raymond Hitchcock
9728 Kent Street
Elk Grove, CA 95624

Re: Invitation to Consult for Pacific Gas and Electric Company's Permit to Construct for the Vierra Reinforcement Project in San Joaquin County, California – Presently undergoing CEQA review by the California Public Utilities Commission

Dear Chairperson Hitchcock,

Please find attached for your information and consideration a fact sheet for the Vierra Reinforcement Project (project). Pacific Gas and Electric Company (PG&E) is proposing to expand the existing Vierra Substation in the City of Lathrop and build a new, double-circuit power line west from the substation approximately one mile to the existing Tesla-Stockton Cogen Junction 115 kilovolt (kV) Power Line.

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California Public Utilities Commission
505 Van Ness Avenue
San Francisco, CA, 94102-3298

Attachments: Fact Sheet

cc: Stephanie Green, CPUC, Tribal Liaison
Mike Monasmith, CEC, Project Manager

PUBLIC UTILITIES COMMISSION
505 VAN NESS AVENUE
SAN FRANCISCO, CA 94102-3298

October 11, 2018

Chairperson
California Valley Miwok Tribe
P.O. Box 395
West Point, CA 95255

Re: Invitation to Consult for Pacific Gas and Electric Company's Permit to Construct for the Vierra Reinforcement Project in San Joaquin County, California – Presently undergoing CEQA review by the California Public Utilities Commission

Dear Chairperson,

Please find attached for your information and consideration a fact sheet for the Vierra Reinforcement Project (project). Pacific Gas and Electric Company (PG&E) is proposing to expand the existing Vierra Substation in the City of Lathrop and build a new, double-circuit power line west from the substation approximately one mile to the existing Tesla-Stockton Cogen Junction 115 kilovolt (kV) Power Line.

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Mike Rosauer
CPUC Project Manager
California Public Utilities Commission
505 Van Ness Avenue
San Francisco, CA, 94102-3298

Attachments: Fact Sheet

cc: Stephanie Green, CPUC, Tribal Liaison
Mike Monasmith, CEC, Project Manager

PUBLIC UTILITIES COMMISSION
505 VAN NESS AVENUE
SAN FRANCISCO, CA 94102-3298

October 11, 2018

Chairperson
California Valley Miwok Tribe
4620 Shippee Lane
Stockton, CA 95212

Re: Invitation to Consult for Pacific Gas and Electric Company's Permit to Construct for the Vierra Reinforcement Project in San Joaquin County, California – Presently undergoing CEQA review by the California Public Utilities Commission

Dear Chairperson,

Please find attached for your information and consideration a fact sheet for the Vierra Reinforcement Project (project). Pacific Gas and Electric Company (PG&E) is proposing to expand the existing Vierra Substation in the City of Lathrop and build a new, double-circuit power line west from the substation approximately one mile to the existing Tesla-Stockton Cogen Junction 115 kilovolt (kV) Power Line.

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Michael E. Rosauer

Mike Rosauer
CPUC Project Manager
California Public Utilities Commission
505 Van Ness Avenue
San Francisco, CA, 94102-3298

Attachments: Fact Sheet

cc: Stephanie Green, CPUC, Tribal Liaison
Mike Monasmith, CEC, Project Manager

PUBLIC UTILITIES COMMISSION
505 VAN NESS AVENUE
SAN FRANCISCO, CA 94102-3298

October 11, 2018

Chairperson Rhonda Morningstar Pope
Buena Vista Rancheria
1418 20th Street, Suite 200
Sacramento, CA 95811

Re: Invitation to Consult for Pacific Gas and Electric Company's Permit to Construct for the Vierra Reinforcement Project in San Joaquin County, California – Presently undergoing CEQA review by the California Public Utilities Commission

Dear Chairperson Morningstar Pope,

Please find attached for your information and consideration a fact sheet for the Vierra Reinforcement Project (project). Pacific Gas and Electric Company (PG&E) is proposing to expand the existing Vierra Substation in the City of Lathrop and build a new, double-circuit power line west from the substation approximately one mile to the existing Tesla-Stockton Cogen Junction 115 kilovolt (kV) Power Line.

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CPUC Project Manager
California Public Utilities Commission
505 Van Ness Avenue
San Francisco, CA, 94102-3298

Attachments: Fact Sheet

cc: Stephanie Green, CPUC, Tribal Liaison
Mike Monasmith, CEC, Project Manager

PUBLIC UTILITIES COMMISSION
505 VAN NESS AVENUE
SAN FRANCISCO, CA 94102-3298

October 11, 2018

Native American Heritage Commission
Chairperson James Ramos
1550 Harbor Blvd., Suite 100
West Sacramento, CA 95691

Re: Invitation to Consult for Pacific Gas and Electric Company's Permit to Construct for the Vierra Reinforcement Project in San Joaquin County, California – Presently undergoing CEQA review by the California Public Utilities Commission

Dear Chairperson Ramos,

Please find attached for your information and consideration a fact sheet for the Vierra Reinforcement Project (project). Pacific Gas and Electric Company (PG&E) is proposing to expand the existing Vierra Substation in the City of Lathrop and build a new, double-circuit power line west from the substation approximately one mile to the existing Tesla-Stockton Cogen Junction 115 kilovolt (kV) Power Line.

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Mike Rosauer
CPUC Project Manager
California Public Utilities Commission
505 Van Ness Avenue
San Francisco, CA, 94102-3298

Attachments: Fact Sheet

cc: Stephanie Green, CPUC, Tribal Liaison
Mike Monasmith, CEC, Project Manager

PUBLIC UTILITIES COMMISSION
505 VAN NESS AVENUE
SAN FRANCISCO, CA 94102-3298

October 11, 2018

Chairperson Gene Whitehouse
United Auburn Indian Community of the Auburn Rancheria
10720 Indian Hill Road
Auburn, CA 95603

Re: Invitation to Consult for Pacific Gas and Electric Company's Permit to Construct for the Vierra Reinforcement Project in San Joaquin County, California – Presently undergoing CEQA review by the California Public Utilities Commission

Dear Chairperson Whitehouse,

Please find attached for your information and consideration a fact sheet for the Vierra Reinforcement Project (project). Pacific Gas and Electric Company (PG&E) is proposing to expand the existing Vierra Substation in the City of Lathrop and build a new, double-circuit power line west from the substation approximately one mile to the existing Tesla-Stockton Cogen Junction 115 kilovolt (kV) Power Line.

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CPUC Project Manager
California Public Utilities Commission
505 Van Ness Avenue
San Francisco, CA, 94102-3298

Attachments: Fact Sheet

cc: Stephanie Green, CPUC, Tribal Liaison
Mike Monasmith, CEC, Project Manager

PUBLIC UTILITIES COMMISSION
505 VAN NESS AVENUE
SAN FRANCISCO, CA 94102-3298

January 9, 2019

Chairperson Valentin Lopez
Amah Mutsun Tribal Band
P.O. Box 5272
Galt, CA 95632

Re: Invitation to Consult for Pacific Gas and Electric Company's Permit to Construct for the Vierra Reinforcement Project in San Joaquin County, California – Presently undergoing CEQA review by the California Public Utilities Commission

Dear Chairperson Valentin Lopez,

Please find attached for your information and consideration an updated fact sheet for the Vierra Reinforcement Project (project). Pacific Gas and Electric Company (PG&E) is proposing to expand the existing Vierra Substation in the City of Lathrop and build a new, double-circuit power line west from the substation approximately one mile to the existing Tesla-Stockton Cogen Junction 115 kilovolt (kV) Power Line.

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Although the CPUC has not received any letters from the Amah Mutsun Tribal Band requesting formal notification of proposed projects per Assembly Bill 52, we would appreciate your comments on this project. Should you have questions and inquiries on this project, you may email or call me at (415) 703-2579 or michael.rosauer@cpuc.ca.gov. Stephanie Green is the CPUC Tribal Liaison. Ms. Green is copied here and is also readily available to assist you with this or any other tribal matter. Ms. Green can be reached at 415-703-5245 and Stephanie.Green@cpuc.ca.gov. If you would benefit from a meeting with our environmental team, please let me know.

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Michael E. Rosauer

Mike Rosauer
CPUC Project Manager
California Public Utilities Commission
505 Van Ness Avenue
San Francisco, CA, 94102-3298

Attachments: Fact Sheet

cc: Stephanie Green, CPUC, Tribal Liaison
Mike Monasmith, CEC, Project Manager

Attachments: Fact Sheet

PUBLIC UTILITIES COMMISSION
505 VAN NESS AVENUE
SAN FRANCISCO, CA 94102-3298

January 9, 2019

Edward Ketchum
Amah Mutsun Tribal Band
35867 Yosemite Ave
Davis, CA 95616

Re: Invitation to Consult for Pacific Gas and Electric Company's Permit to Construct for the Vierra Reinforcement Project in San Joaquin County, California – Presently undergoing CEQA review by the California Public Utilities Commission

Dear Edward Ketchum,

Please find attached for your information and consideration an updated fact sheet for the Vierra Reinforcement Project (project). Pacific Gas and Electric Company (PG&E) is proposing to expand the existing Vierra Substation in the City of Lathrop and build a new, double-circuit power line west from the substation approximately one mile to the existing Tesla-Stockton Cogen Junction 115 kilovolt (kV) Power Line.

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California Public Utilities Commission
505 Van Ness Avenue
San Francisco, CA, 94102-3298

Attachments: Fact Sheet

cc: Stephanie Green, CPUC, Tribal Liaison
Mike Monasmith, CEC, Project Manager

Attachments: Fact Sheet

PUBLIC UTILITIES COMMISSION
505 VAN NESS AVENUE
SAN FRANCISCO, CA 94102-3298

January 9, 2019

Chairperson Irene Zwierlein
Amah Mutsun Tribal Band of Mission San Juan Bautista
789 Canada Road
Woodside, CA 94062

Re: Invitation to Consult for Pacific Gas and Electric Company's Permit to Construct for the Vierra Reinforcement Project in San Joaquin County, California – Presently undergoing CEQA review by the California Public Utilities Commission

Dear Chairperson Irene Zwierlein,

Please find attached for your information and consideration an updated fact sheet for the Vierra Reinforcement Project (project). Pacific Gas and Electric Company (PG&E) is proposing to expand the existing Vierra Substation in the City of Lathrop and build a new, double-circuit power line west from the substation approximately one mile to the existing Tesla-Stockton Cogen Junction 115 kilovolt (kV) Power Line.

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Although the CPUC has not received any letters from the Amah Mutsun Tribal Band of Mission San Juan Bautista requesting formal notification of proposed projects per Assembly Bill 52, we would appreciate your comments on this project. Should you have questions and inquiries on this project, you may email or call me at (415) 703-2579 or michael.rosauer@cpuc.ca.gov. Stephanie Green is the CPUC Tribal Liaison. Ms. Green is copied here and is also readily available to assist you with this or any other tribal matter. Ms. Green can be reached at 415-703-5245 and Stephanie.Green@cpuc.ca.gov. If you would benefit from a meeting with our environmental team, please let me know.

Thank you in advance for your time and input.

Sincerely,

Mike Rosauer
CPUC Project Manager
California Public Utilities Commission
505 Van Ness Avenue
San Francisco, CA, 94102-3298

Attachments: Fact Sheet

cc: Stephanie Green, CPUC, Tribal Liaison
Mike Monasmith, CEC, Project Manager

Attachments: Fact Sheet

PUBLIC UTILITIES COMMISSION
505 VAN NESS AVENUE
SAN FRANCISCO, CA 94102-3298

January 9, 2019

Chairperson Rhonda Morningstar Pope
Buena Vista Rancheria of Me-Wuk Indians
1418 20th Street, Suite 200
Sacramento, CA 95811

Re: Invitation to Consult for Pacific Gas and Electric Company's Permit to Construct for the Vierra Reinforcement Project in San Joaquin County, California – Presently undergoing CEQA review by the California Public Utilities Commission

Dear Chairperson Rhonda Morningstar Pope,

Please find attached for your information and consideration an updated fact sheet for the Vierra Reinforcement Project (project). Pacific Gas and Electric Company (PG&E) is proposing to expand the existing Vierra Substation in the City of Lathrop and build a new, double-circuit power line west from the substation approximately one mile to the existing Tesla-Stockton Cogen Junction 115 kilovolt (kV) Power Line.

The proposed project would expand the existing Vierra Substation westward by approximately 340 feet. PG&E would also install 16 new poles to support the double-circuit power line. PG&E proposed associated work areas and laydown yards in the project's vicinity, including three potential staging areas. The proposed project would provide more electrical capacity and reliability for households and businesses in Lathrop, Manteca, and surrounding areas of San Joaquin County. In addition, there will be upgrades made within the existing fence lines at three other substation facilities (listed in the attached fact sheet). Finally, two microwave dishes will be installed at two pre-existing telecommunications tower sites, Mount Oso Microwave Station and Highland Peak Microwave Station.

PG&E filed an application and Proponent's Environmental Assessment (PEA) for a Permit to Construct on June 6, 2018. Constructing the substation expansion will take approximately 12 to 18 months to complete and will likely begin prior to power line construction, which is estimated to take approximately 3 to 4 months to complete.

The California Public Utilities Commission (CPUC) is the lead agency for the PG&E proposal under the California Environmental Quality Act (CEQA). As part of that effort, it is important that we seek the input of California Native American tribes along with other CEQA interested parties.

The CPUC contacted the Native American Heritage Commission (NAHC) in August 2018 for a list of California Native American tribes traditionally and culturally affiliated with the project area. Upon notification of an expanded proposed project, CPUC contacted the NAHC in November 2018 for an updated list that encompassed the additional areas associated with the proposed project. The NAHC provided your name as a representative of your tribe potentially interested in the activities associated with the proposed project. Previously, letters and phone calls about the project were made to a list of tribes by PG&E between July 2016 and October 2017.

Although the CPUC has not received any letters from the Buena Vista Rancheria of Me-Wuk Indians requesting formal notification of proposed projects per Assembly Bill 52, we would appreciate your comments on this project. Should you have questions and inquiries on this project, you may email or call me at (415) 703-2579 or michael.rosauer@cpuc.ca.gov. Stephanie Green is the CPUC Tribal Liaison. Ms. Green is copied here and is also readily available to assist you with this or any other tribal matter. Ms. Green can be reached at 415-703-5245 and Stephanie.Green@cpuc.ca.gov. If you would benefit from a meeting with our environmental team, please let me know.

Thank you in advance for your time and input.

Sincerely,

Michael E. Rosauer

Mike Rosauer
CPUC Project Manager
California Public Utilities Commission
505 Van Ness Avenue
San Francisco, CA, 94102-3298

Attachments: Fact Sheet

cc: Stephanie Green, CPUC, Tribal Liaison
Mike Monasmith, CEC, Project Manager

Attachments: Fact Sheet

PUBLIC UTILITIES COMMISSION
505 VAN NESS AVENUE
SAN FRANCISCO, CA 94102-3298

January 9, 2019

Debra Grimes, Cultural Res. Specialist
Calaveras Band of Mi-Wuk Indians
P.O. Box 899
West Point, CA 95255

Re: Invitation to Consult for Pacific Gas and Electric Company's Permit to Construct for the Vierra Reinforcement Project in San Joaquin County, California – Presently undergoing CEQA review by the California Public Utilities Commission

Dear Debra Grimes, Cultural Res. Specialist,

Please find attached for your information and consideration an updated fact sheet for the Vierra Reinforcement Project (project). Pacific Gas and Electric Company (PG&E) is proposing to expand the existing Vierra Substation in the City of Lathrop and build a new, double-circuit power line west from the substation approximately one mile to the existing Tesla-Stockton Cogen Junction 115 kilovolt (kV) Power Line.

The proposed project would expand the existing Vierra Substation westward by approximately 340 feet. PG&E would also install 16 new poles to support the double-circuit power line. PG&E proposed associated work areas and laydown yards in the project's vicinity, including three potential staging areas. The proposed project would provide more electrical capacity and reliability for households and businesses in Lathrop, Manteca, and surrounding areas of San Joaquin County. In addition, there will be upgrades made within the existing fence lines at three other substation facilities (listed in the attached fact sheet). Finally, two microwave dishes will be installed at two pre-existing telecommunications tower sites, Mount Oso Microwave Station and Highland Peak Microwave Station.

PG&E filed an application and Proponent's Environmental Assessment (PEA) for a Permit to Construct on June 6, 2018. Constructing the substation expansion will take approximately 12 to 18 months to complete and will likely begin prior to power line construction, which is estimated to take approximately 3 to 4 months to complete.

The California Public Utilities Commission (CPUC) is the lead agency for the PG&E proposal under the California Environmental Quality Act (CEQA). As part of that effort, it is important that we seek the input of California Native American tribes along with other CEQA interested parties.

The CPUC contacted the Native American Heritage Commission (NAHC) in August 2018 for a list of California Native American tribes traditionally and culturally affiliated with the project area. Upon notification of an expanded proposed project, CPUC contacted the NAHC in November 2018 for an updated list that encompassed the additional areas associated with the proposed project. The NAHC provided your name as a representative of your tribe potentially interested in the activities associated with the proposed project. Previously, letters and phone calls about the project were made to a list of tribes by PG&E between July 2016 and October 2017.

Although the CPUC has not received any letters from the Calaveras Band of Mi-Wuk Indians requesting formal notification of proposed projects per Assembly Bill 52, we would appreciate your comments on this project. Should you have questions and inquiries on this project, you may email or call me at (415) 703-2579 or michael.rosauer@cpuc.ca.gov. Stephanie Green is the CPUC Tribal Liaison. Ms. Green is copied here and is also readily available to assist you with this or any other tribal matter. Ms. Green can be reached at 415-703-5245 and Stephanie.Green@cpuc.ca.gov. If you would benefit from a meeting with our environmental team, please let me know.

Thank you in advance for your time and input.

Sincerely,

Michael E. Rosauer

Mike Rosauer
CPUC Project Manager
California Public Utilities Commission
505 Van Ness Avenue
San Francisco, CA, 94102-3298

Attachments: Fact Sheet

cc: Stephanie Green, CPUC, Tribal Liaison
Mike Monasmith, CEC, Project Manager

Attachments: Fact Sheet

PUBLIC UTILITIES COMMISSION
505 VAN NESS AVENUE
SAN FRANCISCO, CA 94102-3298

January 9, 2019

California Valley Miwok Tribe
4620 Shippee Lane
Stockton, CA 95212

Re: Invitation to Consult for Pacific Gas and Electric Company's Permit to Construct for the Vierra Reinforcement Project in San Joaquin County, California – Presently undergoing CEQA review by the California Public Utilities Commission

Dear California Valley Miwok Tribe,

Please find attached for your information and consideration an updated fact sheet for the Vierra Reinforcement Project (project). Pacific Gas and Electric Company (PG&E) is proposing to expand the existing Vierra Substation in the City of Lathrop and build a new, double-circuit power line west from the substation approximately one mile to the existing Tesla-Stockton Cogen Junction 115 kilovolt (kV) Power Line.

The proposed project would expand the existing Vierra Substation westward by approximately 340 feet. PG&E would also install 16 new poles to support the double-circuit power line. PG&E proposed associated work areas and laydown yards in the project's vicinity, including three potential staging areas. The proposed project would provide more electrical capacity and reliability for households and businesses in Lathrop, Manteca, and surrounding areas of San Joaquin County. In addition, there will be upgrades made within the existing fence lines at three other substation facilities (listed in the attached fact sheet). Finally, two microwave dishes will be installed at two pre-existing telecommunications tower sites, Mount Oso Microwave Station and Highland Peak Microwave Station.

PG&E filed an application and Proponent's Environmental Assessment (PEA) for a Permit to Construct on June 6, 2018. Constructing the substation expansion will take approximately 12 to 18 months to complete and will likely begin prior to power line construction, which is estimated to take approximately 3 to 4 months to complete.

The California Public Utilities Commission (CPUC) is the lead agency for the PG&E proposal under the California Environmental Quality Act (CEQA). As part of that effort, it is important that we seek the input of California Native American tribes along with other CEQA interested parties.

The CPUC contacted the Native American Heritage Commission (NAHC) in August 2018 for a list of California Native American tribes traditionally and culturally affiliated with the project area. Upon notification of an expanded proposed project, CPUC contacted the NAHC in November 2018 for an updated list that encompassed the additional areas associated with the proposed project. The NAHC provided your name as a representative of your tribe potentially interested in the activities associated with the proposed project. Previously, letters and phone calls about the project were made to a list of tribes by PG&E between July 2016 and October 2017.

Although the CPUC has not received any letters from the California Valley Miwok Tribe requesting formal notification of proposed projects per Assembly Bill 52, we would appreciate your comments on this project. Should you have questions and inquiries on this project, you may email or call me at (415) 703-2579 or michael.rosauer@cpuc.ca.gov. Stephanie Green is the CPUC Tribal Liaison. Ms. Green is copied here and is also readily available to assist you with this or any other tribal matter. Ms. Green can be reached at 415-703-5245 and Stephanie.Green@cpuc.ca.gov. If you would benefit from a meeting with our environmental team, please let me know.

Thank you in advance for your time and input.

Sincerely,

Michael E. Rosauer

Mike Rosauer
CPUC Project Manager
California Public Utilities Commission
505 Van Ness Avenue
San Francisco, CA, 94102-3298

Attachments: Fact Sheet

cc: Stephanie Green, CPUC, Tribal Liaison
Mike Monasmith, CEC, Project Manager

Attachments: Fact Sheet

PUBLIC UTILITIES COMMISSION
505 VAN NESS AVENUE
SAN FRANCISCO, CA 94102-3298

January 9, 2019

California Valley Miwok Tribe (Sheep Rancheria of Me-Wuk Indians of CA)
P.O. Box 395
West Point, CA 95255

Re: Invitation to Consult for Pacific Gas and Electric Company's Permit to Construct for the Vierra Reinforcement Project in San Joaquin County, California – Presently undergoing CEQA review by the California Public Utilities Commission

Dear California Valley Miwok Tribe (Sheep Rancheria of Me-Wuk Indians of CA),

Please find attached for your information and consideration an updated fact sheet for the Vierra Reinforcement Project (project). Pacific Gas and Electric Company (PG&E) is proposing to expand the existing Vierra Substation in the City of Lathrop and build a new, double-circuit power line west from the substation approximately one mile to the existing Tesla-Stockton Cogen Junction 115 kilovolt (kV) Power Line.

The proposed project would expand the existing Vierra Substation westward by approximately 340 feet. PG&E would also install 16 new poles to support the double-circuit power line. PG&E proposed associated work areas and laydown yards in the project's vicinity, including three potential staging areas. The proposed project would provide more electrical capacity and reliability for households and businesses in Lathrop, Manteca, and surrounding areas of San Joaquin County. In addition, there will be upgrades made within the existing fence lines at three other substation facilities (listed in the attached fact sheet). Finally, two microwave dishes will be installed at two pre-existing telecommunications tower sites, Mount Oso Microwave Station and Highland Peak Microwave Station.

PG&E filed an application and Proponent's Environmental Assessment (PEA) for a Permit to Construct on June 6, 2018. Constructing the substation expansion will take approximately 12 to 18 months to complete and will likely begin prior to power line construction, which is estimated to take approximately 3 to 4 months to complete.

The California Public Utilities Commission (CPUC) is the lead agency for the PG&E proposal under the California Environmental Quality Act (CEQA). As part of that effort, it is important that we seek the input of California Native American tribes along with other CEQA interested parties.

The CPUC contacted the Native American Heritage Commission (NAHC) in August 2018 for a list of California Native American tribes traditionally and culturally affiliated with the project area. Upon notification of an expanded proposed project, CPUC contacted the NAHC in November 2018 for an updated list that encompassed the additional areas associated with the proposed project. The NAHC provided your name as a representative of your tribe potentially interested in the activities associated with the proposed project. Previously, letters and phone calls about the project were made to a list of tribes by PG&E between July 2016 and October 2017.

Although the CPUC has not received any letters from the California Valley Miwok Tribe (Sheep Rancheria of Me-Wuk Indians of CA) requesting formal notification of proposed projects per Assembly Bill 52, we would appreciate your comments on this project. Should you have questions and inquiries on this project, you may email or call me at (415) 703-2579 or michael.rosauer@cpuc.ca.gov. Stephanie Green is the CPUC Tribal Liaison. Ms. Green is copied here and is also readily available to assist you with this or any other tribal matter. Ms. Green can be reached at 415-703-5245 and Stephanie.Green@cpuc.ca.gov. If you would benefit from a meeting with our environmental team, please let me know.

Thank you in advance for your time and input.

Sincerely,

Mike Rosauer
CPUC Project Manager
California Public Utilities Commission
505 Van Ness Avenue
San Francisco, CA, 94102-3298

Attachments: Fact Sheet

cc: Stephanie Green, CPUC, Tribal Liaison
Mike Monasmith, CEC, Project Manager

Attachments: Fact Sheet

PUBLIC UTILITIES COMMISSION
505 VAN NESS AVENUE
SAN FRANCISCO, CA 94102-3298

January 9, 2019

Chairperson Tony Cerda
Costanoan Rumsen Carmel Tribe
244 E. 1st Street
Pomona, CA 91766

Re: Invitation to Consult for Pacific Gas and Electric Company's Permit to Construct for the Vierra Reinforcement Project in San Joaquin County, California – Presently undergoing CEQA review by the California Public Utilities Commission

Dear Chairperson Tony Cerda,

Please find attached for your information and consideration an updated fact sheet for the Vierra Reinforcement Project (project). Pacific Gas and Electric Company (PG&E) is proposing to expand the existing Vierra Substation in the City of Lathrop and build a new, double-circuit power line west from the substation approximately one mile to the existing Tesla-Stockton Cogen Junction 115 kilovolt (kV) Power Line.

The proposed project would expand the existing Vierra Substation westward by approximately 340 feet. PG&E would also install 16 new poles to support the double-circuit power line. PG&E proposed associated work areas and laydown yards in the project's vicinity, including three potential staging areas. The proposed project would provide more electrical capacity and reliability for households and businesses in Lathrop, Manteca, and surrounding areas of San Joaquin County. In addition, there will be upgrades made within the existing fence lines at three other substation facilities (listed in the attached fact sheet). Finally, two microwave dishes will be installed at two pre-existing telecommunications tower sites, Mount Oso Microwave Station and Highland Peak Microwave Station.

PG&E filed an application and Proponent's Environmental Assessment (PEA) for a Permit to Construct on June 6, 2018. Constructing the substation expansion will take approximately 12 to 18 months to complete and will likely begin prior to power line construction, which is estimated to take approximately 3 to 4 months to complete.

The California Public Utilities Commission (CPUC) is the lead agency for the PG&E proposal under the California Environmental Quality Act (CEQA). As part of that effort, it is important that we seek the input of California Native American tribes along with other CEQA interested parties.

The CPUC contacted the Native American Heritage Commission (NAHC) in August 2018 for a list of California Native American tribes traditionally and culturally affiliated with the project area. Upon notification of an expanded proposed project, CPUC contacted the NAHC in November 2018 for an updated list that encompassed the additional areas associated with the proposed project. The NAHC provided your name as a representative of your tribe potentially interested in the activities associated with the proposed project. Previously, letters and phone calls about the project were made to a list of tribes by PG&E between July 2016 and October 2017.

Although the CPUC has not received any letters from the Costanoan Rumsen Carmel Tribe requesting formal notification of proposed projects per Assembly Bill 52, we would appreciate your comments on this project. Should you have questions and inquiries on this project, you may email or call me at (415) 703-2579 or michael.rosauer@cpuc.ca.gov. Stephanie Green is the CPUC Tribal Liaison. Ms. Green is copied here and is also readily available to assist you with this or any other tribal matter. Ms. Green can be reached at 415-703-5245 and Stephanie.Green@cpuc.ca.gov. If you would benefit from a meeting with our environmental team, please let me know.

Thank you in advance for your time and input.

Sincerely,

Michael E. Rosauer

Mike Rosauer
CPUC Project Manager
California Public Utilities Commission
505 Van Ness Avenue
San Francisco, CA, 94102-3298

Attachments: Fact Sheet

cc: Stephanie Green, CPUC, Tribal Liaison
Mike Monasmith, CEC, Project Manager

Attachments: Fact Sheet

PUBLIC UTILITIES COMMISSION
505 VAN NESS AVENUE
SAN FRANCISCO, CA 94102-3298

January 9, 2019

Chairperson Sara Dutschke Setchwaelo
Ione Band of Miwok Indians
P.O. Box 699
Plymouth, CA 95669

Re: Invitation to Consult for Pacific Gas and Electric Company's Permit to Construct for the Vierra Reinforcement Project in San Joaquin County, California – Presently undergoing CEQA review by the California Public Utilities Commission

Dear Chairperson Sara Dutschke Setchwaelo,

Please find attached for your information and consideration an updated fact sheet for the Vierra Reinforcement Project (project). Pacific Gas and Electric Company (PG&E) is proposing to expand the existing Vierra Substation in the City of Lathrop and build a new, double-circuit power line west from the substation approximately one mile to the existing Tesla-Stockton Cogen Junction 115 kilovolt (kV) Power Line.

The proposed project would expand the existing Vierra Substation westward by approximately 340 feet. PG&E would also install 16 new poles to support the double-circuit power line. PG&E proposed associated work areas and laydown yards in the project's vicinity, including three potential staging areas. The proposed project would provide more electrical capacity and reliability for households and businesses in Lathrop, Manteca, and surrounding areas of San Joaquin County. In addition, there will be upgrades made within the existing fence lines at three other substation facilities (listed in the attached fact sheet). Finally, two microwave dishes will be installed at two pre-existing telecommunications tower sites, Mount Oso Microwave Station and Highland Peak Microwave Station.

PG&E filed an application and Proponent's Environmental Assessment (PEA) for a Permit to Construct on June 6, 2018. Constructing the substation expansion will take approximately 12 to 18 months to complete and will likely begin prior to power line construction, which is estimated to take approximately 3 to 4 months to complete.

The California Public Utilities Commission (CPUC) is the lead agency for the PG&E proposal under the California Environmental Quality Act (CEQA). As part of that effort, it is important that we seek the input of California Native American tribes along with other CEQA interested parties.

The CPUC contacted the Native American Heritage Commission (NAHC) in August 2018 for a list of California Native American tribes traditionally and culturally affiliated with the project area. Upon notification of an expanded proposed project, CPUC contacted the NAHC in November 2018 for an updated list that encompassed the additional areas associated with the proposed project. The NAHC provided your name as a representative of your tribe potentially interested in the activities associated with the proposed project. Previously, letters and phone calls about the project were made to a list of tribes by PG&E between July 2016 and October 2017.

Although the CPUC has not received any letters from the Ione Band of Miwok Indians requesting formal notification of proposed projects per Assembly Bill 52, we would appreciate your comments on this project. Should you have questions and inquiries on this project, you may email or call me at (415) 703-2579 or michael.rosauer@cpuc.ca.gov. Stephanie Green is the CPUC Tribal Liaison. Ms. Green is copied here and is also readily available to assist you with this or any other tribal matter. Ms. Green can be reached at 415-703-5245 and Stephanie.Green@cpuc.ca.gov. If you would benefit from a meeting with our environmental team, please let me know.

Thank you in advance for your time and input.

Sincerely,

Michael E. Rosauer

Mike Rosauer
CPUC Project Manager
California Public Utilities Commission
505 Van Ness Avenue
San Francisco, CA, 94102-3298

Attachments: Fact Sheet

cc: Stephanie Green, CPUC, Tribal Liaison
Mike Monasmith, CEC, Project Manager

Attachments: Fact Sheet

PUBLIC UTILITIES COMMISSION
505 VAN NESS AVENUE
SAN FRANCISCO, CA 94102-3298

January 9, 2019

Chairperson Ann Marie Sayers
Indian Canyon Mutsun Band of Costanoan
P.O. Box 28
Hollister, CA 95024

Re: Invitation to Consult for Pacific Gas and Electric Company's Permit to Construct for the Vierra Reinforcement Project in San Joaquin County, California – Presently undergoing CEQA review by the California Public Utilities Commission

Dear Chairperson Ann Marie Sayers,

Please find attached for your information and consideration an updated fact sheet for the Vierra Reinforcement Project (project). Pacific Gas and Electric Company (PG&E) is proposing to expand the existing Vierra Substation in the City of Lathrop and build a new, double-circuit power line west from the substation approximately one mile to the existing Tesla-Stockton Cogen Junction 115 kilovolt (kV) Power Line.

The proposed project would expand the existing Vierra Substation westward by approximately 340 feet. PG&E would also install 16 new poles to support the double-circuit power line. PG&E proposed associated work areas and laydown yards in the project's vicinity, including three potential staging areas. The proposed project would provide more electrical capacity and reliability for households and businesses in Lathrop, Manteca, and surrounding areas of San Joaquin County. In addition, there will be upgrades made within the existing fence lines at three other substation facilities (listed in the attached fact sheet). Finally, two microwave dishes will be installed at two pre-existing telecommunications tower sites, Mount Oso Microwave Station and Highland Peak Microwave Station.

PG&E filed an application and Proponent's Environmental Assessment (PEA) for a Permit to Construct on June 6, 2018. Constructing the substation expansion will take approximately 12 to 18 months to complete and will likely begin prior to power line construction, which is estimated to take approximately 3 to 4 months to complete.

The California Public Utilities Commission (CPUC) is the lead agency for the PG&E proposal under the California Environmental Quality Act (CEQA). As part of that effort, it is important that we seek the input of California Native American tribes along with other CEQA interested parties.

The CPUC contacted the Native American Heritage Commission (NAHC) in August 2018 for a list of California Native American tribes traditionally and culturally affiliated with the project area. Upon notification of an expanded proposed project, CPUC contacted the NAHC in November 2018 for an updated list that encompassed the additional areas associated with the proposed project. The NAHC provided your name as a representative of your tribe potentially interested in the activities associated with the proposed project. Previously, letters and phone calls about the project were made to a list of tribes by PG&E between July 2016 and October 2017.

Although the CPUC has not received any letters from the Indian Canyon Mutsun Band of Costanoan requesting formal notification of proposed projects per Assembly Bill 52, we would appreciate your comments on this project. Should you have questions and inquiries on this project, you may email or call me at (415) 703-2579 or michael.rosauer@cpuc.ca.gov. Stephanie Green is the CPUC Tribal Liaison. Ms. Green is copied here and is also readily available to assist you with this or any other tribal matter. Ms. Green can be reached at 415-703-5245 and Stephanie.Green@cpuc.ca.gov. If you would benefit from a meeting with our environmental team, please let me know.

Thank you in advance for your time and input.

Sincerely,

Michael E. Rosauer

Mike Rosauer
CPUC Project Manager
California Public Utilities Commission
505 Van Ness Avenue
San Francisco, CA, 94102-3298

Attachments: Fact Sheet

cc: Stephanie Green, CPUC, Tribal Liaison
Mike Monasmith, CEC, Project Manager

Attachments: Fact Sheet

PUBLIC UTILITIES COMMISSION
505 VAN NESS AVENUE
SAN FRANCISCO, CA 94102-3298

January 9, 2019

Chairperson Charlene Nijmeh
Muwekma Ohlone Indian Tribe of the SF Bay Area
20885 Redwood Road, Suite 232
Castro Valley, CA 94546

Re: Invitation to Consult for Pacific Gas and Electric Company's Permit to Construct for the Vierra Reinforcement Project in San Joaquin County, California – Presently undergoing CEQA review by the California Public Utilities Commission

Dear Chairperson Charlene Nijmeh,

Please find attached for your information and consideration an updated fact sheet for the Vierra Reinforcement Project (project). Pacific Gas and Electric Company (PG&E) is proposing to expand the existing Vierra Substation in the City of Lathrop and build a new, double-circuit power line west from the substation approximately one mile to the existing Tesla-Stockton Cogen Junction 115 kilovolt (kV) Power Line.

The proposed project would expand the existing Vierra Substation westward by approximately 340 feet. PG&E would also install 16 new poles to support the double-circuit power line. PG&E proposed associated work areas and laydown yards in the project's vicinity, including three potential staging areas. The proposed project would provide more electrical capacity and reliability for households and businesses in Lathrop, Manteca, and surrounding areas of San Joaquin County. In addition, there will be upgrades made within the existing fence lines at three other substation facilities (listed in the attached fact sheet). Finally, two microwave dishes will be installed at two pre-existing telecommunications tower sites, Mount Oso Microwave Station and Highland Peak Microwave Station.

PG&E filed an application and Proponent's Environmental Assessment (PEA) for a Permit to Construct on June 6, 2018. Constructing the substation expansion will take approximately 12 to 18 months to complete and will likely begin prior to power line construction, which is estimated to take approximately 3 to 4 months to complete.

The California Public Utilities Commission (CPUC) is the lead agency for the PG&E proposal under the California Environmental Quality Act (CEQA). As part of that effort, it is important that we seek the input of California Native American tribes along with other CEQA interested parties.

The CPUC contacted the Native American Heritage Commission (NAHC) in August 2018 for a list of California Native American tribes traditionally and culturally affiliated with the project area. Upon notification of an expanded proposed project, CPUC contacted the NAHC in November 2018 for an updated list that encompassed the additional areas associated with the proposed project. The NAHC provided your name as a representative of your tribe potentially interested in the activities associated with the proposed project. Previously, letters and phone calls about the project were made to a list of tribes by PG&E between July 2016 and October 2017.

Although the CPUC has not received any letters from the Muwekma Ohlone Indian Tribe of the SF Bay Area requesting formal notification of proposed projects per Assembly Bill 52, we would appreciate your comments on this project. Should you have questions and inquiries on this project, you may email or call me at (415) 703-2579 or michael.rosauer@cpuc.ca.gov. Stephanie Green is the CPUC Tribal Liaison. Ms. Green is copied here and is also readily available to assist you with this or any other tribal matter. Ms. Green can be reached at 415-703-5245 and Stephanie.Green@cpuc.ca.gov. If you would benefit from a meeting with our environmental team, please let me know.

Thank you in advance for your time and input.

Sincerely,

Mike Rosauer
CPUC Project Manager
California Public Utilities Commission
505 Van Ness Avenue
San Francisco, CA, 94102-3298

Attachments: Fact Sheet

cc: Stephanie Green, CPUC, Tribal Liaison
Mike Monasmith, CEC, Project Manager

Attachments: Fact Sheet

PUBLIC UTILITIES COMMISSION
505 VAN NESS AVENUE
SAN FRANCISCO, CA 94102-3298

January 9, 2019

Chairperson Katherine Erolinda Perez
North Valley Yokuts Tribe
P.O. Box 717
Linden, CA 95236

Re: Invitation to Consult for Pacific Gas and Electric Company's Permit to Construct for the Vierra Reinforcement Project in San Joaquin County, California – Presently undergoing CEQA review by the California Public Utilities Commission

Dear Chairperson Katherine Erolinda Perez,

Please find attached for your information and consideration an updated fact sheet for the Vierra Reinforcement Project (project). Pacific Gas and Electric Company (PG&E) is proposing to expand the existing Vierra Substation in the City of Lathrop and build a new, double-circuit power line west from the substation approximately one mile to the existing Tesla-Stockton Cogen Junction 115 kilovolt (kV) Power Line.

The proposed project would expand the existing Vierra Substation westward by approximately 340 feet. PG&E would also install 16 new poles to support the double-circuit power line. PG&E proposed associated work areas and laydown yards in the project's vicinity, including three potential staging areas. The proposed project would provide more electrical capacity and reliability for households and businesses in Lathrop, Manteca, and surrounding areas of San Joaquin County. In addition, there will be upgrades made within the existing fence lines at three other substation facilities (listed in the attached fact sheet). Finally, two microwave dishes will be installed at two pre-existing telecommunications tower sites, Mount Oso Microwave Station and Highland Peak Microwave Station.

PG&E filed an application and Proponent's Environmental Assessment (PEA) for a Permit to Construct on June 6, 2018. Constructing the substation expansion will take approximately 12 to 18 months to complete and will likely begin prior to power line construction, which is estimated to take approximately 3 to 4 months to complete.

The California Public Utilities Commission (CPUC) is the lead agency for the PG&E proposal under the California Environmental Quality Act (CEQA). As part of that effort, it is important that we seek the input of California Native American tribes along with other CEQA interested parties.

The CPUC contacted the Native American Heritage Commission (NAHC) in August 2018 for a list of California Native American tribes traditionally and culturally affiliated with the project area. Upon notification of an expanded proposed project, CPUC contacted the NAHC in November 2018 for an updated list that encompassed the additional areas associated with the proposed project. The NAHC provided your name as a representative of your tribe potentially interested in the activities associated with the proposed project. Previously, letters and phone calls about the project were made to a list of tribes by PG&E between July 2016 and October 2017.

Although the CPUC has not received any letters from the North Valley Yokuts Tribe requesting formal notification of proposed projects per Assembly Bill 52, we would appreciate your comments on this project. Should you have questions and inquiries on this project, you may email or call me at (415) 703-2579 or michael.rosauer@cpuc.ca.gov. Stephanie Green is the CPUC Tribal Liaison. Ms. Green is copied here and is also readily available to assist you with this or any other tribal matter. Ms. Green can be reached at 415-703-5245 and Stephanie.Green@cpuc.ca.gov. If you would benefit from a meeting with our environmental team, please let me know.

Thank you in advance for your time and input.

Sincerely,

Michael E. Rosauer

Mike Rosauer
CPUC Project Manager
California Public Utilities Commission
505 Van Ness Avenue
San Francisco, CA, 94102-3298

Attachments: Fact Sheet

cc: Stephanie Green, CPUC, Tribal Liaison
Mike Monasmith, CEC, Project Manager

Attachments: Fact Sheet

PUBLIC UTILITIES COMMISSION
505 VAN NESS AVENUE
SAN FRANCISCO, CA 94102-3298

January 9, 2019

Chairperson Bill Leonard
Southern Sierra Miwuk Nation
P.O. Box 186
Mariposa, CA 95338

Re: Invitation to Consult for Pacific Gas and Electric Company's Permit to Construct for the Vierra Reinforcement Project in San Joaquin County, California – Presently undergoing CEQA review by the California Public Utilities Commission

Dear Chairperson Bill Leonard,

Please find attached for your information and consideration an updated fact sheet for the Vierra Reinforcement Project (project). Pacific Gas and Electric Company (PG&E) is proposing to expand the existing Vierra Substation in the City of Lathrop and build a new, double-circuit power line west from the substation approximately one mile to the existing Tesla-Stockton Cogen Junction 115 kilovolt (kV) Power Line.

The proposed project would expand the existing Vierra Substation westward by approximately 340 feet. PG&E would also install 16 new poles to support the double-circuit power line. PG&E proposed associated work areas and laydown yards in the project's vicinity, including three potential staging areas. The proposed project would provide more electrical capacity and reliability for households and businesses in Lathrop, Manteca, and surrounding areas of San Joaquin County. In addition, there will be upgrades made within the existing fence lines at three other substation facilities (listed in the attached fact sheet). Finally, two microwave dishes will be installed at two pre-existing telecommunications tower sites, Mount Oso Microwave Station and Highland Peak Microwave Station.

PG&E filed an application and Proponent's Environmental Assessment (PEA) for a Permit to Construct on June 6, 2018. Constructing the substation expansion will take approximately 12 to 18 months to complete and will likely begin prior to power line construction, which is estimated to take approximately 3 to 4 months to complete.

The California Public Utilities Commission (CPUC) is the lead agency for the PG&E proposal under the California Environmental Quality Act (CEQA). As part of that effort, it is important that we seek the input of California Native American tribes along with other CEQA interested parties.

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Although the CPUC has not received any letters from the Southern Sierra Miwuk Nation requesting formal notification of proposed projects per Assembly Bill 52, we would appreciate your comments on this project. Should you have questions and inquiries on this project, you may email or call me at (415) 703-2579 or michael.rosauer@cpuc.ca.gov. Stephanie Green is the CPUC Tribal Liaison. Ms. Green is copied here and is also readily available to assist you with this or any other tribal matter. Ms. Green can be reached at 415-703-5245 and Stephanie.Green@cpuc.ca.gov. If you would benefit from a meeting with our environmental team, please let me know.

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California Public Utilities Commission
505 Van Ness Avenue
San Francisco, CA, 94102-3298

Attachments: Fact Sheet

cc: Stephanie Green, CPUC, Tribal Liaison
Mike Monasmith, CEC, Project Manager

Attachments: Fact Sheet

PUBLIC UTILITIES COMMISSION
505 VAN NESS AVENUE
SAN FRANCISCO, CA 94102-3298

January 9, 2019

Andrew Galvan
The Ohlone Indian Tribe
P.O. Box 3388
Fremont, CA 94539

Re: Invitation to Consult for Pacific Gas and Electric Company's Permit to Construct for the Vierra Reinforcement Project in San Joaquin County, California – Presently undergoing CEQA review by the California Public Utilities Commission

Dear Andrew Galvan,

Please find attached for your information and consideration an updated fact sheet for the Vierra Reinforcement Project (project). Pacific Gas and Electric Company (PG&E) is proposing to expand the existing Vierra Substation in the City of Lathrop and build a new, double-circuit power line west from the substation approximately one mile to the existing Tesla-Stockton Cogen Junction 115 kilovolt (kV) Power Line.

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PG&E filed an application and Proponent's Environmental Assessment (PEA) for a Permit to Construct on June 6, 2018. Constructing the substation expansion will take approximately 12 to 18 months to complete and will likely begin prior to power line construction, which is estimated to take approximately 3 to 4 months to complete.

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Although the CPUC has not received any letters from the The Ohlone Indian Tribe requesting formal notification of proposed projects per Assembly Bill 52, we would appreciate your comments on this project. Should you have questions and inquiries on this project, you may email or call me at (415) 703-2579 or michael.rosauer@cpuc.ca.gov. Stephanie Green is the CPUC Tribal Liaison. Ms. Green is copied here and is also readily available to assist you with this or any other tribal matter. Ms. Green can be reached at 415-703-5245 and Stephanie.Green@cpuc.ca.gov. If you would benefit from a meeting with our environmental team, please let me know.

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California Public Utilities Commission
505 Van Ness Avenue
San Francisco, CA, 94102-3298

Attachments: Fact Sheet

cc: Stephanie Green, CPUC, Tribal Liaison
Mike Monasmith, CEC, Project Manager

Attachments: Fact Sheet

PUBLIC UTILITIES COMMISSION
505 VAN NESS AVENUE
SAN FRANCISCO, CA 94102-3298

January 9, 2019

Andrew Galvan
The Ohlone Indian Tribe
P.O. Box 3152
Fremont, CA 94539

Re: Invitation to Consult for Pacific Gas and Electric Company's Permit to Construct for the Vierra Reinforcement Project in San Joaquin County, California – Presently undergoing CEQA review by the California Public Utilities Commission

Dear Andrew Galvan,

Please find attached for your information and consideration an updated fact sheet for the Vierra Reinforcement Project (project). Pacific Gas and Electric Company (PG&E) is proposing to expand the existing Vierra Substation in the City of Lathrop and build a new, double-circuit power line west from the substation approximately one mile to the existing Tesla-Stockton Cogen Junction 115 kilovolt (kV) Power Line.

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CPUC Project Manager
California Public Utilities Commission
505 Van Ness Avenue
San Francisco, CA, 94102-3298

Attachments: Fact Sheet

cc: Stephanie Green, CPUC, Tribal Liaison
Mike Monasmith, CEC, Project Manager

Attachments: Fact Sheet

PUBLIC UTILITIES COMMISSION
505 VAN NESS AVENUE
SAN FRANCISCO, CA 94102-3298

January 9, 2019

Chairperson Neil Peyron
Tule River Indian Tribe
P.O. Box 589
Porterville, CA 93258

Re: Invitation to Consult for Pacific Gas and Electric Company's Permit to Construct for the Vierra Reinforcement Project in San Joaquin County, California – Presently undergoing CEQA review by the California Public Utilities Commission

Dear Chairperson Neil Peyron,

Please find attached for your information and consideration an updated fact sheet for the Vierra Reinforcement Project (project). Pacific Gas and Electric Company (PG&E) is proposing to expand the existing Vierra Substation in the City of Lathrop and build a new, double-circuit power line west from the substation approximately one mile to the existing Tesla-Stockton Cogen Junction 115 kilovolt (kV) Power Line.

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Although the CPUC has not received any letters from the Tule River Indian Tribe requesting formal notification of proposed projects per Assembly Bill 52, we would appreciate your comments on this project. Should you have questions and inquiries on this project, you may email or call me at (415) 703-2579 or michael.rosauer@cpuc.ca.gov. Stephanie Green is the CPUC Tribal Liaison. Ms. Green is copied here and is also readily available to assist you with this or any other tribal matter. Ms. Green can be reached at 415-703-5245 and Stephanie.Green@cpuc.ca.gov. If you would benefit from a meeting with our environmental team, please let me know.

Thank you in advance for your time and input.

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Michael E. Rosauer

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CPUC Project Manager
California Public Utilities Commission
505 Van Ness Avenue
San Francisco, CA, 94102-3298

Attachments: Fact Sheet

cc: Stephanie Green, CPUC, Tribal Liaison
Mike Monasmith, CEC, Project Manager

Attachments: Fact Sheet

PUBLIC UTILITIES COMMISSION
505 VAN NESS AVENUE
SAN FRANCISCO, CA 94102-3298

January 9, 2019

Chairpeson Kevin Day
Tuolumne Band of Me-Wuk Indians
P.O. Box 699
Tuolumne, CA 95379

Re: Invitation to Consult for Pacific Gas and Electric Company's Permit to Construct for the Vierra Reinforcement Project in San Joaquin County, California – Presently undergoing CEQA review by the California Public Utilities Commission

Dear Chairpeson Kevin Day,

Please find attached for your information and consideration an updated fact sheet for the Vierra Reinforcement Project (project). Pacific Gas and Electric Company (PG&E) is proposing to expand the existing Vierra Substation in the City of Lathrop and build a new, double-circuit power line west from the substation approximately one mile to the existing Tesla-Stockton Cogen Junction 115 kilovolt (kV) Power Line.

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Although the CPUC has not received any letters from the Tuolumne Band of Me-Wuk Indians requesting formal notification of proposed projects per Assembly Bill 52, we would appreciate your comments on this project. Should you have questions and inquiries on this project, you may email or call me at (415) 703-2579 or michael.rosauer@cpuc.ca.gov. Stephanie Green is the CPUC Tribal Liaison. Ms. Green is copied here and is also readily available to assist you with this or any other tribal matter. Ms. Green can be reached at 415-703-5245 and Stephanie.Green@cpuc.ca.gov. If you would benefit from a meeting with our environmental team, please let me know.

Thank you in advance for your time and input.

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Michael E. Rosauer

Mike Rosauer
CPUC Project Manager
California Public Utilities Commission
505 Van Ness Avenue
San Francisco, CA, 94102-3298

Attachments: Fact Sheet

cc: Stephanie Green, CPUC, Tribal Liaison
Mike Monasmith, CEC, Project Manager

Attachments: Fact Sheet

PUBLIC UTILITIES COMMISSION
505 VAN NESS AVENUE
SAN FRANCISCO, CA 94102-3298

January 9, 2019

Chairperson Raymond Hitchcock
Wilton Rancheria
9728 Kent Street
Elk Grove, CA 95624

Re: Invitation to Consult for Pacific Gas and Electric Company's Permit to Construct for the Vierra Reinforcement Project in San Joaquin County, California – Presently undergoing CEQA review by the California Public Utilities Commission

Dear Chairperson Raymond Hitchcock,

Please find attached for your information and consideration an updated fact sheet for the Vierra Reinforcement Project (project). Pacific Gas and Electric Company (PG&E) is proposing to expand the existing Vierra Substation in the City of Lathrop and build a new, double-circuit power line west from the substation approximately one mile to the existing Tesla-Stockton Cogen Junction 115 kilovolt (kV) Power Line.

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Although the CPUC has not received any letters from the Wilton Rancheria requesting formal notification of proposed projects per Assembly Bill 52, we would appreciate your comments on this project. Should you have questions and inquiries on this project, you may email or call me at (415) 703-2579 or michael.rosauer@cpuc.ca.gov. Stephanie Green is the CPUC Tribal Liaison. Ms. Green is copied here and is also readily available to assist you with this or any other tribal matter. Ms. Green can be reached at 415-703-5245 and Stephanie.Green@cpuc.ca.gov. If you would benefit from a meeting with our environmental team, please let me know.

Thank you in advance for your time and input.

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Mike Rosauer
CPUC Project Manager
California Public Utilities Commission
505 Van Ness Avenue
San Francisco, CA, 94102-3298

Attachments: Fact Sheet

cc: Stephanie Green, CPUC, Tribal Liaison
Mike Monasmith, CEC, Project Manager

Attachments: Fact Sheet

Appendix D

Preliminary Transmission EMF Management Plan – Vierra Reinforcement Project

BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA

Application of PACIFIC GAS AND ELECTRIC COMPANY, a California corporation, for a Permit to Construct the Vierra Reinforcement Project Pursuant to General Order 131-D. (U 39 E)	A.18-06-004 (Filed June 6, 2018)

CORRECTED EXHIBIT D TO THE APPLICATION OF PACIFIC GAS AND ELECTRIC COMPANY FOR A PERMIT TO CONSTRUCT THE VIERRA REINFORCEMENT PROJECT

DAVID T. KRASKA
Law Department
Pacific Gas and Electric Company
77 Beale Street, B30A
San Francisco, CA 94105
Telephone: (415) 973-7503
Facsimile: (415) 972-5952
Email: David.Kraska@pge.com

JO LYNN LAMBERT
LAMBERT LAW
300 East State Street, Suite 600
Redlands, CA 92373
Telephone: (909) 793-4942 or (415) 973-5248
Facsimile: (909) 792-5150
Email: JoLynn.Lambert@pge.com

Attorneys for Applicant
PACIFIC GAS AND ELECTRIC COMPANY

Dated: November 27, 2018

BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA

Application of PACIFIC GAS AND ELECTRIC COMPANY, a California corporation, for a Permit to Construct the Vierra Reinforcement Project Pursuant to General Order 131-D. (U 39 E)	A.18-06-004 (Filed June 6, 2018)

CORRECTED EXHIBIT D TO THE APPLICATION OF
PACIFIC GAS AND ELECTRIC COMPANY
FOR A PERMIT TO CONSTRUCT THE VIERRA REINFORCEMENT PROJECT

In accordance with Rule 1.12 of the California Public Utilities Commission's Rules of Practice and Procedure and as discussed at the Prehearing Conference held before ALJ DeAngelis on November 14, 2018, Pacific Gas and Electric Company hereby files a corrected Exhibit D, EMF Field Management Plan, to its Application for a Permit to Construct. The estimated cost of the project has been corrected; no other changes have been made.

Respectfully submitted,

DAVID T. KRASKA
Pacific Gas and Electric Company
77 Beale Street, B30A
San Francisco, CA 94105
Telephone: (415) 973-7503
Facsimile: (415) 972-5952
Email: David.Kraska@pge.com

JO LYNN LAMBERT
Lambert Law
300 East State Street, Suite 600
Redlands, CA 92373
Telephone: (909) 793-4942 or (415) 973-5248
Facsimile: (909) 792-5150
Email: JoLynn.Lambert@pge.com

By: */s/ Jo Lynn Lambert*
JO LYNN LAMBERT
Attorneys for Applicant
PACIFIC GAS AND ELECTRIC COMPANY

Dated: November 27, 2018

EXHIBIT D

PRELIMINARY TRANSMISSION EMF MANAGEMENT PLAN VIERRA REINFORCEMENT PROJECT

A. TRANSMISSION COMPONENT

I. GENERAL DESCRIPTION OF PROPOSED PROJECT

Project Name: Vierra Reinforcement Project

Project Lead: Josh Hinkey, P.E., P.M.P.

Scope of Work:

PG&E proposes to upgrade the electric transmission system in the cities of Lathrop and Manteca by expanding the existing Vierra Substation, located in the City of Lathrop in San Joaquin County. The Vierra Reinforcement Project (project) will also include the construction of a new 115 kilovolt (kV) power line composed of two circuits, Tesla-Vierra 115 kV Power Line and Vierra-Stockton Co-gen Junction 115 kV Power Line, collocated on a single alignment of tubular steel poles (TSPs) between Vierra Substation and the existing Tesla-Stockton Co-Gen Junction 115 kV Power Line, located west of Vierra Substation in the City of Lathrop.

The project involves looping the Tesla-Stockton Co-Gen Junction 115 kV Power Line into the Vierra 115 kV bus, which will benefit the Tesla 115 kV system—and the 60 kV systems it feeds at Kasson, Manteca, and Salado substations—by providing more capacity and better reliability. As part of the project, Vierra Substation will be upgraded from a loop bus configuration to a breaker-and-a-half (BAAH) bus, and the feed from Vierra Substation to Howland Road Substation will be changed to a radial (single source) feed. The project will benefit more than 120,000 residential and business customers in the cities of Manteca and Lathrop by providing greater reliability.

- Power Line Construction. An approximately 1-mile-long, double-circuit 115 kV power line will be installed on approximately 14 TSPs.

Base Cost of Transmission Line Proposed Project:

The estimated total cost of the Proposed Project (without the EMF mitigation benchmark budget and excluding contingency) is approximately $39,000,000. Four percent of this estimated total cost is approximately $1,560,000.

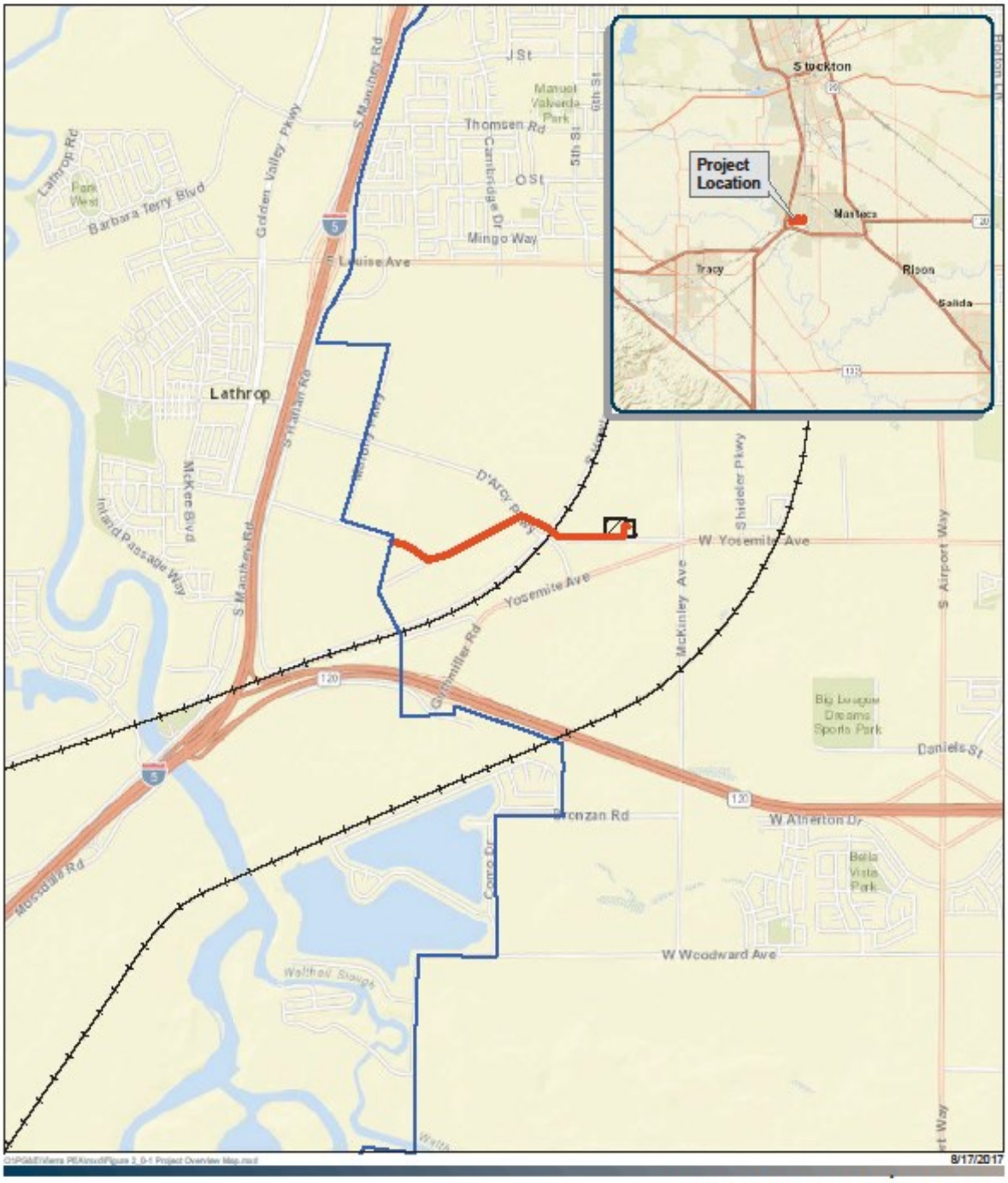

Figure 2.0-1 - Project Area Map
Vierra Reinforcement Project
PG&E

- New 115 kV Line to be Installed
- Existing Tesla-Stockton Co Gen Jct 115 kV
- Union Pacific Railroad
- Existing Substation Footprint
- Planned Substation Expansion Footprint

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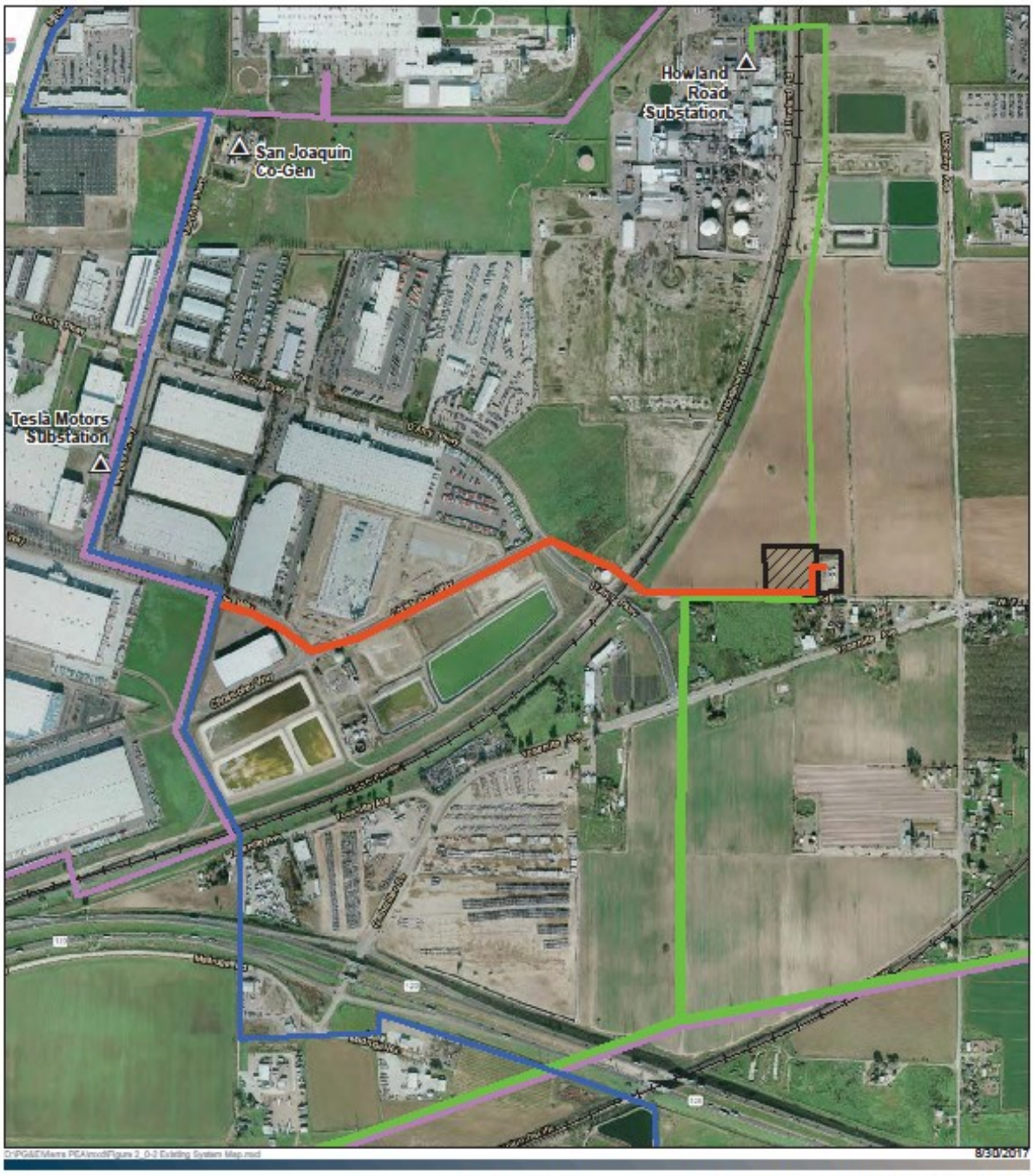

Figure 2.0-2 - Project Overview Map
Vierra Reinforcement Project
PG&E

II. BACKGROUND: CPUC DECISION 93-11-013 AND EMF POLICY

On January 15, 1991, the CPUC initiated an investigation to consider its role in mitigating the health effects, if any, of electric and magnetic fields (EMF) from utility facilities and power lines. A working group of interested parties, called the California EMF Consensus Group, was created by the CPUC to advise it on this issue. It consisted of 17 stakeholders representing citizens groups, consumer groups, environmental groups, state agencies, unions, and utilities. The Consensus Group's fact-finding process was open to the public, and its report incorporated concerns expressed by the public. The Consensus Group's recommendations were filed with the Commission in March 1992.

In August 2004 the CPUC began a proceeding known as a "rulemaking" (R.04-08-020) to explore whether changes should be made to existing CPUC policies and rules concerning EMF from electric transmission lines and other utility facilities.

Through a series of hearings and conferences, the Commission evaluated the results of its existing EMF mitigation policies and addressed possible improvements in implementation of these policies. The CPUC also explored whether new policies were warranted in light of recent scientific findings on the possible health effects of EMF exposure.

The CPUC completed the EMF rulemaking in January 2006 and presented these conclusions in Decision D.06-01-042:

- The CPUC affirmed its existing policy of requiring no-cost and low-cost mitigation measures to reduce EMF levels from new utility transmission lines and substation projects.

- The CPUC adopted rules and policies to improve utility design guidelines for reducing EMF and established a utility workshop to implement these policies and standardize design guidelines.

- Despite numerous studies, including one ordered by the Commission and conducted by the California Department of Health Services, the CPUC stated "we are unable to determine whether there is a significant scientifically verifiable relationship between EMF exposure and negative health consequences."

- The CPUC said it will "remain vigilant" regarding new scientific studies on EMF, and if these studies indicate negative EMF health impacts, the Commission will reconsider its EMF policies and open a new rulemaking if necessary.

In response to a situation of scientific uncertainty and public concern, the decision specifically requires utilities to consider "no-cost" and "low-cost" measures, where feasible, to reduce exposure from new or upgraded utility facilities. It directs that no-cost mitigation measures be undertaken, and that low-cost options, when they meet certain guidelines for field reduction and cost, be adopted through the project certification

process. PG&E was directed to develop, submit and follow EMF guidelines to implement the CPUC decision. According to the guidelines, four percent of total project budgeted cost is the benchmark used to determine "low-cost" in implementing EMF mitigation, and mitigation measures should achieve incremental magnetic field reductions of at least 15% at the edge of right-of-way (ROW).

III. PRIORITY AREAS WHERE LOW COST MEASURES ARE TO BE APPLIED

Surrounding Uses by Priority Category:

Pursuant to PG&E's "EMF Design Guidelines for Electrical Facilities", the mitigation of magnetic fields will be applied to the transmission lines in the following priority:

Land Uses Adjacent to Project Route:

Schools or Daycare: None.

Residential: Four structures.

Commercial/Industrial: Ten structures.

Recreational: None.

Undeveloped Land and/or Agricultural, Rural: One structure.

IV. No Cost and Low Cost Magnetic Field Mitigation

No Cost Field Reduction

Optimal phase configurations can be used as a field cancellation technique. The phases from one circuit of a multi-circuit line can be used to reduce the field from another circuit, thereby reducing the total magnetic field strength. For this reason, multi-circuit lines may have lower magnetic fields than single circuit lines.

Double circuit tower lines considered for optimal phasing:

Existing Phasing:

Tesla – Vierra 115 kV line -	(T,M,B) =	BCA
Vierra – San Joaquin Cogen 115 kV line -	(T,M,B) =	BCA

The double circuit Tesla – Vierra & Vierra – San Joaquin Cogen 115 kV lines are already optimally phased.

Base Case Load Flow:

Tesla – Vierra 115 kV: The maximum normal rating used for the base case calculation of the magnetic field is 427 Amps, flowing from Tesla substation to Vierra substation.

Vierra – San Joaquin Cogen 115 kV: The maximum normal rating used for the base case calculation of the magnetic field is 212 Amps, flowing from Vierra substation to Tesla Motors substation.

The load currents are assumed to be balanced at 120 electrical degrees separation between the three phases. The loads can vary significantly during the 24 hour day and /or throughout the year.

Priority Areas where Low Cost Measures Should Be Considered

Four structures in the residential land use area are considered for magnetic field reduction.

Low Cost Magnetic Field Reduction Options

Reducing magnetic field strength by increasing the distance from the source can be accomplished either by increasing the height or depth of the conductor from ground level. Furthermore, locating the power lines as far away from the edge of the ROW or as close to centerline as possible will result in lower field levels at the edge of the ROW. Calculations are based on normal peak current flow forecasted for 2023 and a minimum conductor height of thirty-one feet at midspan. Below are calculations showing magnetic field reductions from raising conductor heights an additional 10 feet more than needed to meet clearance requirements:

Table 1. Magnetic Field Reduction for Raising Conductor Height by Additional Ten Feet.

Segment	Base Case		Raise 10 Feet		Reduction	
	North ROW	South ROW	North ROW	South ROW	North ROW	South ROW
Tesla – Vierra Line	19.7 mG	9.1 mG	12.9 mG	7.0 mG	35%	23%

The purpose of magnetic field modeling is to evaluate relative effectiveness of various magnetic field reduction measures, not to predict magnetic field levels.

Table 2. Estimated Cost of Raising Conductor Height by Additional Ten Feet at Certain Locations

The following table identifies the no cost and low cost field mitigation measures for each line segment, including the reasoning for each, and the estimated cost to adopt the measure.

Project Segment (Pole/Tower ID #)	Location (Street, Area)	Adjacent Land Use	Reduction Measure Considered	Measure Adopted?	Reason(s) if not adopted	Estimated Cost to Adopt
Tesla – Vierra 115 kV line - Double Circuit with Vierra – San Joaquin Cogen 115 kV line						
004-014A to 5-2	Nestle Way	Industrial				
5-3 to 5-7	Christopher Way	Industrial				
5-8 to 5-9	D'Arcy Parkway	Industrial				
5-10	Vierra Road	Agriculture				
5-10	Vierra Road	Residential	Optimal Phasing	No	Already Optimal	
			Raise Conductor 10 Feet	Yes		$40,000

This FMP proposes to raise the height of four structures in the residential land use area by ten feet taller than required for meeting clearance requirements. The estimated cost of this mitigation is $40,000.

V. CONCLUSION: FIELD REDUCTION MEASURES SELECTED

The Vierra Reinforcement Project field management plan proposes to apply the following no cost and low magnetic field mitigation:

Raise the height of four structures in the residential land use area by ten feet taller than required for meeting clearance requirements. The estimated cost of this mitigation is $40,000.

VI. References

California Public Utilities Commission. 1993. Order instituting investigation on the Commission's own motion to develop policies and procedures for addressing the potential health effects of electric and magnetic fields of utility facilities. Decision 93-11-013 (November 2).

California Public Utilities Commission. 2006. Order Instituting Rulemaking to update the Commission's policies and procedures related to electromagnetic fields emanating from regulated utility facilities. Decision 06-01-042 (January 26).

Pacific Gas & Electric Company. 2006. EMF Design Guidelines for Electrical Facilities.

B. SUBSTATION COMPONENT

Vierra Reinforcement Project
Substation FMP Checklist

No.	NoCost and LowCost Magnetic Field Reduction Measures Evaluated for a Substation Project	Measures Adopted? (Yes/No)	Reason(s) if not Adopted
1	Keep high current devices, transformers, capacitors, and reactors away from the substation property lines.	Yes	
2	For underground duct banks, the minimum distance should be 12 feet from the adjacent property lines or as close to 12 feet as practical.	Yes	
3	Locate new substations close to existing power lines to the extent practical.	Yes	
4	Increase the substation property boundary to the extent practical.	Yes	
5	Other:		

Appendix E

Land Evaluation and Site Assessment Worksheet
Score Sheets

California Agricultural Land Evaluation and Site Assessment Model

The California Agricultural Land Evaluation and Site Assessment (LESA) Model was developed to provide lead agencies with an optional methodology to ensure that potentially significant effects on the environment of agricultural land conversions are quantitatively and consistently considered in the environmental review process (Public Resources Code Section 21095), including in California Environmental Quality Act (CEQA) reviews.

The LESA Model evaluates measures of soil resource quality, a given project's size, water resource availability, surrounding agricultural lands, and surrounding protected resource lands. For a given project, the factors are rated, weighted, and combined, resulting in a single numeric score. The project score becomes the basis for making a determination of a project's potential significance. (CDOC, 1997)

Vierra Substation Expansion Final LESA Score Sheet

	Factor Score		Factor Weight	Weighted Factor Score	
Land Evaluation (LE) Factors					
Land Capability Classification	70	x	0.25	17.5	
Storie Index	65	x	0.25	16.25	
LE subtotal			*0.50*	*33.75*	
Site Assessment (SA) Factors					
Project Size	0	x	0.15	0	
Water Resources Available	75	x	0.15	11.25	
Surrounding Agricultural Land	30	x	0.15	4.5	
Protected Resource Land	0	x	0.05	0	
SA subtotal			*0.50*	*15.75*[1]	+
			Final LESA Score	49.5	=
				LESA Score 40 to 59 points. Not Considered Significant	

Project site acreage: 2.47 acres.

Soil information: Soil Survey of San Joaquin County, California, United States Department of Agriculture Soil Conservation Service issued October 1992.

Soil type: 142-Delhi loamy sand, 0 to 2 percent slopes.

Land capability unit: IIIs-4 (MLRA-17) irrigated. III is the soil class. Class III soils have severe limitations that reduce the choice of plants or that require special conservation practices, or both. The letter "s" shows that the soil is limited mainly because it is shallow, droughty, or stony. The number "4" indicates a low available water capacity in sandy or gravelly soils. MLRA-17 means Major Land Resource Area of the soils. Number "17" identifies the Sacramento and San Joaquin Valley area.

Storie index: 65 (Index ratings 60 to 79 soil grade = Grade 2). Grade 2 soils are good agricultural soils, although they are not so desirable as soils in grade 1 because of a less permeable subsoil, deep hardpan layers, a gravelly or moderately fine textured surface layer, moderate or strong slopes, restricted drainage, low

[1] "Considered significant only if LE and SA subscores are each greater than or equal to 20 points." (California Agricultural Land Evaluation and Site Assessment Model)

available water capacity, lower soil fertility, or a slight or moderate hazard of flooding.

Reference

CDOC, 1997 – California Department of Conservation (CDOC). Land Evaluation & Site Assessment (LESA) Model. Available online at: https://www.conservation.ca.gov/dlrp/Pages/qh_lesa.aspx**.**