



**Zeta Solar and Battery Energy
Storage System Project**

Air Quality and Greenhouse Gas Impact
Assessment

August 2024

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Executive Summary
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Executive Summary

The purpose of this Air Quality and Greenhouse Gas Impact Assessment is to support the preparation of the Draft Environmental Impact Report (Draft EIR) for the Zeta Solar and Battery Energy Storage System Project (Project). This technical analysis has been prepared to analyze the potential air quality and greenhouse gas emissions generated from the Project.

PROJECT UNDERSTANDING

The Project involves the development of a 75 megawatt (MW) solar facility and battery energy storage system (BESS) across 650 acres within Merced County, California (Project site). The Project would include a substation, 1,700-foot-long generation-tie (gen-tie), operation and maintenance (O&M) building and adjacent O&M warehouse, and access roads throughout the Project site.

SUMMARY OF ANALYSIS

- Impact AIR-1:** The Project would not conflict with or obstruct implementation of the applicable air quality plan. There is a **less-than-significant impact**.
- Impact AIR-2:** The Project would not 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. There is a **less-than-significant impact**.
- Impact AIR-3:** The Project would not expose sensitive receptors to substantial pollutant concentrations. There is a **less-than-significant impact with mitigation**.
- Impact AIR-4:** The Project would not result in other emissions (such as those leading to odors) affecting a substantial number of people. There is a **less-than-significant impact**.
- Impact GHG-1:** The Project would not generate direct and indirect greenhouse gas emissions that would result in a significant impact on the environment. There is a **less-than-significant impact with mitigation**.
- Impact GHG-2:** The Project would not conflict with any applicable plan, policy or regulation of an agency adopted to reduce the emissions of greenhouse gases. There is a **less-than-significant impact**.



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Abbreviations
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Abbreviations

°F	degrees Fahrenheit
AB	Assembly Bill
AC	alternating current
ACBMs	Asbestos-Containing Building Material
APN	Assessor's Parcel Number
Applicant	Longroad Development Company, LLC
AQGGP	Air Quality Guidelines for General Plans
AQMP	Air Quality Management Plan
BACT	best available control technology
BAU	business-as-usual
BESS	battery energy storage system
BMP	best management practice
C ₂ F _{6s}	perfluoroethane
CAA	Clean Air Act
CAAQS	California Ambient Air Quality Standards
CalEEMod	California Emissions Estimator Model
CAP	Climate Action Plan
CARB	California Air Resources Board
CCAA	California Clean Air Act
CEQA	California Environmental Quality Act
CF ₄	perfluoromethane
CFR	Code of Federal Regulations
CH ₄	methane
CO	carbon monoxide
CO ₂	carbon dioxide
CO _{2e}	carbon dioxide equivalent
DC	direct current
DPM	diesel particulate matter
DRPP	Diesel Risk Reduction Plan
EIR	Environmental Impact Report
EO	Executive Order
EPA	United States Environmental Protection Agency
GAMAQI	Guidance for Assessing and Mitigating Air Quality Impacts
gen-tie line	generation tie line
GHG	Greenhouse Gas
GWP	Global Warming Potential
HAP	hazardous air pollutant
HFC	hydrofluorocarbon
I-5	Interstate 5
LCFS	Low Carbon Fuel Standard
MMT	million metric tons
MTCO _{2e}	metric tons of carbon dioxide equivalents
MW	megawatt
N ₂ O	nitrous oxide
NAAQS	National Ambient Air Quality Standards
NESHAP	national emission standards for hazardous air pollutants
NF ₃	Nitrogen trifluoride
NO ₂	nitrogen dioxide
NOA	naturally occurring asbestos



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NO _x	oxides of nitrogen
O ₃	ozone
Pb	lead
PFC	perfluorocarbon
PG&E	Pacific Gas & Electric Company
PM	particulate matter
PM ₁₀	fugitive dust, particulate matter 10 microns or smaller in diameter
PM _{2.5}	fine particulate matter 2.5 microns or smaller in diameter
ppb	parts per billion
ppm	parts per million
Project	Zeta Solar and Battery Energy Storage System Project
PV	photovoltaic
ROG	reactive organic gas
RPS	Renewables Portfolio Standard
SB	Senate Bill
SCAQMD	South Coast Air Quality Management District
SF ₆	sulfur hexafluoride
SJVAB	San Joaquin Valley Air Basin
SJVAPCD	San Joaquin Valley Air Pollution Control District
SLOCAPCD	San Luis Obispo County Air Pollution Control District
SLCP	short-lived climate pollutant
SMAQMD	Sacramento Metropolitan Air Quality Management District
SO ₂	sulfur dioxide
SO _x	sulfur oxides
TAC	toxic air contaminants
VOC	volatile organic compounds
ZEV	zero-emission vehicles



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1.0 Introduction

1.1 Purpose of Analysis

The purpose of this Air Quality and Greenhouse Gas Impact Assessment is to provide a discussion of air pollutants, health risks posed to nearby sensitive receptors, and greenhouse gas (GHG) emissions from construction and operation of the Zeta Solar and Battery Energy Storage System Project (Project). This evaluation relies on guidance and thresholds established by the United States Environmental Protection Agency (USEPA), the San Joaquin Valley Air Pollution Control District (SJVAPCD), and the California Air Resources Board (CARB).

1.2 Project Description

Longroad Development Company, LLC (Applicant) proposes to construct, operate, maintain and decommission a photovoltaic (PV) solar power generation facility and battery energy storage system (BESS) in unincorporated Merced County, California, approximately 9 miles southwest of Los Banos (Project site) (see Figure 1, Project Location, and Figure 2, Site Plan). The Project would generate up to approximately 75 megawatts (MW) alternating current (AC) renewable electrical energy and include an energy storage capacity of up to 8 hours of 75 MW of AC. The Project would be developed on all or portions of several contiguous parcels, totaling approximately 650 acres plus an additional 1,700-foot-long generation tie (gen-tie) line to deliver power from the Project to the Pacific Gas and Electric Company (PG&E) existing Mercy Springs Substation (point of interconnection).

The Project would occupy all or portions of several parcels identified by Merced County as assessor's parcel numbers (APN) 090-130-018, and 090-130-044, and 090-130-060. The gen-tie line would extend north through APN 088-180-063 to a point of interconnection in APN 090-103-059. Poleline Road abuts the southwestern Project site boundary. The California Aqueduct and United States (U.S.) Interstate 5 (I-5) run parallel to the southwest Project boundary about 300 feet and 800 feet to the west, respectively. First Lift Canal Road lies along the western boundary of the Project site, and the eastern boundary abuts an unnamed dirt/gravel road. The Project site consists of fallow agricultural lands, and there has been no agricultural production on the Project site for over 10 years. Land uses surrounding the Project site primarily consist of undeveloped active agricultural lands to the north, south, and east, in addition to a small (0.15-acre), developed area to the south housing a cell tower, and undeveloped, hilly grasslands used for cattle grazing to the west. The Vega Solar Project site and Dos Amigos Pumping Plant are located 1,200 feet north and 0.5-mile northwest of the Project site, respectively.

The Project would include a solar array area surrounded by a security fence. Solar PV modules mounted in rows on single-axis trackers and racking equipment would occupy most of the Project site. The Project would also include, among other things, an underground DC collector system, up to 21 electrical equipment pads with inverters and transformers within the PV facility, an approximately 15-acre BESS with regularly spaced battery units and 70 electrical equipment pads, underground or above-ground AC collector system, an approximately 5-acre substation, an approximately 1,700-foot-long 70 kilovolt (kV) gen-tie line, an approximately 0.8-acre operation and maintenance (O&M) building and adjacent O&M



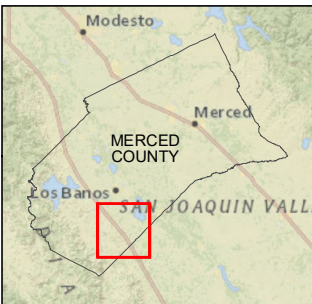
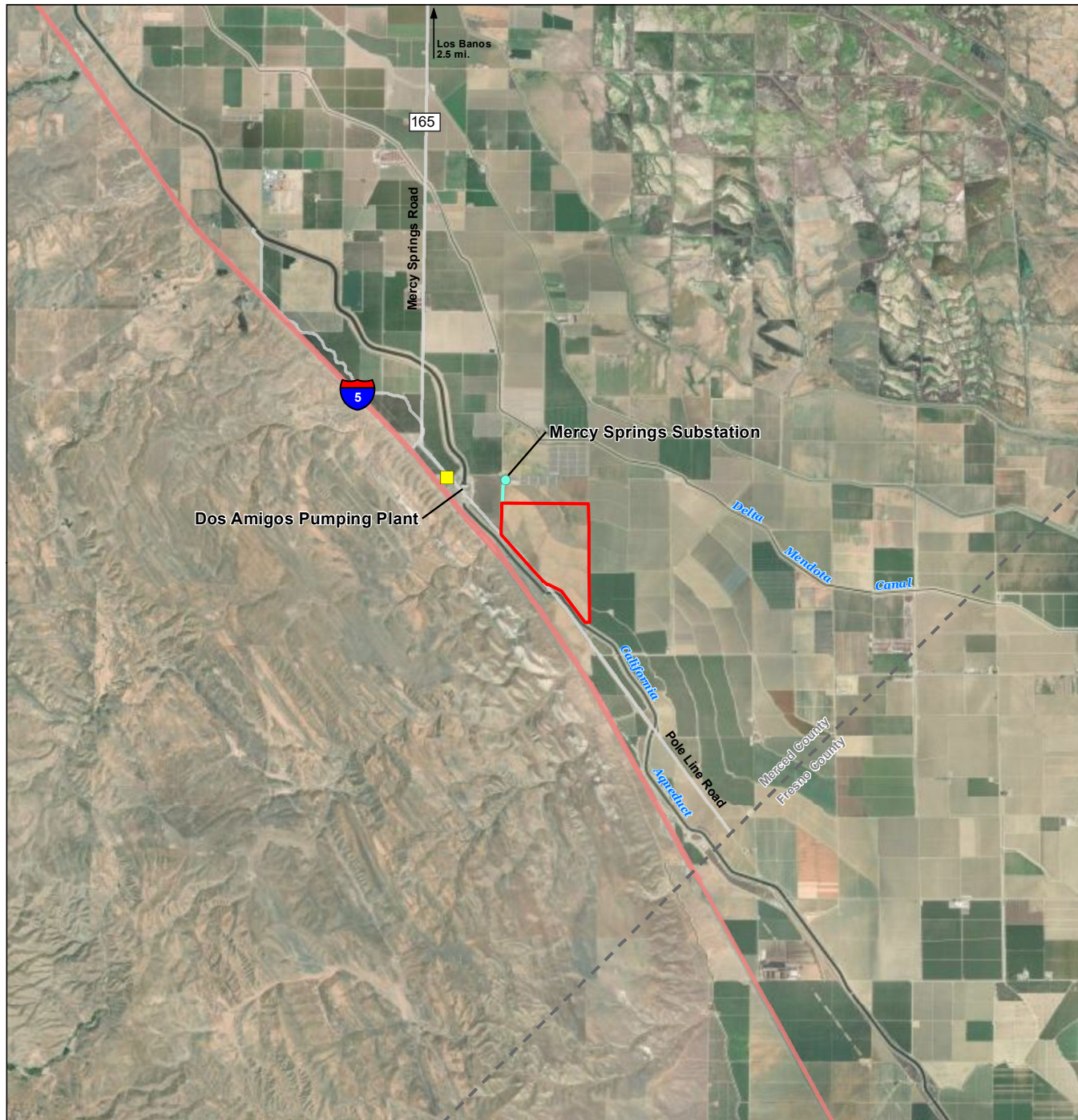
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warehouse, and access roads. As part of construction, an approximately 10-acre staging area/laydown yard would be located within the Project site and accessed via internal graveled or compacted earth access roads. Construction of the Project facilities would occur over 24 consecutive months. The Project would operate year-round to generate electricity from the PV facilities during daylight hours and dispatch additional electricity during either daylight or non-daylight hours, depending on the application of the BESS portion of the Project.



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- Project Site Boundary
- Gen-tie
- Point of Interconnection
- Sensitive Receptor

0 1 2
Miles
(At original document size of 8.5x11)
1:120,000



Project Location
Merced County, CA

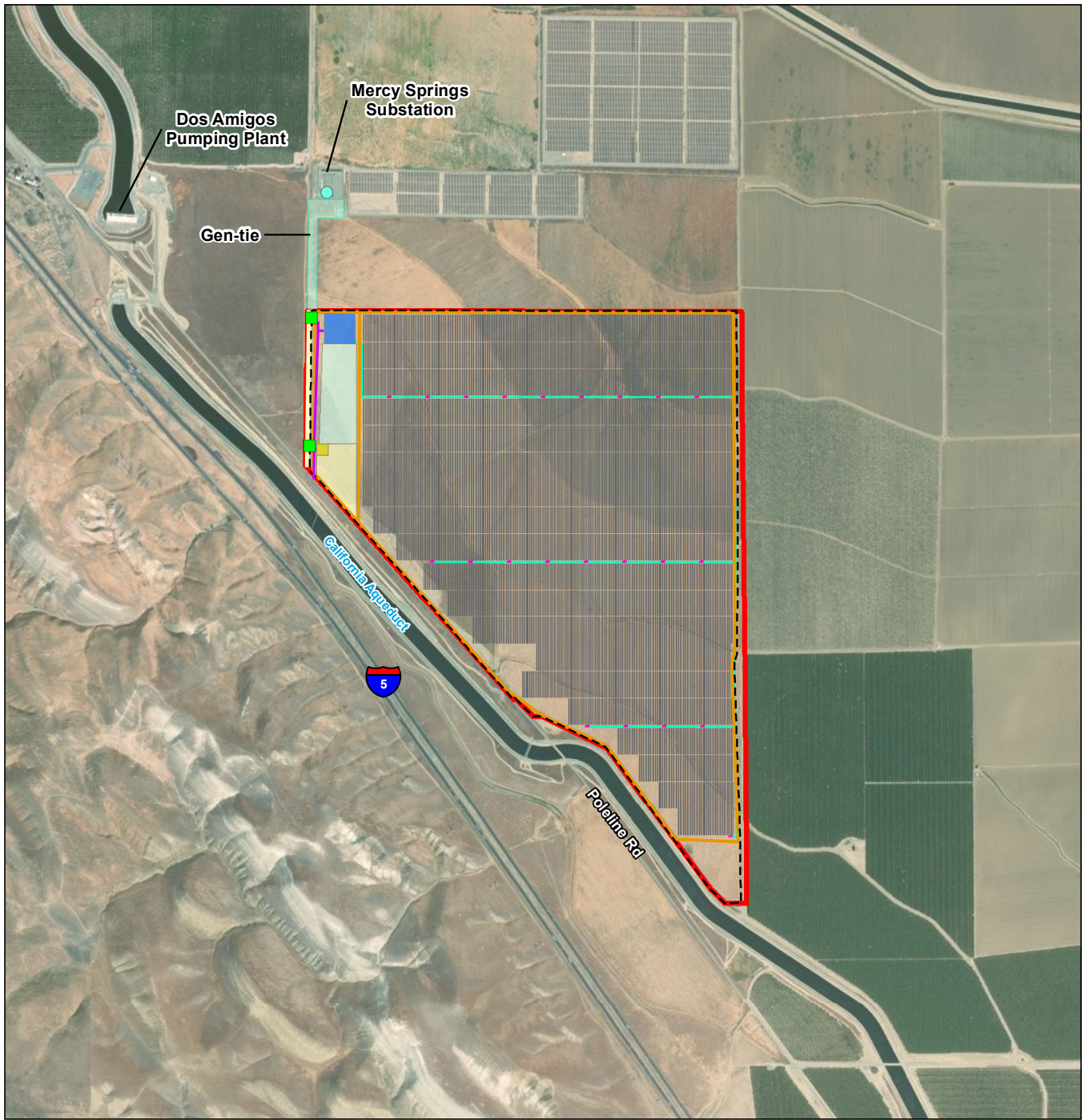
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TR by GG on 2024-07-18

Client/Project
Longroad Energy Management, LLC
Zeta Solar and Battery Energy Storage System Project

Figure 1
Project Location

Notes
1. Coordinate System: NAD 1983 StatePlane
California III FIPS 0403 Feet

Disclaimer: This document has been prepared based on information provided by others as cited in the Notes section. Stantec has not verified the accuracy and/or completeness of this information and shall not be responsible for any errors or omissions which may be incorporated herein as a result. Stantec assumes no responsibility for data supplied in electronic format, and the recipient accepts full responsibility for verifying the accuracy and completeness of the data.



- Project Site Boundary
- Gen-tie
- Gen-tie Corridor
- Point of Interconnection
- Zeta Substation
- Panel Layout
- Inverters
- O&M Building
- Laydown Yard
- BESS
- Mv Collectors
- Fence
- Access Road
- Perimeter Road
- Utility Lines
- Gate

0 0.25 0.5
Miles
(At original document size of 8.5x11)
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Project Location
Merced County, CA

Prepared by PG on 2023-06-09
TR by TR on 2023-06-09

Client/Project
Longroad Energy Management, LLC
Zeta Solar and Battery Energy Storage System Project

Figure 2

Project Site — Conceptual Plan

2.0 Air Quality

2.1 Environmental Setting

The Project is located within the San Joaquin Valley Air Basin (SJVAB) and within the jurisdiction of the SJVAPCD. Air pollution in the SJVAB can be attributed to both anthropogenic (i.e., human-related) and non-anthropogenic (i.e., natural) activities that can produce emissions. Air pollution from significant anthropogenic activities in the SJVAB include a variety of industrial-based sources and on- and off-road mobile sources (SJVAPCD 2015).

2.1.1 CLIMATE AND TOPOGRAPHY

The SJVAB has an “inland Mediterranean” climate and is characterized by long, hot, dry summers and short, foggy winters. Sunlight can be a catalyst in the formation of some air pollutants (such as ozone [O₃]), and the SJVAB averages over 260 sunny days per year. The SJVAB is generally shaped like a bowl: it is open in the north and is surrounded by mountain ranges on all other sides. The Sierra Nevada are along the eastern boundary and rise 8,000–14,000 feet in elevation; the Coast Ranges are along the western boundary, rising to 3,000 feet; and the Tehachapi Mountains are along the southern boundary at 6,000–8,000 feet in elevation (SJVAPCD 2015).

Dominant airflows provide the driving mechanism for transport and dispersion of air pollution. The mountains surrounding the SJVAB form natural horizontal barriers to the dispersion of air contaminants. The wind generally flows south-southeast through the valley, through the Tehachapi Pass and into the Southeast Desert Air Basin portion of Kern County. As the wind moves through the SJVAB, it mixes with the air pollution generated locally, transporting air pollutants from the north to the south in the summer and in a reverse flow in the winter (SJVAPCD 2015).

Strong temperature inversions occur throughout the SJVAB in the summer, fall, and winter. The result is a relatively high concentration of air pollution in the valley during inversion episodes. These inversions cause haziness, which in addition to moisture may include suspended dust, a variety of chemical aerosols emitted from vehicles, particulates from wood stoves, and other pollutants. In the winter, these conditions can lead to carbon monoxide hotspots along heavily traveled roads and at busy intersections. During summer's longer daylight hours, stagnant air, high temperatures, and plentiful sunshine provide the conditions and energy for the photochemical reaction between reactive organic gases (ROG) and oxides of nitrogen (NO_x), which results in the formation of O₃ (SJVAPCD 2015).

Because of the prevailing daytime winds and time-delayed nature of O₃, concentrations are highest in the southern portion of the SJVAB. Summers often have periods of hazy visibility and occasionally unhealthful air. Winter air quality impacts tend to be localized and can consist of, but are not exclusive to, odors from agricultural operations; soot or smoke around residential, agricultural, and hazard-reduction wood burning; or dust near mineral resource recovery operations (SJVAPCD 2015).



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2.1.2 CRITERIA AIR POLLUTANTS

Criteria air pollutants include O₃, carbon monoxide (CO), nitrogen dioxide (NO₂), sulfur dioxide (SO₂), lead (Pb), and particulate matter (PM) measured both in units of smaller than 2.5 microns in diameter (PM_{2.5}) and in units smaller than 10 microns in diameter (PM₁₀). In addition, sulfates (SO₄), hydrogen sulfide (H₂S), vinyl chloride, and visibility reducing particles, are not considered criteria pollutants, but have CAAQS.

Ozone (O₃)

Most ground-level O₃ is formed as a result of complex photochemical reactions in the atmosphere between ROGs, NO_x, and oxygen. ROGs and NO_x are considered precursors to the formation of O₃, a highly reactive gas that can damage lung tissue and affect respiratory function. O₃ can damage the respiratory tract, causing inflammation and irritation, and it can induce symptoms, such as coughing, chest tightness, shortness of breath, and worsening of asthmatic symptoms. O₃ in sufficient doses increases the permeability of lung cells, rendering them more susceptible to toxins and microorganisms. Exposure to high concentrations of O₃ (above the current ambient air quality standard) leads to lung inflammation, lung tissue damage, and a reduction in the amount of air inhaled into the lungs. Health effects include potential increased susceptibility to respiratory infections and reduced ability to exercise. Health effects are more severe in people with asthma and other respiratory ailments. People who work or play outdoors are at a greater risk for harmful health effects from O₃. Children and adolescents are also at greater risk because they are more likely than adults to spend time engaged in vigorous activities. While O₃ in the lower atmosphere is considered a damaging air pollutant, O₃ in the upper atmosphere is beneficial, as it protects Earth from harmful ultraviolet radiation. However, atmospheric processes preclude ground-level O₃ from reaching the upper atmosphere (USEPA 2022a).

Carbon Monoxide (CO)

CO is a colorless, odorless, poisonous gas produced by the incomplete combustion of fossil fuels. Elevated levels of CO can result in harmful health effects, especially for the young and elderly, and can also contribute to global climate change (USEPA 2022a). When inhaled, CO enters the bloodstream and binds more readily to hemoglobin, the oxygen-carrying protein in blood, than oxygen, thereby reducing the oxygen-carrying capacity of blood and reducing oxygen delivery to organs and tissues. The health threat from CO is most serious for those who suffer from cardiovascular disease. Healthy individuals are also affected, but only at higher levels of exposure. Exposure to CO can cause chest pain, headaches, and reduced mental alertness. At high concentrations, CO can cause heart difficulties in people with chronic diseases and can impair mental abilities. Exposure to elevated CO levels is associated with visual impairment, reduced work capacity, reduced manual dexterity, poor learning ability, difficulty performing complex tasks, and, with prolonged enclosed exposure, death.

Nitrogen Dioxide (NO₂)

NO₂ is a brownish, highly reactive gas primarily produced as a result of the burning of fossil fuels. NO₂ can also lead to the formation of O₃ in the lower atmosphere. NO₂ can cause respiratory ailments, especially in the young and elderly, and can lead to degradations in the health of aquatic and terrestrial



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ecosystems (USEPA 2022a). Direct inhalation of NO₂ can cause a wide range of health effects, including irritation of the lungs, lung damage, and lowered resistance to respiratory infections, such as influenza. Short-term exposures (e.g., less than 3 hours) to low levels of NO₂ may lead to changes in airway responsiveness and lung function in individuals with preexisting respiratory illnesses. These exposures may also increase respiratory illnesses in children. Long-term exposures to NO₂ may lead to increased susceptibility to respiratory infection and may cause irreversible lung damage. Other health effects associated with NO₂ include an increase in the incidence of chronic bronchitis and lung irritation.

Sulfur Dioxide (SO₂)

SO₂ is primarily emitted from the combustion of coal and oil by steel mills, pulp and paper mills, and non-ferrous smelters. High concentrations of SO₂ can aggravate existing respiratory and cardiovascular diseases in asthmatics and others who suffer from emphysema or bronchitis. High concentrations of SO₂ can result in temporary breathing impairment for asthmatic children and adults who are active outdoors. Health effects from exposure to emissions of SO₂ include aggravation of lung diseases, especially bronchitis, and constricting of breathing passages, especially in asthmatics and people involved in moderate to heavy exercise. Short-term exposures of individuals to elevated SO₂ levels during moderate activity may result in health effects, including breathing difficulties that can be accompanied by symptoms, such as wheezing, chest tightness, or shortness of breath. Other health effects that have been associated with longer-term exposures to high concentrations of SO₂, in conjunction with high levels of particulate matter, include aggravation of existing cardiovascular disease, respiratory illness, and alterations in the lungs' defenses. SO₂ also contributes to acid rain, which in turn, can lead to the acidification of lakes and streams (USEPA 2022a).

Lead (Pb)

Sources of Pb include pipes, fuel, and paint, although the use of Pb in these materials has declined dramatically over the years. Historically, the main source of Pb was automobile emissions. Pb can be inhaled directly or ingested by consuming Pb-contaminated food, water, or dust. Fetuses and children are most susceptible to Pb poisoning, which can result in heart disease and nervous system damage (USEPA 2022b). Through regulations, the U.S. Environmental Protection Agency (USEPA) has gradually reduced the Pb content of gasoline. This program has essentially eliminated violations of the Pb standard in urban areas except those areas with Pb point sources. Exposure to Pb occurs mainly through inhalation of air and ingestion of Pb in food, water, soil, or dust. It accumulates in the blood, bones, and soft tissues and can adversely affect the kidneys, liver, nervous system, and other organs. Excessive exposure to Pb may cause neurological impairments, such as seizures, mental retardation, and behavioral disorders. Even at low doses, Pb exposure is associated with damage to the nervous systems of fetuses and young children, resulting in learning deficits and lowered IQ. Recent studies also show that Pb may be a factor in high blood pressure and subsequent heart disease. Pb can also be deposited on the leaves of plants, presenting a hazard to grazing animals and humans through ingestion (USEPA 2022b).



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Particulate Matter (PM)

Airborne PM is not a single pollutant, but rather is a mixture of many chemical species. PM is a complex mixture of solids and aerosols composed of small droplets of liquid, dry solid fragments, and solid cores with liquid coatings. Particles vary widely in size, shape, and chemical composition; and they may contain inorganic ions, metallic compounds, elemental carbon, organic compounds, and compounds from Earth's crust. Particles are defined by their diameter for air quality regulatory purposes. Those with a diameter of 10 microns or less (PM_{10}) are inhalable into the lungs and can induce adverse health effects. Fine particulate matter is defined as particles that are 2.5 microns or less in diameter ($PM_{2.5}$) and is a portion of PM_{10} . Emissions from combustion of gasoline, oil, diesel fuel, or wood produce much of the $PM_{2.5}$ pollution found in outdoor air and a significant proportion of PM_{10} . PM_{10} also includes dust from construction sites, landfills and agriculture, wildfires and brush or waste burning, industrial sources, wind-blown dust from open lands, pollen, and fragments of bacteria.

PM may be either directly emitted from sources (primarily particles) or formed in the atmosphere through chemical reactions of gases (secondary particles) such as SO_2 , NO_x , and certain organic compounds (USEPA 2022a).

PM_{10} and $PM_{2.5}$ particles are small enough—about one-seventh the thickness of a human hair or smaller—to be inhaled and lodged in the deepest parts of the lung, where they evade the respiratory system's natural defenses and can be trapped in the nose, throat, and upper respiratory tract. Health effects from exposure to PM_{10} and $PM_{2.5}$ occur when the body reacts to these foreign particles. Acute and chronic health effects associated with high particulate levels include the aggravation of chronic respiratory diseases; heart and lung disease; and coughing, bronchitis, and respiratory illnesses in children. Recent mortality studies have shown a statistically significant direct association between mortality and daily concentrations of PM in the air. PM_{10} and $PM_{2.5}$ can aggravate respiratory disease and cause lung damage, cancer, and premature death. Sensitive populations, including children, the elderly, exercising adults, and those suffering from chronic lung disease, such as asthma or bronchitis, are especially vulnerable to the effects of PM. Of greatest concern are recent studies that link PM exposure to the premature death of people who already have heart and lung disease, especially the elderly. Acidic PM can also damage humanmade materials and is a major cause of reduced visibility in many parts of the United States. Non-health-related effects include reduced visibility and soiling of buildings.

Sulfates

Sulfates are a category of chemicals that contain the fully oxidized ionic form of sulfur (SO_4^{2-}) in combination with metal or hydrogen ions. In California, emissions of sulfur compounds occur primarily from the combustion of petroleum-derived fuels (e.g., gasoline and diesel fuel) that contain sulfur.

CARB's sulfate standard is designed to prevent aggravation of respiratory symptoms. Effects of sulfate exposure at levels above the standard include a decrease in oxygen intake, aggravation of asthmatic symptoms, and an increased risk of cardio-pulmonary disease. When acidic pollutants and particulates are also present, SO_2 tends to have an even more toxic effect. Sulfate particles are usually acidic and contribute to acid rain. There are currently no adopted NAAQS for sulfates.



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Hydrogen Sulfide (H₂S)

H₂S is associated with geothermal activity, oil and gas production, refining, sewage treatment plants, and confined animal feeding operations. H₂S in the atmosphere would likely oxidize into SO₂ that can cause acid rain. At low concentrations, H₂S, which has a characteristic “rotten egg” smell, may cause irritation to the eyes, mucous membranes, and respiratory system, dizziness, and headaches. At high concentrations, H₂S is extremely hazardous, especially in enclosed spaces. There are currently no adopted NAAQS for H₂S.

Vinyl Chloride

Vinyl chloride is a sweet-smelling colorless gas at ambient temperature. Landfills, publicly owned treatment works, and polyvinyl chloride (PVC) production are the major identified sources of vinyl chloride emissions in California. PVC can be fabricated into several products, such as PVC pipes, pipe fittings, and plastics. In humans, epidemiological studies of occupationally exposed workers have linked vinyl chloride exposure to development of liver angiosarcoma, which is a rare cancer, and have suggested a relationship between exposure cancers of the lung and brain. There are currently no adopted NAAQS for vinyl chloride.

Visibility Reducing Particles

Visibility reducing particles consist of suspended particulate matter, which is a complex mixture of tiny particles that consists of dry solid fragments, solid cores with liquid coatings, and small droplets of liquid. Except for Lake County, which is designated to be in attainment, California’s attainment status with respect to visibility reducing particles is currently designated as unclassified. There are currently no adopted NAAQS for visibility reducing particles.

2.1.3 ATTAINMENT STATUS

The USEPA and CARB designate air basins where ambient air quality standards are exceeded as “non-attainment” areas. If standards are met, the area is designated as an “attainment” area. If there is inadequate or inconclusive data to make a definitive attainment designation, they are considered “unclassified.” National non-attainment areas are further designated as marginal, moderate, serious, severe, or extreme as a function of deviation from standards. Attainment status is based on the National Ambient Air Quality Standards (NAAQS) and the California Ambient Air Quality Standards (CAAQS). Each standard has a different definition, or “form” of what constitutes attainment, based on specific air quality statistics. For example, the federal 8-hour CO standard is not to be exceeded more than once per year; therefore, an area is in attainment of the CO standard if no more than one 8-hour ambient air monitoring value exceeds the threshold per year. In contrast, the federal annual standard for PM_{2.5} is met if the 3-year average of the annual average PM_{2.5} concentration is less than or equal to the standard.

The Clean Air Act (CAA) identifies two types of NAAQS. Primary standards provide public health protection, including protecting the health of sensitive populations such as asthmatics, children, and the elderly. Secondary standards provide public welfare protection, including protection against decreased visibility and damage to animals, crops, vegetation, and buildings (USEPA 2022a). The CAAQS are equal



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to or more stringent than the NAAQS and include pollutants for which national standards do not exist. Table 1 presents the applicable NAAQS and CAAQS for the Project area.

Table 1. California and National Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards Concentration	National Standards Primary	National Standards Secondary
Ozone	1 hour	0.09 ppm (180 µg/m³)	—	—
	8 hours	0.070 ppm (137 µg/m³)	0.070 ppm (137 µg/m³)	0.070 ppm (137 µg/m³)
Respirable particulate matter	24 hours	50 µg/m³	150 µg/m³	150 µg/m³
	Annual arithmetic mean	20 µg/m³	—	—
Fine particulate matter ²	24 hours	—	35 µg/m³	35 µg/m³
	Annual arithmetic mean	12 µg/m³	9 µg/m³	15 µg/m³
Carbon monoxide	1 hour	20 ppm (23 mg/m³)	35 ppm (40 mg/m³)	—
	8 hours	9.0 ppm (10 mg/m³)	9 ppm (10 mg/m³)	—
	8 hours (Lake Tahoe)	6 ppm (7 mg/m³)	—	—
Nitrogen dioxide	1 hour	0.18 ppm (339 µg/m³)	100 ppb (188 µg/m³)	—
	Annual arithmetic mean	0.030 ppm (57 µg/m³)	0.053 ppm (100 µg/m³)	0.053 ppm (100 µg/m³)
Sulfur dioxide	1 hour	0.25 ppm (655 µg/m³)	75 ppb (196 µg/m³)	—
	3 hours	—	—	0.5 ppm (1,300 µg/m³)
	24 hours	0.04 ppm (105 µg/m³)	0.14 ppm (for certain areas)	—
	Annual arithmetic mean	—	0.030 ppm (for certain areas)	—
Lead	30-day average	1.5 µg/m³	—	—
	Calendar quarter	—	1.5 µg/m³	1.5 µg/m³
	Rolling 3-month average	—	0.15 µg/m³	0.15 µg/m³
Visibility reducing particles	8 hours	See Footnote ¹	—	—
Sulfates	24 hours	25 µg/m³	—	—
Hydrogen sulfide	1 hour	0.03 ppm (42 µg/m³)	—	—
Vinyl chloride	24 hours	0.01 ppm (26 µg/m³)	—	—

Source: California Air Resources Board. 2016. Ambient Air Quality Standards.

Note:

¹ In 1989, the CARB converted both the general statewide 10-mile visibility standard and the Lake Tahoe 30-mile visibility standard to instrumental equivalents, which are “extinction of 0.23 per kilometer” and “extinction of 0.07 per kilometer” for the statewide and Lake Tahoe Air Basin standards, respectively.

² On February 7, 2024, the USEPA issued a pre-publication version of the Final Rule to lower the primary annual NAAQS for PM_{2.5} from 12.0 µg/m³ to 9.0 µg/m³ (USEPA 2024a).

Key:

µg/m³ = micrograms per liter
ppb = parts per billion

mg/m³ = milligrams per cubic meter
ppm = parts per million



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The current attainment designations for the SJVAB are shown in Table 2. The SJVAB is designated as non-attainment for federal and state O₃ and PM_{2.5} and state PM₁₀.

Table 2. San Joaquin Valley Air Basin Attainment Status

Pollutant	Designation/Classification of Federal Standards ¹	Designation/Classification of State Standards ²
Ozone – One hour	No Federal Standard ³	Non-attainment/Severe
Ozone – Eight Hour	Non-attainment/Extreme ⁴	Non-attainment
PM ₁₀	Attainment ⁵	Non-attainment
PM _{2.5}	Nonattainment ⁶	Non-attainment
Carbon Monoxide	Attainment/Unclassified	Attainment/Unclassified
Nitrogen Dioxide	Attainment/Unclassified	Attainment
Sulfur Dioxide	Attainment/Unclassified	Attainment
Lead	No Designation/Classification	Attainment
Hydrogen Sulfide	No Federal Standard	Unclassified
Sulfates	No Federal Standard	Attainment
Visibility Reducing Particles	No Federal Standard	Unclassified
Vinyl Chloride	No Federal Standard	Attainment

Source: San Joaquin Valley Air Pollution Control District. 2022. *Ambient Air Quality Standards & Valley Attainment Status*.

Notes:

¹ See 40 Code of Federal Regulations Part 81

² See California Code of Regulations Title 17 Sections 60200-60210

³ Effective June 15, 2005, the USEPA revoked the federal 1-hour ozone standard, including associated designations and classifications. USEPA had previously classified the SJVAB as extreme non-attainment for this standard. USEPA approved the 2004 Extreme Ozone Attainment Demonstration Plan on March 8, 2010 (effective April 7, 2010). Many applicable requirements for extreme 1-hour ozone non-attainment areas continue to apply to the SJVAB.

⁴ Though the valley was initially classified as serious non-attainment for the 1997 8-hour ozone standard, USEPA approved valley reclassification to extreme non-attainment in the Federal Register on May 5, 2010 (effective June 4, 2010).

⁵ On September 25, 2008, USEPA redesignated the San Joaquin Valley to attainment for the PM₁₀ NAAQS and approved the PM₁₀ Maintenance Plan.

⁶ The valley is designated non-attainment for the 1997 PM_{2.5} NAAQS. USEPA designated the valley as non-attainment for the 2006 PM_{2.5} NAAQS on November 13, 2009 (effective December 14, 2009).

2.1.4 AMBIENT AIR QUALITY

SJVAPCD operates a regional monitoring network that measures the ambient concentrations of criteria pollutants. Local air quality can be evaluated by reviewing relevant air pollution concentrations near the Project. Table 3 summarizes published monitoring data from the Merced-S. Coffee Avenue Monitoring Station at 385 S. Coffee Avenue in Merced, California, for the years 2020 to 2022 from CARB's Air Quality Data Statistics (CARB 2023c). The Merced-S. Coffee Avenue Monitoring Station monitors ambient O₃, PM_{2.5}, and NO_x. The Merced-2334 M Street Monitoring Station was used to present the ambient concentration of PM₁₀. Other monitoring stations in Merced County do not measure CO or SO₂; therefore, CO and SO₂ ambient concentrations are not included in the table.



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Table 3. Merced-S. Coffee Monitoring Station Air Quality Data

Air Pollutant	Averaging Time	Item	2020	2021	2022
Ozone	1 Hour	Max 1 hour (ppm)	0.100	0.099	0.096
		Days above state standard (0.09 ppm)	2	2	2
	8 Hour	Max 8 hour (ppm)	0.087	0.089	0.083
		Days above state standard (0.070 ppm)	21	24	10
		Days above national standard (0.070 ppm)	20	21	9
		Days above national standard (0.075 ppm)	5	7	2
PM ₁₀	24-Hour	Max 24 hours (ug/m ³)	210.7	86.9	46.4
		Measured days above national standard	5.8	*	*
		Annual average	41.6	32.2	19.0
PM _{2.5}	24-Hour	Max 24 hours (ug/m ³)	117.4	77.3	39.6
		Measured days above 24-hour standard	23	13	1
		Annual average	14.6	11.2	9.7
Nitrogen Dioxide	1-Hour	Max 1 hour (ppb)	38.5	38.2	39.1
		Annual average	6	*	7
		Days above state standard (180 ppb)	0	0	0
		Days above national standard (100 ppb)	0	0	0

Source: California Air Resources Board. 2023c. iADAM: Air Quality Data Statistics.

Notes: The data presented for PM₁₀ was taken from the Merced-2334 M Street Monitoring Station, which is the closest monitoring station to the Project site that measures PM₁₀.

* = insufficient data available to determine the value

Key:

ug/m³ = micrograms per liter

PM_{2.5} = particulate matter less than 2.5 microns in aerodynamic diameter

PM₁₀ = particulate matter between 2.5 and 10 microns in aerodynamic diameter

ppb = parts per billion

ppm = parts per million

2.1.5 ODORS

Typically, odors are regarded as an annoyance rather than a health hazard. However, manifestations of a person's reaction to foul odors can range from the psychological (i.e., irritation, anger, or anxiety) to the physiological (i.e., circulatory and respiratory effects, nausea, vomiting, and headache).

The ability to detect odors varies considerably among the population and is subjective. Some individuals can smell very minute quantities of specific substances; others have varying sensitivities to odors; and people may have different reactions to the same odor (e.g., bakery, gasoline). It is important to note that an unfamiliar odor is more easily detected and is more likely to cause complaints than a familiar one. This is because of the phenomenon known as odor fatigue, in which a person can become desensitized to almost any odor and recognition only occurs with an alteration in the intensity.



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Quality and intensity are two properties present in any odor. The quality of an odor indicates the nature of the smell experience; e.g., a description of flowery or sweet. Intensity refers to the strength of the odor and depends on the odorant concentration in the air. When an odorous sample is progressively diluted, the odorant concentration decreases, the odor intensity weakens, and it eventually becomes so low that the detection or recognition of the odor is quite difficult. At some point during dilution, the concentration of the odorant drops below a human's detection threshold.

Neither the state nor the federal governments have adopted rules or regulations for the control of odor sources. The SJVAPCD does not have an individual rule or regulation that specifically addresses odors; however, odors would be subject to SJVAPCD Rule 4102, Nuisance. Any actions related to odors would be based on citizen complaints to the County or SJVAPCD.

2.1.6 TOXIC AIR CONTAMINANTS

Toxic Air Contaminants (TACs) are air pollutants that may cause or contribute to an increase in mortality or serious illness, or which may pose a hazard to human health. TACs are usually present in minute quantities in the ambient air; but due to their high toxicity, they may pose a threat to public health even at very low concentrations. Because there is no threshold level below which adverse health impacts are not expected to occur, TACs differ from criteria pollutants for which acceptable levels of exposure can be determined and for which state and federal governments have set ambient air quality standards. TACs, therefore, are not considered "criteria pollutants" under either the federal Clean Air Act (CAA) or the California Clean Air Act (CCAA) and are not subject to NAAQS or CAAQS ambient air quality standards. Instead, USEPA and CARB regulate hazardous air pollutants (HAPs) and TACs, respectively, through statutes and regulations that generally require the use of the maximum or best available control technology to limit emissions. In conjunction with SJVAPCD rules, these federal and state statutes and regulations establish the regulatory framework for TACs. At the national level, USEPA has established national emission standards for hazardous air pollutants (NESHAP) in accordance with the requirements of the federal CAA and subsequent amendments. These are technology-based, source-specific regulations that limit allowable emissions of HAPs.

Within California, TACs are regulated primarily through the Tanner Air Toxics Act (Assembly Bill [AB] 1807) and the Air Toxics Hot Spots Information and Assessment Act of 1987 (AB 2588). AB 1807 sets forth a formal procedure for CARB to designate substances as TACs. The following provides a summary of the primary TACs of concern within the state of California and related health effects.

Diesel Particulate Matter

Diesel particulate matter (DPM) was identified as a TAC by the CARB in August 1998. DPM is emitted from both mobile and stationary sources. In California, on-road diesel-fueled vehicles contribute approximately 42 percent of the statewide total, with an additional 55 percent attributed to other mobile sources such as construction and mining equipment, agricultural equipment, and transport refrigeration units. Stationary sources, contributing about three percent of emissions, include shipyards, warehouses, heavy equipment repair yards, and oil and gas production operations. Emissions from these sources are from diesel-fueled internal combustion engines. Stationary sources that report DPM emissions also



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include heavy construction, manufacturers of asphalt paving materials and blocks, and diesel-fueled electrical generation facilities (CARB 2022a).

In October 2000, CARB issued a report entitled *Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles*, which is commonly referred to as the Diesel Risk Reduction Plan (DRRP). The DRRP provides a mechanism for combating the DPM problem. The goal of the DRRP is to reduce concentrations of DPM. The key elements of the DRRP are to clean up existing engines through engine retrofit emission control devices, to adopt stringent standards for new diesel engines, and to lower the sulfur content of diesel fuel through advanced technology emission control devices on diesel engines. When fully implemented, the DRRP will significantly reduce emissions from both old and new diesel-fueled motor vehicles and from stationary sources that burn diesel fuel. In addition to these strategies, CARB continues to promote the use of alternative fuels and electrification. As a result of these actions, DPM concentrations and associated health risks in future years are projected to decline (CARB 2022a). In comparison to year 2010 inventory of statewide DPM emissions, CARB estimates that emissions of DPM in 2035 will be reduced by more than 50 percent.

DPM is typically composed of carbon particles (also called “soot” or “black carbon”) and numerous organic compounds, including over 40 known cancer-causing organic substances. Examples of these chemicals include polycyclic aromatic hydrocarbons, benzene, formaldehyde, acetaldehyde, acrolein, and 1,3-butadiene. Diesel exhaust also contains gaseous pollutants, including volatile organic compounds and NO_x. NO_x emissions from diesel engines are important because they can undergo chemical reactions in the atmosphere leading to formation of PM_{2.5} and O₃.

In California, diesel exhaust particles have been identified as a carcinogen accounting for an estimated 70 percent of the total known cancer risks in California. DPM is estimated to increase statewide cancer risk by 520 cancer occurrences per million residents exposed over an estimated 70-year lifetime. Non-cancer health effects associated with exposure to DPM include premature death, exacerbated chronic heart and lung disease, including asthma, and decreased lung function in children. Short-term exposure to diesel exhaust can also have immediate health effects. Diesel exhaust can irritate the eyes, nose, throat and lungs, and it can cause coughs, headaches, lightheadedness, and nausea. In studies with human volunteers, diesel exhaust particles made people with allergies more susceptible to the materials to which they are allergic, such as dust and pollen. Exposure to diesel exhaust also causes inflammation in the lungs, which may aggravate chronic respiratory symptoms and increase the frequency or intensity of asthma attacks (CARB 2022a).

Individuals most vulnerable to non-cancer health effects of DPM are children whose lungs are still developing and the elderly who often have chronic health problems. The elderly and people with emphysema, asthma, and chronic heart and lung disease are especially sensitive to DPM (CARB 2022a). In addition to its health effects, DPM significantly contributes to haze and reduced visibility.

Asbestos

Asbestos is the name given to a number of naturally occurring fibrous silicate minerals with useful properties such as thermal insulation, chemical and thermal stability, and high tensile strength. The three most common types of asbestos are chrysotile, amosite, and crocidolite. Chrysotile, also known as white



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asbestos, is the most common type of asbestos found in buildings. Chrysotile makes up approximately 90 to 95 percent of all asbestos contained in buildings in the United States. Exposure to asbestos fibers may result in health issues such as lung cancer, mesothelioma (a rare cancer of the thin membranes lining the lungs, chest, and abdominal cavity), and asbestosis (a non-cancerous lung disease that causes scarring of the lungs). Exposure to asbestos can occur during demolition or remodeling of buildings constructed prior to 1977 when it was banned for use in buildings. Exposure to naturally occurring asbestos can occur during soil disturbing activities in areas with deposits present.

2.1.7 SENSITIVE RECEPTORS

Some land uses are considered more sensitive to air pollution than others due to the types of population groups or activities involved. Sensitive population groups include children, the elderly, the acutely ill, and the chronically ill, especially those with cardiovascular diseases. Examples of sensitive receptors include hospitals, residences, convalescent facilities, and schools. The nearest sensitive receptor locations include the residential property at 25001 Poleline Road, about 3,750 feet northwest of the Project site, and at 24477 S. Woo Road, approximately 4,330 feet north of the Project site.

2.1.8 VALLEY FEVER

Valley Fever is an infection caused by a fungus that lives in the soil. About 10,000 U.S. cases are reported each year, mostly from Arizona and California. Valley fever can be misdiagnosed because its symptoms are like those of other illnesses.

The fungus that causes Valley fever, *Coccidioides*, grows naturally and is found in the southwestern United States, parts of Mexico and Central America, and parts of South America. The fungus is endemic in many areas within the SJVAB. People can get this infection by breathing in fungal spores from the air, especially when the wind blows or when dirt with the fungal spores is moved by human activity. About 40 percent of the people who come into contact with the fungal spores will develop symptoms that may require medical treatment and the symptoms will not go away on their own. Some people may develop a more severe infection, especially those with compromised immune systems (CDC 2020).

2.2 Regulatory Setting

The agencies with regulatory authority over air emissions in the County are the USEPA, the CARB, and the SJVAPCD. The USEPA has established federal air quality standards for which CARB and SJVAPCD have primary implementation responsibility. CARB and SJVAPCD are also responsible for seeing that state air quality standards are met within the region.

2.2.1 FEDERAL

U. S. Environmental Protection Agency

At the federal level, the USEPA has been charged with implementing national air quality programs. The USEPA's air quality mandates are drawn primarily from the CAA, which was signed into law in 1970. Congress substantially amended the CAA in 1977 and again in 1990.



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Clean Air Act

The CAA required USEPA to establish NAAQS and set deadlines for their attainment. Two types of NAAQS have been established: primary standards, which protect public health, and secondary standards, which protect public welfare from non-health-related adverse effects, such as visibility restrictions. NAAQS are summarized in Table 1.

National Emission Standards for Hazardous Air Pollutants

Pursuant to the CAA of 1970, USEPA established NESHAP. These are technology-based source-specific regulations that limit allowable emissions of HAPs. Among these sources include asbestos-containing building materials (ACBM). NESHAPs include requirements pertaining to the inspection, notification, handling, and disposal of ACBMs associated with the demolition and renovation of structures.

Non-Road Diesel Rule

The USEPA has established a series of increasingly strict emissions standards for new off-road diesel equipment, on-road diesel trucks, and locomotives. Any new construction equipment used for the Project, including heavy-duty trucks and off-road construction equipment, would be required to comply with the emissions standards.

2.2.2 STATE

California Air Resources Board

CARB is the agency responsible for coordination and oversight of state and local air pollution control programs in California and for implementing the CCAA of 1988. Other CARB duties include monitoring air quality in conjunction with air monitoring networks maintained by air pollution control districts and air quality management districts, establishing CAAQS, which in many cases are more stringent than the NAAQS, and setting emissions standards for new motor vehicles. The emission standards established for motor vehicles differ depending on various factors including the model year, and the type of vehicle, fuel and engine used. The CAAQS are set to be protective of human health and are summarized in Table 1. These standards apply to the same criteria pollutants as the federal CAA and also include sulfates, visibility reducing particulates, hydrogen sulfide, and vinyl chloride. There are currently no NAAQS for these latter pollutants.

California Clean Air Act

The CCAA requires that all air districts in the state endeavor to achieve and maintain CAAQS for O₃, CO, SO₂, and NO₂ by the earliest practical date. The CCAA specifies that districts focus attention on reducing the emissions from transportation and area wide emission sources, and the act provides districts with authority to regulate indirect sources. Each district plan is required to either (1) achieve a five percent annual reduction, averaged over consecutive 3-year periods, in district-wide emissions of each non-attainment pollutant or its precursors, or (2) to provide for implementation of all feasible measures to



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reduce emissions. Any planning effort for air quality attainment would thus need to consider both state and federal planning requirements.

Assembly Bills 1807 and 2588 – Toxic Air Contaminants

Within California, TACs are regulated primarily through AB 1807 (Tanner Air Toxics Act) and AB 2588 (Air Toxics Hot Spots Information and Assessment Act of 1987). AB 1807 sets forth a formal procedure for CARB to designate substances as TACs. This includes research, public participation, and scientific peer review before CARB designates a substance as a TAC.

Existing sources of TACs that are subject to the Air Toxics Hot Spots Information and Assessment Act are required to: (1) prepare a toxic emissions inventory; (2) prepare a risk assessment if emissions are significant; (3) notify the public of significant risk levels; and (4) prepare and implement risk reduction measures.

Assembly Bill 617– Nonvehicular Air Pollution

In response to AB 617 (Nonvehicular Air Pollution), CARB established the Community Air Protection Program. The Community Air Protection Program includes community air monitoring, and the community emissions reduction program's focus is to reduce exposure in communities most impacted by air pollution. The California Legislature has appropriated funding to support early actions to address localized air pollution through targeted incentive funding to deploy cleaner technologies in these communities and grants to support community participation in the AB 617 process. AB 617 also includes new requirements for accelerated retrofit of pollution controls on industrial sources, increased penalty fees, and greater transparency and availability of air quality and emissions data, which will help advance air pollution control efforts throughout the state.

Regulatory Attainment Designations

Under the CCAA, CARB is required to designate areas of the state as attainment, non-attainment, or unclassified with respect to applicable standards. An "attainment" designation for an area signifies that pollutant concentrations did not violate the applicable standard in that area. A "non-attainment" designation indicates that a pollutant concentration violated the applicable standard at least once, excluding those occasions when a violation was caused by an exceptional event, as defined in the criteria. Depending on the frequency and severity of pollutants exceeding applicable standards, the non-attainment designation can be further classified as serious non-attainment, severe non-attainment, or extreme non-attainment, with extreme non-attainment being the most severe of the classifications. An "unclassified" designation signifies that the data does not support either an attainment or non-attainment designation. The CCAA divides districts into moderate, serious, and severe air pollution categories, with increasingly stringent control requirements mandated for each category.

USEPA designates areas for O₃, CO, and NO₂ as "does not meet the primary standards," "cannot be classified," or "better than national standards." For SO₂, areas are designated as "does not meet the primary standards," "does not meet the secondary standards," "cannot be classified," or "better than national standards." However, CARB terminology of attainment, non-attainment, and unclassified is more



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frequently used. The USEPA uses the same sub-categories for non-attainment status: serious, severe, and extreme. In 1991, USEPA assigned new non-attainment designations to areas that had previously been classified as Group I, II, or III for PM₁₀ based on the likelihood that they would violate national PM₁₀ standards. All other areas are designated as unclassified. State attainment status is identified in Table 2.

Low-Emission Vehicle Program and Zero-Emission Vehicle Program

CARB first adopted Low-Emission Vehicle (LEV) program standards in 1990. The first LEV program standards ran from 1994 through 2003. LEV II regulations, running from 2004 through 2010, represented continuing progress in emission reductions. As the state's passenger vehicle fleet continues to grow and more sport utility vehicles and pickup trucks are used as passenger cars rather than work vehicles, the more stringent LEV II standards were adopted to provide reductions necessary for California to meet federally mandated clean air goals outlined in the 1994 State Implementation Plan (SIP). In 2012, CARB adopted the LEV III amendments to California's LEV regulations. These amendments include more stringent emission standards for both criteria pollutants and greenhouse gases for new passenger vehicles.

The Advanced Clean Cars II (ACC II) regulation builds on the Advanced Clean Cars (ACC) rule adopted in 2012. ACC II decreases emissions by increasing electric vehicle (EV) sales via two programs. First, the Zero-Emission Vehicle (ZEV) program requires ZEVs, defined as battery-electric vehicles (BEVs) or fuel-cell-electric vehicles (FCEVs), to comprise an increasing portion of annual vehicle sales. Under the ZEV program, original equipment manufacturers must increase sales of ZEV vehicles from 35 percent in 2026 to 100 percent in 2035. Second, ACC II further strengthened the LEV program discussed above, with more stringent emission standards beginning with model year 2025.

On-Road Heavy-Duty Vehicle Program

CARB has adopted standards for emissions from various types of new on-road heavy-duty vehicles. Section 1956.8, Title 13, California Code of Regulations contains California's emission standards for on-road heavy-duty engines and vehicles, and test procedures (CARB 2024a). CARB has also adopted programs to reduce emissions from in-use heavy-duty vehicles including the Heavy-Duty Diesel Vehicle Idling Reduction Program, the Heavy-Duty Diesel In-Use Compliance Program, the Public Bus Fleet Rule and Engine Standards, and the School Bus Program and others.

In addition, the CARB's Truck and Bus regulation was established to meet federal attainment standards. This regulation requires heavy-duty diesel vehicles that operate in California to reduce TAC emissions from their exhaust. Diesel exhaust is responsible for 70 percent of the cancer risk from airborne toxics. Therefore, as of January 1, 2023, nearly all trucks and buses are required to have 2010 or newer model year engines to reduce PM and NOx emissions. To help ensure that the benefits of this regulation are achieved, starting in 2020, only vehicles compliant with this regulation were registered by the California Department of Motor Vehicles (CARB 2024b).



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Advanced Clean Truck Act

To reduce emissions, the Advanced Clean Truck Act (ACT) requires original equipment manufacturers of medium- and heavy-duty vehicles to sell ZEVs or near-zero-emissions vehicles (NZEVs), such as plug-in electric hybrids, at an increasing percentage of their annual sales from 2024 to 2035. A ZEV is a vehicle that produces zero tail-pipe emissions, including BEVs and hydrogen fuel cell vehicles. A NZEV is a vehicle with an internal combustion engine and an electric energy storage system, including plug-in hybrid vehicles and hydrogen internal combustion engine vehicles. The ACT includes a cap-and-trade system, capping the number of fossil fuel vehicles sold by stipulating annual sales percentage requirements. Manufacturers can comply with the ACT by generating compliance credits through the sale of ZEVs or NZEVs or through the trading of compliance credits.

California State Implementation Plan

The CAA (and its subsequent amendments) requires each state to prepare an air quality control plan referred to as the SIP. The SIP is a living document that is periodically modified to reflect the latest emissions inventories, plans, and rules and regulations of air basins as reported by the agencies with jurisdiction over them. The CAA Amendments dictate that states containing areas violating the NAAQS revise their SIPs to include extra control measures to reduce air pollution. The SIP includes strategies and control measures to attain the NAAQS by deadlines established by the CAA. The USEPA has the responsibility to review all SIPs to determine if they conform to the requirements of the CAA. State law makes CARB the lead agency for all purposes related to the SIP. Local air districts and other agencies prepare SIP elements and submit them to CARB for review and approval. CARB then forwards SIP revisions to the USEPA for approval and publication in the Federal Register.

California Renewables Portfolio Standard Program

Established in 2002 under SB 1078 and accelerated by SB 107 (2006) and SB 2 (2011), California's Renewable Portfolio Standard (RPS) required investor-owned utilities, energy service providers, and community choice aggregators to procure 33 percent of their electricity from renewable energy sources by 2020. In 2015, SB 350 further increased the RPS to 50 percent by 2030. The legislation also included interim targets of 40 percent by 2024 and 45 percent by 2027. The California Public Utilities Commission (CPUC) and the California Energy Commission (CEC) are jointly responsible for implementing the program. PG&E is on track to meeting these obligations, and currently delivers 93 percent greenhouse gas emissions free clean energy with the plan to be net zero by 2040 and climate positive (carbon negative) by 2050. SB 100, signed into law in September 2018, requires California utilities to increase the percentages of renewable energy sold to retail customers. The new targets are for 50 percent renewable resources by December 31, 2026, 60 percent by December 31, 2030, and 100 percent from eligible renewable energy resources and zero-carbon resources by 2045.



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2.2.3 REGIONAL

San Joaquin Valley Air Pollution Control District (SJVAPCD)

SJVAPCD is the agency primarily responsible for helping ensure that NAAQS and CAAQS are not exceeded and that air quality conditions are maintained in the SJVAB, within which the Project is located. Responsibilities of the SJVAPCD include, but are not limited to, preparing plans for the attainment of ambient air quality standards, adopting and enforcing rules and regulations concerning sources of air pollution, issuing permits for stationary sources of air pollution, inspecting stationary sources of air pollution and responding to citizen complaints, monitoring ambient air quality and meteorological conditions, and implementing programs and regulations required by the CAA and the CCAA.

Current Air Quality Plans

The SJVAPCD is responsible for formulating and implementing the Air Quality Management Plan (AQMP) for the SJVAB. The main purpose of an AQMP is to bring the area into compliance with federal and state air quality standards. The SJVAPCD does not have one single AQMP for criteria pollutants; rather, the SJVAPCD addresses each criteria pollutant with its own Plan. The SJVAPCD has the following AQMPs:

- 2004 Revision to the California State Implementation Plan for Carbon Monoxide
- 2007 PM₁₀ Maintenance Plan
- 2013 Plan for the Revoked 1-Hour Ozone Standard
- 2018 Plan for the 1997, 2006, and 2012 PM_{2.5} Standards
- 2022 Plan for the 2015 8-Hour Ozone Standard
- 2023 Maintenance Plan and Redesignation Request for the Revoked 1-Hour Ozone Standard

The SJVAPCD's AQMPs incorporate the latest scientific and technological information and planning assumptions, including updated emission inventory methodologies for various source categories. The SJVAPCD's AQMPs included the integrated strategies and measures needed to meet the NAAQS, implementation of new technology measures, and demonstrations of attainment of the 1-hour and 8-hour ozone NAAQS as well as the latest 24-hour and annual PM_{2.5} standards.

The SJVAPCD's current air quality plans are discussed below.

Carbon Monoxide Plans. CARB approved the 2004 Revision to the California State Implementation Plan for Carbon Monoxide on July 22, 2004 to demonstrate how ten areas of the state, including SJVAB, would maintain CO standards.

Ozone Plans. The SJVAPCD adopted the 2022 Plan for the 2015 8-Hour Ozone standard in December 2022 to meet CAA requirements and ensure attainment of the USEPA's 8-hour ozone threshold of 70 ppb. In June 2023, SJVAPCD adopted the 2023 Maintenance Plan and Redesignation Request for the Revoked 1-Hour Ozone Standard to request redesignation of the SJVAB to attainment for the 1-hour federal ozone standard and demonstrate a maintenance plan to ensure attainment through 2036.

SJVAPCD's Governing Board approved the 2016 Plan for the 2008 8-Hour Ozone Standard on June 16, 2016. The comprehensive strategy in this plan will reduce NO_x emissions by over 60 percent between



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2012 and 2031 and will bring the San Joaquin Valley into attainment of USEPA's 2008 8-hour O₃ standard as expeditiously as practicable, no later than December 31, 2031.

Particulate Matter Plans. The USEPA designated the SJVAB as an attainment/maintenance area for PM₁₀ and non-attainment for PM_{2.5}. SJVAPCD adopted the 2007 PM₁₀ Maintenance Plan in September 2007 to help ensure SJVAB's continued attainment of the USEPA's PM₁₀ standard. The SJVAPCD's most recent PM_{2.5} attainment plan is the 2018 Plan for the 1997, 2006, and 2012 PM_{2.5} Standards. This plan was adopted in 2018 and addresses the USEPA federal 1997 annual PM_{2.5} standard of 15 µg/m³ and 24-hour PM_{2.5} standard of 65 µg/m³; the 2006 24-hour PM_{2.5} standard of 35 µg/m³; and the 2012 annual PM_{2.5} standard of 12 µg/m³. This plan demonstrates attainment of the federal PM_{2.5} standards as expeditiously as practicable.

SJVAPCD Rules and Regulations

SJVAPCD rules and regulations that may apply to projects that will occur during buildout of the Project include, but are not limited to, the following:

Rule 2010 – Permits Required. The purpose of this rule is to require any person constructing, altering, replacing or operating any source operation which emits, may emit, or may reduce emissions to obtain an Authority to Construct or a Permit to Operate. This rule also explains the posting requirements for a Permit to Operate and the illegality of a person willfully altering, defacing, forging, counterfeiting, or falsifying any Permit to Operate.

Rule 2201 – New and Modified Stationary Source Review Rule. The purpose of this rule is to provide for the following:

- The review of new and modified Stationary Sources of air pollution and to provide mechanisms including emission trade-offs by which Authorities to Construct such sources may be granted, without interfering with the attainment or maintenance of Ambient Air Quality Standards; and
- No net increase in emissions above specified thresholds from new and modified Stationary Sources of all non-attainment pollutants and their precursors.

Rule 2280 – Portable Equipment Registration. Portable equipment used at project sites for less than six consecutive months must be registered with the SJVAPCD. The SJVAPCD will issue the registrations 30 days after receipt of the application.

Rule 4002 – National Emission Standards for Hazardous Air Pollutants. This rule incorporates the National Emission Standards for Hazardous Air Pollutants from Part 61, Chapter I, Subchapter C, Title 40, Code of Federal Regulations (CFR) and the National Emission Standards for Hazardous Air Pollutants for Source Categories from Part 63, Chapter I, Subchapter C, Title 40, CFR.

Rule 4102 – Nuisance. The purpose of this rule is to protect the health and safety of the public and applies to any source operation that emits or may emit air contaminants or other materials.



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Rule 4601 – Architectural Coatings. The purpose of this rule is to limit ROG emissions (also called Volatile Organic Compounds [VOC] emissions) from architectural coatings. Emissions are reduced by limits on ROG content and providing requirements on coatings storage, cleanup, and labeling.

Rule 4623 – Storage of Organic Liquids. The purpose of this rule is to limit ROG emissions from the storage of organic liquids.

Rule 4624 – Transfer of Organic Liquids. The purpose of this rule is to limit ROG emissions from the transfer of organic liquids.

Rule 4641 – Cutback, Slow Cure, and Emulsified Asphalt, Paving and Maintenance Operations. The purpose of this rule is to limit ROG emissions from asphalt paving and maintenance operations. If asphalt paving will be used, then the paving operations will be subject to Rule 4641.

Rule 8011 – General Requirements. Fugitive Dust Emission Sources. Fugitive dust regulations are applicable to outdoor fugitive dust sources. Operations, including construction operations, must control fugitive dust emissions in accordance with SJVAPCD Regulation VIII. According to Rule 8011, the SJVAPCD requires the implementation of control measures for fugitive dust emission sources. For projects in which construction-related activities would disturb equal to or greater than 1 acre of surface area, the SJVAPCD recommends that demonstration of receipt of an SJVAPCD-approved Dust Control Plan or Construction Notification Form, before issuance of the first grading permit, be made a condition of approval.

Rule 9510 – New Source Review. Rule 9510 requires certain development projects to mitigate exhaust emissions from construction equipment greater than 50 horsepower to 20 percent below statewide average NO_x emissions and 45 percent below statewide average PM₁₀ exhaust emissions. This rule also requires applicants to reduce baseline emissions of NO_x and PM₁₀ emissions associated with operations by 33.3 percent and 50 percent, respectively, over a period of 10 years.

Regulation VIII – Fugitive PM₁₀ Prohibitions. Rules 8011-8081 are designed to reduce PM₁₀ emissions (e.g., dust or dirt) generated by human activity, including construction and demolition activities, road construction, bulk materials storage, paved and unpaved roads, carryout and track out, etc. All development projects that involve soil disturbance are subject to at least one provision of the Regulation VIII series of rules.

SJVAPCD California Environmental Quality Act (CEQA) Guidance and Thresholds

SJVAPCD also provides guidance and thresholds for CEQA air quality and GHG analyses. In particular, SJVAPCD's 2015 Guidance for Assessing and Mitigating Air Quality Impacts (GAMAQI) states the following:

The District's Air Quality Attainment Plans include measures to promote air quality elements in county and city general plans as one of the primary indirect source programs. The general plan is the primary long-range planning document used by cities and counties to direct development. Since air districts have no authority over land use decisions, it is up to cities and counties to ensure that their general plans help achieve air quality goals. Section 65302.1 of the California



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Government Code requires cities and counties in the San Joaquin Valley to amend appropriate elements of their general plans to include data, analysis, comprehensive goals, policies, and feasible implementation strategies to improve air quality in their next housing element revisions.

The Air Quality Guidelines for General Plans (AQGGP), adopted by the District in 1994 and amended in 2005, is a guidance document containing goals and policy examples that cities and counties may want to incorporate into their general plans to satisfy Section 65302.1. When adopted in a general plan and implemented, the suggestions in the AQGGP can reduce vehicle trips and miles traveled and improve air quality. The specific suggestions in the AQGGP are voluntary. The District strongly encourages cities and counties to use their land use and transportation planning authority to help achieve air quality goals by adopting the suggested policies and programs.

2.2.4 LOCAL

2030 Merced County General Plan

The 2030 Merced County General Plan (2030 General Plan) is a legal document that serves as Merced County's blueprint for all future land use, development, preservation, and resource conservation decisions. The 2030 General Plan covers Merced County's planning area, which encompasses both incorporated and unincorporated territory that may directly or indirectly affect the County's future development.

The 2030 General Plan contains the following goals and policies applicable to the Project (Merced County 2013):

Goal AQ-1. Reduce air pollutants and GHG emissions and anticipate adaptation due to future consequences of global and local climate change.

- Policy AQ-1.1: Energy Consumption Reduction. Encourage new residential, commercial, and industrial development to reduce air quality impacts from energy consumption.
- Policy AQ-1.5: Climate Action Plan. Prepare a Climate Action Plan that includes an inventory of 1990 and 2010 GHG emissions, determines project air quality impacts using analysis methods and significance thresholds recommended by the SJVAPCD, and identify strategies to achieve state emission reduction targets.
- Policy AQ-1.6: Air Quality Improvement. Support and implement programs to improve air quality throughout the County by reducing emissions related to vehicular travel and agricultural practices.
- Policy AQ-1.8: Climate Change Adaptation. Prepare appropriate strategies to adapt to climate change based on peer-reviewed scientific findings of the potential impacts.
- Policy AQ-1.10: Public Awareness. Increase public awareness about climate change and encourage county residents and businesses to become involved in activities and lifestyle changes that will aid in reduction of GHG emissions.



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Goal AQ-2. Mitigate significant local and regional air quality impacts of projects through the CEQA process.

- **Policy AQ-2.1: Air Quality Plan Compliance.** Require all development projects to comply with applicable regional air quality plans and policies.
- **Policy AQ-2.2: Development Review Process.** Use the development review process to achieve measurable reductions in criteria pollutant, TACs, and GHG emissions.
- **Policy AQ-2.3: Cumulative Impacts.** Encourage the reduction of cumulative air quality impacts produced by projects that are not significant by themselves but result in cumulatively significant impacts in combination with other development.
- **Policy AQ-2.4: Mitigation.** Require that local and regional air quality impacts identified during CEQA review for projects reviewed and approved by the County are consistently and fairly mitigated.
- **Policy AQ-2.5: Innovative Mitigation Measures.** Encourage innovative mitigation measures and project redesign to reduce air quality impacts by coordinating with the SJVAPCD project applicants, and other interested parties.
- **Policy AQ-2.6: County Decision-Making Process.** Require climate change planning and program implementation in the County decision-making process.
- **Policy AQ-2.7: Air District Best Performance Standards.** Require the County to use the Best Performance Standards adopted by the SJVAPCD during the development review and decision-making process to ensure new projects meet the targets set by the district.

Goal AQ-5. County residents are protected from toxic air pollutants and noxious odors from industrial, manufacturing, and processing facilities, and agricultural operations.

Goal AQ-6. Improve air quality in Merced County by reducing emissions of PM₁₀, PM_{2.5}, and other particulates from mobile and non-mobile sources.

- **Policy AQ-6.1: Particulate Emissions from Construction.** Support the SJVAPCD's efforts to reduce particulate emissions from construction, grading, excavation, and demolition to the maximum extent feasible and consistent with state and federal regulations.
- **Policy AQ-6.3: Paving Materials.** Require all access roads, driveways, and parking areas serving new commercial and industrial development to be constructed with materials that minimize particulate emissions and are appropriate to the scale and intensity of use.
- **Policy AQ-6.8. Voluntary Emissions Reduction Agreement.** Require all project applicants, where project emissions for any criteria pollutant have been evaluated to exceed SJVAPCD significance thresholds, to consult with the SJVAPCD regarding the establishment of a Voluntary Emissions Reduction Agreement between the applicant and the SJVAPCD. Support the SJVAPCD in its efforts to fund the Emissions Reduction Incentive Program.



3.0 Greenhouse Gas

3.1 Environmental Setting

To fully understand global climate change, it is important to recognize the naturally occurring “greenhouse effect” and to define the GHGs that contribute to this phenomenon. Various gases in the earth’s atmosphere, classified as atmospheric GHGs, play a critical role in determining the earth’s surface temperature. Solar radiation enters the earth’s atmosphere from space, and a portion of the radiation is absorbed by the earth’s surface. The earth emits this radiation back toward space, but the properties of the radiation change from high-frequency solar radiation to lower-frequency infrared radiation. GHGs, which are transparent to solar radiation, are effective in absorbing infrared radiation. As a result, this radiation that would have escaped back into space is now retained, resulting in a warming of the atmosphere. This phenomenon is known as the greenhouse effect.

3.1.1 GREENHOUSE GASES

Among the prominent GHGs contributing to the greenhouse effect are carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF₆). Primary GHGs attributed to global climate change, are discussed in the following subsections.

Carbon Dioxide

CO₂ is a colorless, odorless gas. CO₂ is emitted in a number of ways, both naturally and through human activities. The largest source of CO₂ emissions globally is the combustion of fossil fuels such as coal, oil, and gas in power plants, automobiles, industrial facilities, and other sources. A number of specialized industrial production processes and product uses such as mineral production, metal production, and the use of petroleum-based products can also lead to CO₂ emissions. The atmospheric lifetime of CO₂ is variable because it is so readily exchanged in the atmosphere (USEPA 2021).

Methane

CH₄ is a colorless and odorless gas. CH₄ is the major component of natural gas, about 87 percent by volume. It is also formed and released to the atmosphere by biological processes occurring in anaerobic environments. CH₄ is emitted from a variety of both human-related and natural sources. Human-related sources include fossil fuel production, animal husbandry (e.g., enteric fermentation in livestock and manure management), rice cultivation, biomass burning, and waste management. These activities release significant quantities of CH₄ to the atmosphere. Natural sources of CH₄ include wetlands, gas hydrates, permafrost, termites, oceans, freshwater bodies, non-wetland soils, and other sources such as wildfires. The atmospheric lifetime of CH₄ is about 12 years (USEPA 2021).

Nitrous Oxide

N₂O is a clear, colorless gas with a slightly sweet odor. N₂O is produced by both natural and human-related sources. Primary human-related sources of N₂O are agricultural soil management, animal manure



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management, sewage treatment, mobile and stationary combustion of fossil fuels, adipic acid production, and nitric acid production. N_2O is also produced naturally from a wide variety of biological sources in soil and water, particularly microbial action in wet tropical forests. The atmospheric lifetime of N_2O is approximately 120 years (USEPA 2021).

Hydrofluorocarbons

HFCs are manufactured chemicals, many of which have been developed as alternatives to ozone-depleting substances for industrial, commercial, and consumer products. The only significant emissions of HFCs before 1990 were of the chemical HFC-23, which is generated as a byproduct of the production of HCFC-22, or Freon 22, used in air conditioning applications. The atmospheric lifetime for HFCs varies from just over a year for HFC-152a to 260 years for HFC-23. Most of the commercially used HFCs have atmospheric lifetimes of less than 15 years (e.g., HFC-134a, which is used in automobile air conditioning and refrigeration, has an atmospheric life of 14 years) (USEPA 2021).

Perfluorocarbons

PFCs are colorless, highly dense, chemically inert, and nontoxic. There are seven PFC gases: perfluoromethane (CF_4), perfluoroethane (C_2F_6), perfluoropropane (C_3F_8), perfluorobutane (C_4F_{10}), perfluorocyclobutane (C_4F_8), perfluoropentane (C_5F_{12}), and perfluorohexane (C_6F_{14}). Natural geological emissions have been responsible for the PFCs that have accumulated in the atmosphere in the past; however, the largest current source is aluminum production, which releases CF_4 and C_2F_6 as byproducts. The estimated atmospheric lifetimes for CF_4 and C_2F_6 are 50,000 and 10,000 years, respectively (USEPA 2021).

Nitrogen Trifluoride

Nitrogen trifluoride (NF_3) is an inorganic, colorless, odorless, toxic, nonflammable gas used as an etchant in microelectronics. NF_3 is predominantly employed in the cleaning of the plasma-enhanced chemical vapor deposition chambers in the production of liquid crystal displays and silicon-based thin film solar cells. In 2009, NF_3 was listed by California as a potential GHG to be listed and regulated under AB 32, Section 38505 Health and Safety Code.

Sulfur Hexafluoride

SF_6 is an inorganic compound that is colorless, odorless, nontoxic, and generally nonflammable. SF_6 is primarily used as an electrical insulator in high voltage equipment. The electric power industry uses roughly 80 percent of all SF_6 produced worldwide. Leaks of SF_6 occur from aging equipment and during equipment maintenance and servicing. The use of SF_6 in electric power systems has decreased dramatically in recent years; for example, according to the USEPA, an old circuit breaker can contain up to 2,000 pounds of SF_6 while modern breakers usually contain less than 100 pounds. Best practices to reduce the potential for SF_6 leaks include training staff to handle SF_6 properly; implement leak detection and repair strategies; and decommissioning equipment appropriately. SF_6 has an atmospheric life of 3,200 years (USEPA 2022c).



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Black Carbon

Black carbon is the most strongly light-absorbing component of PM emitted from burning fuels such as coal, diesel, and biomass. Black carbon contributes to climate change both directly by absorbing sunlight and indirectly by depositing on snow and by interacting with clouds and affecting cloud formation. Black carbon is considered a short-lived species, which can vary spatially and, consequently, it is very difficult to quantify associated global warming potentials. The main sources of black carbon in California are wildfires, off-road vehicles (e.g., locomotives, marine vessels, tractors, excavators, dozers), on-road vehicles (e.g., cars, trucks, and buses), fireplaces, agricultural waste burning, and prescribed burning of forest or wildlands. California has been an international leader in reducing emissions of black carbon, including programs that target reducing PM from diesel engines and burning activities (CARB 2013).

3.1.2 GLOBAL WARMING POTENTIAL

Each GHG differs in its ability to absorb heat in the atmosphere based on the lifetime, or persistence, of the gas molecule in the atmosphere. Often, estimates of GHG emissions are presented in carbon dioxide equivalents (CO₂e), which weigh each gas by its global warming potential (GWP).

Expressing GHG emissions in carbon dioxide equivalents takes the contribution of all GHG emissions to the greenhouse effect and converts them to a single unit equivalent to the effect that would occur if only CO₂ were being emitted. Based on a 100-year time horizon, CH₄ traps over 25 times more heat per molecule than CO₂; and N₂O absorbs roughly 298 times more heat per molecule than CO₂. Additional GHGs with high GWP include NF₃, SF₆, PFCs, and black carbon.

3.1.3 SOURCES OF GREENHOUSE GAS EMISSIONS

On a global scale, GHG emissions are predominantly associated with activities related to energy production from fossil-fuel sources; changes in land use, such as deforestation and land clearing; industrial sources; agricultural activities; transportation; waste and wastewater generation; and commercial and residential land uses. Worldwide, energy production including the burning of coal, natural gas, and oil for electricity and heat is the largest single source of global GHG emissions.

United States of America

In 2021, net GHG emissions in the United States totaled 5,586 MMTCO₂e. Within the United States, the largest contributor to GHG emissions is the transportation sector (28 percent). The next largest contributors are from electricity production (25 percent) and industry (23 percent), followed by the commercial and residential sector (13 percent) and the agricultural sector (10 percent). Transportation emissions primarily come from burning fossil fuels for cars, trucks, ships, trains, and planes. Over 90 percent of the fuel used for transportation is petroleum-based, which includes primarily gasoline and diesel. The bulk of emissions generated from energy production come from burning fossil fuels, mostly coal and natural gas. Industry emissions are also primarily generated from fossil fuels burned for heat, the use of certain products that contain GHGs, and the handling of waste. Similar to industry sector emissions, commercial and residential uses arise primarily from fossil fuels for heat, the use of certain products that contain GHGs, and the handling of waste. Agricultural emissions come from livestock such



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as cows, agricultural soil, and rice production. The land use and forestry sector within the United States serves as a carbon sink. Carbon sinks absorb CO₂ from the atmosphere. Land areas across the United States absorbed approximately 12 percent of the 2020 GHG emissions (USEPA 2023).

California

In 2020, net GHG emissions within California totaled 369.2 MMTCO₂e. Similar to national emissions, in California, the transportation sector is the largest contributor. Transportation emissions account for approximately 38 percent of the total statewide GHG emissions. The majority of transportation emissions are derived from passenger vehicles and heavy-duty trucks. Emissions associated with industrial uses are the second largest contributor, totaling roughly 23 percent. Industrial emissions are driven by fuel combustion from sources that include refineries, oil and gas extraction, cement plants, and the portion of cogeneration emissions attribution to thermal energy output. Electricity generation (in-state and imports) totaled roughly 16 percent. Emissions from the electricity generation sector have declined over the years due to the increase in renewable generation that continues to replace fossil power (CARB 2023a).

3.1.4 EFFECTS OF GLOBAL CLIMATE CHANGE

There are uncertainties as to exactly what the climate changes will be in various areas of Earth. There are also uncertainties associated with the magnitude and timing of other consequences of a warmer planet, e.g., sea level rise, spread of certain diseases out of their usual geographic range, the effect on agricultural production, water supply, sustainability of ecosystems, increased strength and frequency of storms, extreme heat events, increased air pollution episodes, and the consequence of these effects on the economy.

Within California, climate changes would likely alter the ecological characteristics of many ecosystems throughout the state. Such alterations would likely include increases in surface temperatures and changes in the form, timing, and intensity of precipitation. For instance, historical records are depicting an increasing trend toward earlier snowmelt in the Sierra Nevada. This snowpack is a principal supply of water for the state, providing roughly 50 percent of the state's annual runoff. If this trend continues, some areas of the state may experience an increased danger of floods during the winter months and possible exhaustion of the snowpack during spring and summer months. An earlier snowmelt would also impact the state's energy resources. An early exhaustion of the Sierra snowpack may force electricity producers to switch to more costly or non-renewable forms of electricity generation during spring and summer months. A changing climate may also impact agricultural crop yields, coastal structures, and biodiversity. As a result, resultant changes in climate will likely have detrimental effects on some of California's largest industries, including agriculture, wine, tourism, skiing, recreational and commercial fishing, and forestry.

3.2 Regulatory Setting

There are considerable regulatory actions regarding GHGs and climate change at the federal, state, regional, and local level. The following includes the key regulations applicable to the Project.



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3.2.1 FEDERAL

Clean Air Act

As noted previously, the principal air quality regulatory mechanism at the federal level is the federal CAA and, in particular, the 1990 amendments to the CAA and the NAAQS that it establishes. The federal CAA does not specifically regulate GHG emissions; however, the U.S. Supreme Court has determined that GHGs are pollutants that can be regulated under the CAA. There are currently no federal regulations that set ambient air quality standards for GHGs.

The USEPA is responsible for implementing federal policy to address GHGs. The federal government administers a wide array of public-private partnerships to reduce the GHG intensity generated in the United States. These programs focus on energy efficiency, renewable energy, methane and other non-CO₂ gases, agricultural practices, and implementation of technologies to achieve GHG reductions. USEPA implements numerous voluntary programs that contribute to the reduction of GHG emissions. These programs (e.g., the ENERGY STAR® labeling system for energy-efficient products) play a significant role in encouraging voluntary reductions from large corporations, consumers, industrial and commercial buildings, and many major industrial sectors.

In 2009, the USEPA Administrator signed two distinct findings regarding GHGs under Section 202(a) of the federal CAA. USEPA adopted a Final Endangerment Finding for six defined GHGs (CO₂, CH₄, N₂O, HFCs, PFCs, and SF₆). The Endangerment Finding was required before USEPA could regulate GHG emissions under Section 202(a)(1) of the CAA. USEPA also adopted a Cause or Contribute Finding in which the USEPA Administrator found that GHG emissions from new motor vehicles and motor vehicle engines are contributing to air pollution, which is endangering public health and welfare. These findings do not themselves impose any requirements on industry or other entities. However, these actions were a prerequisite for implementing GHG emissions standards for vehicles.

Regulations for Greenhouse Gas Emissions from Vehicles

The National Highway Traffic Safety Administration (NHTSA) is responsible for establishing additional vehicle standards and for revising existing standards. NHTSA and the USEPA are taking coordinated steps to enable the production of clean energy vehicles with improved fuel efficiency. NHTSA sets the Corporate Average Fuel Economy (I) levels, which are rapidly increasing over the next several years to improve energy security and reduce fuel consumption. In March 2022, the NHTSA finalized I standards for model years 2024 to 2026. The standards require an industry-wide fleet average of approximately 49 miles per gallon for passenger cars and light trucks by model year 2026 (NHTSA 2022).

40 Code of Federal Regulations (CFR) Part 98. Mandatory Reporting of Greenhouse Gases Rule

This rule requires mandatory reporting of GHG emissions for facilities that emit more than 25,000 metric tons of carbon dioxide equivalent (MTCO_{2e}) emissions per year. Additionally, reporting of emissions is required for owners of SF₆- and PFC-insulated equipment, when the total nameplate capacity of these



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insulating gases is above 17,280 pounds. The Project would not be expected to trigger GHG reporting according to the rule; however, GHG emissions of the Project are quantified in this report.

40 CFR Part 52. Proposed Prevention of Significant Deterioration and Title V Greenhouse Gas Tailoring Rule

USEPA mandated to apply Prevention of Significant Deterioration (PSD) requirements to facilities whose stationary source CO₂e emissions exceed 75,000 tons per year. The Project would not be expected to trigger PSD permitting as required by this regulation; however, GHG emissions of the Project are quantified in this report.

Fuel Efficiency Standards for Construction Equipment

The federal government sets fuel efficiency standards for non-road diesel engines that are used in construction equipment. The regulations, contained in 40 Code of Federal Regulations (CFR) Parts 1039, 1065, and 1068, include multiple tiers of emission standards, with the highest tiers requiring the most efficient engine function. Most recently, the USEPA adopted a comprehensive national program to reduce emissions from non-road diesel engines by integrating engine and fuel controls as a system to gain the greatest reductions. To meet the Tier 4 emission standards, engine manufacturers will produce new engines with advanced control technologies (USEPA 2024b).

3.2.2 STATE

Executive Order S-3-05

Executive Order S-3-05 was established by Governor Arnold Schwarzenegger in June 2006; the order establishes statewide emission reduction targets through the year 2050, as follows:

- By 2010, reduce GHG emissions to 2000 levels.
- By 2020, reduce GHG emissions to 1990 levels.
- By 2050, reduce GHG emissions to 80 percent below 1990 levels.

The Order does not include any specific requirements that pertain to the Project; however, future actions taken by the state to implement these goals may affect the Project depending on the specific implementation measures that are developed. The 2050 reduction target has not been codified, and the California Supreme Court has ruled that CEQA lead agencies are not required to use it as a significance threshold.

Assembly Bill 32 and Senate Bill 32

AB 32 requires that GHGs emitted in California be reduced to 1990 levels by the year 2020. GHGs, as defined under AB 32, include CO₂, CH₄, N₂O, HFCs, PFCs, and SF₆. Since AB 32 was enacted, a seventh chemical, NF₃, has also been added to the list of GHGs. CARB is the state agency charged with monitoring and regulating sources of GHGs. AB 32 states the following:



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Global warming poses a serious threat to the economic well-being, public health, natural resources, and the environment of California. The potential adverse impacts of global warming include the exacerbation of air quality problems, a reduction in the quality and supply of water to the state from the Sierra snowpack, a rise in sea levels resulting in the displacement of thousands of coastal businesses and residences, damage to marine ecosystems and the natural environment, and an increase in the incidences of infectious diseases, asthma, and other human health-related problems.

CARB approved the 1990 GHG emissions level of 427 MMTCO₂e on December 6, 2007. Therefore, to meet the state's target, emissions generated in California in 2020 are required to be equal to or less than 427 MMTCO₂e. In order to set a framework for the state to meet this target, CARB was tasked with creating a Scoping Plan (as described below). California announced in July 2018 that the state emitted 427 MMTCO₂e in 2016 and achieved AB 32 goals (CARB 2018a).

Senate Bill (SB) 32 was signed into law on September 8, 2016. SB 32 states that "In adopting rules and regulations to achieve the maximum technologically feasible and cost-effective GHG emissions reductions authorized by this division, the state [air resources] board shall ensure that statewide GHG emissions are reduced to at least 40 percent below the statewide GHG emissions limit no later than December 31, 2030."

Cap-and-Trade Program

CARB administers the state's Cap-and-Trade Program, which covers GHG sources that emit more than 25,000 metric tons of carbon dioxide equivalent per year (MTCO₂e/year), such as refineries, power plants, and industrial facilities. This market-based approach to reducing GHG emissions provides economic incentives for achieving GHG emission reductions.

2022 Climate Change Scoping Plan

The 2022 Climate Change Scoping Plan (2022 Scoping Plan) was approved in December 2022 and assesses progress toward achieving the SB 32 2030 target and laying out a path to achieve carbon neutrality no later than 2045. The 2022 Scoping Plan focuses on outcomes needed to achieve carbon neutrality by assessing paths for clean technology, energy deployment, natural and working lands, and others, and is designed to meet the state's long-term climate objectives and support a range of economic, environmental, energy security, environmental justice, and public health priorities.

Assembly Bill 1279: The California Climate Crisis

On September 16, 2022, AB 1279, also known as the California Climate Crisis Act, codified the carbon neutrality goal established by EO B-55-18. AB 1279 establishes the policy of the state to achieve carbon neutrality as soon as possible, but no later than 2045, and maintain net negative GHG emissions thereafter. AB 1279 would also ensure that by 2045 the statewide anthropogenic GHG emissions are reduced by at least 85 percent below 1990 levels. The bill would require CARB to ensure that an updated Scoping Plan identifies and recommends measures to achieve carbon neutrality, and to identify and



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implement policies and strategies that enable CO₂ removal and carbon capture, utilization, and storage technologies to complement AB 1279's emissions reduction requirements.

Senate Bill 375: The Sustainable Communities and Climate Protection Act of 2008

SB 375 was signed into law on September 30, 2008. According to SB 375, the transportation sector is the largest contributor of GHG emissions, which emits more than 40 percent of the total GHG emissions in California. SB 375 states, "Without improved land use and transportation policy, California will not be able to achieve the goals of AB 32." SB 375 does the following: (1) requires metropolitan planning organizations to include sustainable community strategies in their regional transportation plans for reducing GHG emissions, (2) aligns planning for transportation and housing, and (3) creates specified incentives for the implementation of the strategies.

CARB has prepared a Proposed Update to the SB 375 Greenhouse Gas Emission Reduction Targets in 2018 which set updated GHG reduction targets for metropolitan planning organizations for 2020 and 2035 (CARB 2023b). Pursuant to SB 375, the Central Valley/San Joaquin reduction targets for per capita vehicular emissions were 6 to 13 percent by 2020 and are 13 to 16 percent by 2035.

Assembly Bill 1493: Pavley Regulations and Fuel Efficiency Standards

AB 1493, enacted on July 22, 2002, required CARB to develop and adopt regulations and fuel efficiency standards that reduce GHGs emitted by passenger vehicles and light duty trucks. Implementation of the regulation was delayed by lawsuits filed by automakers and by USEPA's denial of an implementation waiver. USEPA subsequently granted the requested waiver in 2009, which was upheld by the by the U.S. District Court for the District of Columbia in 2011.

The fuel efficiency standards were phased in during the 2009 through 2016 model years. When fully phased in, the near-term (2009–2012) standards resulted in an approximately 22 percent reduction compared with the 2002 fleet, and the mid-term (2013–2016) standards resulted in about a 30 percent reduction. Several technologies stand out as providing significant reductions in emissions at favorable costs. These include discrete variable valve lift or camless valve actuation to optimize valve operation, rather than relying on fixed valve timing and lift as has historically been done; turbocharging to boost power and allow for engine downsizing; improved multi-speed transmissions; and improved air conditioning systems that operate optimally, leak less, and/or use an alternative refrigerant.

The second phase of the implementation for AB 1493 was incorporated into *Amendments to the Low-Emission Vehicle Program*, referred to as LEV III or the Advanced Clean Cars program. The Advanced Clean Cars program combines the control of smog-causing pollutants and GHG emissions into a single coordinated package of requirements for model years 2017 through 2025. The regulation would reduce GHGs from new cars by 34 percent from 2016 levels by 2025. The rules would reduce pollutants from gasoline and diesel-powered cars and would deliver increasing numbers of zero-emission technologies, such as full battery electric cars, newly emerging plug-in hybrid electric vehicles, and hydrogen fuel cell cars. The regulations would also provide adequate fueling infrastructure for the increasing numbers of hydrogen fuel cell vehicles planned for deployment in California.



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Senate Bill 1368: Emission Performance Standards

Enacted in 2006, SB 1368 directs the California Public Utilities Commission to adopt a performance standard for GHG emissions for the future power purchases of California utilities. SB 1368 seeks to limit carbon emissions associated with electrical energy consumed in California by forbidding procurement arrangements for energy longer than five years from resources that exceed the emissions of a relatively clean, combined cycle natural gas power plant.

Because of the carbon content of its fuel source, a coal-fired plant cannot meet this standard because such plants emit roughly twice as much carbon as natural gas, combined cycle plants. Accordingly, the law effectively prevents California's utilities from investing in, otherwise financially supporting, or purchasing power from new coal plants located in or out of the state. The California Public Utilities Commission adopted the regulations required by SB 1368 on August 29, 2007. The regulations implementing SB 1368 establish a standard for baseload generation owned by, or under long-term contract to publicly owned utilities, of 1,100 pounds of CO₂ per megawatt-hour (MWh).

Senate Bill 1078: Renewable Electricity Standards

SB 1078 (September 12, 2002) required California to generate 20 percent of its electricity from renewable energy by 2017. SB 107 changed the due date to 2010 instead of 2017. On November 17, 2008, the governor signed EO S-14-08, which established an RPS target for California requiring that all retail sellers of electricity serve 33 percent of their load with renewable energy by 2020. EO S-21-09 directed CARB to adopt a regulation by July 31, 2010, requiring the state's load serving entities to meet a 33 percent renewable energy target by 2020. CARB approved the Renewable Electricity Standard on September 23, 2010, by Resolution 10-23. In 2011, the state legislature adopted this higher standard in SB X1-2. Renewable sources of electricity include wind, small hydropower, solar, geothermal, biomass, and biogas.

Senate Bill 350: Clean Energy and Pollution Reduction Act of 2015

SB 350 (October 7, 2015) reaffirms California's commitment to reducing its GHG emissions and addressing climate change. Key provisions include an increase in the RPS, higher energy efficiency requirements for buildings, initial strategies toward a regional electricity grid, and improved infrastructure for electric vehicle charging stations.

Senate Bill 100: California Renewables Portfolio Standard Program

SB 100 (September 10, 2018) revised the RPS goals to achieve the 50 percent renewable resources target by December 31, 2026, and to achieve a 60 percent target by December 31, 2030. The bill requires that retail sellers and local publicly owned electric utilities procure a minimum quantity of electricity products from eligible renewable energy resources so that the total kilowatt hours of those products sold to their retail end-use customers achieve 44 percent of retail sales by December 31, 2024; 52 percent by December 31, 2027; and 60 percent by December 31, 2030. The bill also establishes a state policy that eligible renewable energy resources and zero-carbon resources supply 100 percent of all retail sales of electricity to California end-use customers and 100 percent of electricity procured to serve all state



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agencies by December 31, 2045. Under the bill, the state cannot increase carbon emissions elsewhere in the western grid or allow resource shuffling to achieve the 100 percent carbon-free electricity target.

Senate Bill X7-7: The Water Conservation Act of 2009 and SB 606: Water Conservation and Drought Planning of 2018

SB X7-7 directs urban retail water suppliers to set individual 2020 per capita water use targets and to begin implementing conservation measures to achieve those goals. Meeting this statewide goal of 20 percent decrease in demand will result in a reduction of almost 2 million acre-feet of urban water use in 2020. SB 606, Water Conservation and Drought Planning was passed and built upon SB X7-7 to set numerical standards for outdoor residential water uses and commercial, industrial, and institutional landscape water use. The numerical standards recommended under SB 606 result in lower aggregate statewide urban water use than the SB X7-7's 2020 target reduction. Reductions in water consumption reduce the amount of energy, as well as the emissions, associated with conveying, treating, and distributing the water; emissions from wastewater treatment are also reduced.

Executive Order B-30-15: Establishes Greenhouse Gas Emissions Target for 2030

EO B-30-15 was issued on April 29, 2015, to establish a California GHG reduction target of 40 percent below 1990 levels by 2030. The EO aligns California's GHG reduction targets with those of leading international governments of the United Nations Climate Change Conference in Paris in late 2015. The EO sets a new interim statewide GHG emission reduction target to reduce GHG emissions to 40 percent below 1990 levels by 2030 so that California meets its target of reducing GHG emissions to 80 percent below 1990 levels by 2050 and directs CARB to update the Climate Change Scoping Plan to express the 2030 target in terms of MMTCO₂e. The EO also requires the state's climate adaptation plan to be updated every three years and for the state to continue its climate change research program, among other provisions. As with EO S-3-05, this EO is not legally enforceable against local governments and the private sector. However, SB 32 includes a 2030 mandate matching the requirements of this EO.

Executive Order S-01-07: Low Carbon Fuel Standard

EO S-01-07 was signed on January 18, 2007. The EO mandates that a statewide goal shall be established to reduce the carbon intensity of California's transportation fuels by at least 10 percent by 2020. In particular, the EO established a Low Carbon Fuel Standard (LCFS) and directed the Secretary for Environmental Protection to coordinate the actions of the California Energy Commission, CARB, the University of California, and other agencies to develop and propose protocols for measuring the "life-cycle carbon intensity" of transportation fuels. This analysis supporting development of the protocols was included in an implementation plan for the state Alternative Fuels Plan adopted by California Energy Commission on December 24, 2007, and was submitted to CARB for consideration as an "early action" item under AB 32. CARB adopted the LCFS on April 23, 2009.

The LCFS was subject to legal challenge in 2011. Ultimately, CARB was required to bring a new LCFS regulation for consideration in February 2015. The proposed LCFS regulation was required to contain revisions to the 2010 LCFS and new provisions designed to foster investments in the production of the low-carbon fuels, offer additional flexibility to regulated parties, update critical technical information,



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simplify and streamline program operations, and enhance enforcement. The Office of Administrative Law approved the regulation on November 16, 2015. The regulation was last amended in 2018. The 2018 amendments strengthen the carbon intensive fuel reduction targets beyond 2020 to support SB 32. Other major changes to the 2018 amendments include expanding the fuel types and eligible activities to participate in the LCFS (CARB 2018b).

Executive Order S-13-08: Climate Adaptation Strategy

EO S-13-08 states that “climate change in California during the next century is expected to shift precipitation patterns, accelerate sea level rise and increase temperatures, thereby posing a serious threat to California’s economy, to the health and welfare of its population and to its natural resources.” Pursuant to the requirements in this EO, the 2009 California Climate Adaptation Strategy was adopted, which is the “... first statewide, multi-sector, region-specific, and information-based climate change adaptation strategy in the United States.” Objectives include analyzing risks of climate change in California, identifying and exploring strategies to adapt to climate change, and specifying a direction for future research.

Executive Order B-48-18: Zero-Emission Vehicles

In January 2018, Governor Brown signed EO B-48-18 requiring all state entities to work with the private sector to have at least 5 million ZEVs on the road by 2030, as well as install 200 hydrogen fueling stations and 250,000 electric vehicle charging stations by 2025. It specifies that 10,000 of the electric vehicle charging stations should be direct current fast chargers. This order also requires all state entities to continue to partner with local and regional governments to streamline the installation of ZEV infrastructure. The Governor's Office of Business and Economic Development is required to publish a Plug-in Charging Station Design Guidebook and update the 2015 Hydrogen Station Permitting Guidebook to aid in these efforts. All state entities are required to participate in updating the 2016 Zero-Emissions Vehicle Action Plan to help expand private investment in ZEV infrastructure with a focus on serving low-income and disadvantaged communities. Additionally, all state entities are to support and recommend policies and actions to expand ZEV infrastructure at residential land uses, through the LCFS Program and recommend how to ensure affordability and accessibility for all drivers.

Executive Order B-55-18: California’s 100 Percent Clean Energy Policy

EO B-55-18 issued on September 10, 2018, establishes a new statewide goal to achieve carbon neutrality as soon as possible, but no later than 2045, and to achieve and maintain net negative emissions thereafter. The EO directs CARB to work with relevant state agencies to develop a framework for implementation and accounting that tracks progress toward this goal.

Executive Order N-79-20

EO N-79-20, which was signed by the Governor on September 23, 2020, sets the following goals for the state: 100 percent of in-state sales of new passenger cars and trucks shall be zero-emission by 2035; 100 percent of medium- and heavy-duty vehicles in the state shall be zero-emission by 2045 for all



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operations where feasible and by 2035 for drayage trucks; and 100 percent of off-road vehicles and equipment in the state shall be zero-emission by 2035, where feasible.

California Green Building Code

The California Green Building Code (CALGreen) (California Code of Regulations, title 24, part 11) is a state-mandated building code aimed at improving public health, safety, and general welfare through mandating efficient design and construction of buildings within the state. An updated CALGreen standards is published every three years by order of the California legislature.

3.2.3 REGIONAL

San Joaquin Valley Air Pollution Control District

In August 2008, SJVAPCD's governing board adopted the Climate Change Action Plan (CCAP). The CCAP directed the SJVAPCD 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.

On December 17, 2009, the SJVAPCD governing board adopted *Guidance for Valley Land-use Agencies in Addressing GHG Emission Impacts for New Projects under CEQA*, and the *District Policy—Addressing GHG Emission Impacts for Stationary Source Projects Under CEQA When Serving as the Lead Agency*. SJVAPCD concluded that the existing science is inadequate to support quantification of the impacts that project-specific GHG emissions have on global climate change. SJVAPCD found the effects of project-specific emissions to be cumulative; and without mitigation, their incremental contribution to global climate change could be considered cumulatively considerable. SJVAPCD found that this cumulative impact is best addressed by requiring all projects to reduce their GHG emissions, whether through project design elements or mitigation.

2022 Regional Transportation Plan/Sustainable Communities Strategy

In August 2022, the Merced County Association of Governments (MCAG) adopted the 2022 Regional Transportation Plan/Sustainable Community Strategy (RTP/SCS), which is a long range planning document that provides the framework for investments in roads, freeways, public transit, bikeways and other ways people move around Merced County for the next 25 years (MCAG 2022). Each metropolitan planning organization is required to prepare an SCS pursuant to SB 375. The primary goal of each SCS is to reduce regional VMT and, as a result, reduce GHG emissions associated with mobile sources.

3.2.4 LOCAL

2030 Merced County General Plan

The 2030 General Plan is a legal document that serves as Merced County's blueprint for all future land use, development, preservation, and resource conservation decisions. The 2030 General Plan covers the



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County's planning area, which encompasses both incorporated and unincorporated territory that may directly or indirectly affect the County's future development.

There are several policies in the 2030 General Plan that also seek to reduce GHG emissions, including promoting alternative energy sources, among others. The policies that are relevant to the Project include:

- **Policy NR-2.1: Renewable Energy Use.** Promote the development and use of renewable energy resources to reduce dependency on petroleum-based energy sources.
- **Policy NR-2.2: Clean Alternative Energy Requirement.** Encourage new electricity providers to use only clean alternative energy sources (e.g., solar, thermal, wind).
- **Policy NR-2.4: Solar Power.** Encourage on-site solar power use in residential, commercial, and industrial buildings, and solar power facilities in rural locations that do not harm long-term agricultural productivity and habitat values.
- **Policy NR-2.9: Energy Conservation.** Encourage and maximize energy conservation and identification of alternative energy sources (e.g., wind or solar).

Merced County Climate Action Plan (In Development)

A Climate Action Plan (CAP) is a long-range plan that outlines specific strategies to reduce GHG emissions. Merced County is currently developing a CAP, which is a strategy for how it will reduce its GHG emissions in accordance with statewide targets. In the long term, the CAP will achieve multiple community goals such as lowering energy costs, reducing air pollution, supporting local economic development, and improving public health and quality of life. Merced County does not have an adopted CAP.



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4.0 Modeling Inputs and Parameters

The following modeling parameters and assumptions will be used to generate criteria air pollutant and GHG emissions for the Project.

4.1 Criteria Air Pollutant and GHG Model Selection

The California Emissions Estimator Model (CalEEMod) is a statewide land use emissions computer model designed to provide a uniform platform for government agencies, land use planners, and environmental professionals to quantify potential criteria pollutant and GHG emissions associated with both construction and operation from a variety of land use projects. CalEEMod quantifies direct GHG emissions, such as construction and operational activities and vehicle use, and indirect emissions, such as energy use, solid waste disposal, vegetation planting and/or removal, and water use. Further, CalEEMod identifies mitigation measures to reduce criteria pollutant and GHG emissions along with calculating the benefits achieved from measures chosen by the user.

CalEEMod was developed for the California Air Pollution Control Officers Association in collaboration with the California Air Districts. Default data (e.g., emission factors, trip lengths, meteorology, source inventory) have been provided by the various California Air Districts to account for local requirements and conditions.

CalEEMod is a comprehensive tool for quantifying air quality impacts from land use projects located throughout California. The model can be used for a variety of situations where an air quality analysis is necessary or desirable, such as preparing CEQA or National Environmental Policy Act documents, conducting pre-project planning, and, verifying compliance with local air quality rules and regulations, etc.

CalEEMod version 2022.1.1.25 was used to estimate construction and operational impacts of the Project.

4.2 Construction Modeling Assumptions

4.2.1 LAND USE

Table 4 provides a summary of the land use inputs included in the CalEEMod modeling.

Table 4. California Emissions Estimator Model Land Use Development Summary Table for the Project

Project Component	CalEEMod Land Use Type	Land Use Size
Solar Site	User Defined Industrial	650 acres
Operation and Maintenance Building	General Light Industrial	2,100 square feet
Warehouse	Unrefrigerated Warehouse – No Rail	3,000 square feet
Concrete Pads	Other Non-Asphalt Surfaces	14,560 square feet



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In addition to the foregoing new land uses, as part of the Project's interconnection process, PG&E would install gen-tie line terminal equipment and the termination of the Project's fiber optic line and install one circuit breaker, all of which would occur within areas previously disturbed and occupied by existing electrical facilities. Construction and operation of the new PG&E interconnection infrastructure is evaluated qualitatively in this analysis.

1.1.1 CONSTRUCTION SCHEDULE

The Project would require three construction tasks that include civil work, facility construction, and testing and commissioning. It is assumed that construction would take place six days per week for 10 hours per day. Some activities may continue 24 hours per day, 7 days per week.

Table 5 shows the anticipated construction schedule. The construction schedule presents a "worst-case" analysis scenario since emission factors for construction equipment decrease as the analysis year increases due to improvements in technology and more stringent regulatory requirements. Therefore, construction emissions would decrease if the construction schedule moved to later years or is phased over multiple years. The duration of construction activity and associated equipment represent a reasonable approximation of the expected construction fleet as required per CEQA Guidelines. The site-specific construction fleet may vary due to specific Project needs at the time of construction.

Table 5. Project Construction Schedule

Construction Task	Start Date ¹	End Date ¹	Workdays
Civil work	1/1/2025	7/1/2025	156
Facility Construction	7/1/2025	7/1/2026	314
Testing and Commissioning	7/1/2026	12/31/2026	158

Source: CalEEMod Output (Attachment A).

Note: 1. Construction schedule durations provided by the Applicant.

1.2 Construction Equipment

The off-road equipment fleet for construction were provided by the Applicant. CalEEMod default horsepower and load factors were used for this analysis. The Applicant will use approximately seven pickup trucks on the Project site over the course of Project construction. The emissions from on-site trucks were calculated off-model using CARB's EMFAC 2021 software for Merced County in 2025 assuming all on-site pickup trucks would be medium heavy-duty. Consistent with SJVAPCD fugitive dust rules, the trucks were assumed to travel 15 miles per hour on unpaved roads and were conservatively assumed to operate eight hours per day. Table 6 provides a breakdown of the equipment required on the Project site.



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Table 6. Project Construction Equipment

Construction Task	Proposed Equipment	Equipment Modeled	Pieces of Equipment	Average Daily Usage (hours/day)	Horsepower	Load Factor
Civil work	On-site Pickup Trucks ¹	Medium heavy-duty trucks (MHDT)	7	8	-	-
	Water Haul Trucks ²	Heavy heavy-duty trucks (HHDT)	26	-	-	-
	Excavator	Excavators	2	2	158	0.38
	Off-road haul truck	Off-highway trucks	1	8	402	0.38
	Grader	Graders	2	4	187	0.41
	Loader	Tractor/loader/backhoes	2	3	97	0.37
Facility Construction	On-site Pickup Trucks ¹	Medium heavy-duty trucks (MHDT)	7	8	-	-
	Water Haul Trucks ²	Heavy heavy-duty trucks (HHDT)	26	-	-	-
	Vibratory roller	Rollers	1	2	80	0.38
	Loader	Tractor/loader/backhoes	2	3	97	0.37
	Utility truck/pile driver	Off-highway trucks	6	3	402	0.38
	Hydraulic cranes	Cranes	1	3	231	0.29
Testing and Commissioning	On-site Pickup Trucks ¹	Medium heavy-duty trucks (MHDT)	7	8	-	-
	Water Haul Trucks ²	Heavy heavy-duty trucks (HHDT)	26	-	-	-
	Skidsteer	Skid Steer Loaders	10	6	71	0.37
	Excavator	Excavators	2	2	158	0.38
	Utility truck/pile driver	Off-highway trucks	6	3	402	0.38
	Utility Terrain Vehicle ³	Off-highway trucks	8	4	402	0.38
	Generator	Generator Sets	2	4	84	0.74

Notes: ¹ On-site pickup trucks were modeled in EMFAC 2021 as medium heavy-duty trucks. Consistent with EMFAC outputs for 2025 Merced County, it was assumed 86.5% of these trucks would be diesel powered, and the remaining would be gasoline powered. Calculations are provided in Appendix A.

² Emissions from water haul trucks used to transport well water to the Project site were modeled using EMFAC 2021 as heavy heavy-duty trucks. Based on EMFAC outputs for 2025 Merced County, over 99.9% of heavy heavy-duty trucks were diesel-fueled. As a result, all water haul truck trips were assumed to use diesel fuel. Water haul trucks were assumed to travel 25 miles per one-way trip (50 miles round-trip).

³ Utility Terrain Vehicles were modeled as Off-highway trucks. The CalEEMod default horsepower of 402 for off-highway trucks was retained within the modeling and presents a conservative estimate of the horsepower.



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4.2.2 VEHICLE TRIPS

Off-site construction emissions (PM_{10} and $PM_{2.5}$) are caused by motor vehicle exhaust from delivery vehicles, worker traffic, and road dust. The number of daily trips during construction was calculated in the traffic analysis prepared by Stantec Consulting Service Inc. (2024). Project construction is expected to generate a maximum of 300 passenger car trips per day and 80 heavy-duty trips (includes material hauling and water deliveries) per day.

The fleet mix for worker trips is light duty passenger vehicles to light duty trucks. The vendor trips fleet mix comprises medium duty and heavy-duty diesel trucks. The Project is located in a rural portion of California, and it was assumed that vendors and workers would travel from nearby urban centers to the Project site. The nearest major urban areas are Fresno (56 miles), Merced (44.8 miles), and Madera (49 miles), from the Project site. It is conservatively assumed that all worker and vendor one-way trips will be from Fresno (56 miles). All water haul trucks were assumed to travel 25 miles per one-way trip and modeled with EMFAC2021. In addition, the Project would require hauling truck trips to transport concrete to the site. It was assumed that a total of 390 trucks would haul concrete from a batch plant located within 20 miles of the Project site. Concrete trucks were modeled as hauling trucks within CalEEMod during the Civil Work construction task.

4.3 Operational Modeling Assumptions

Operational emissions are those emissions that occur during operation of the Project. The sources are summarized below.

4.3.1 MOTOR VEHICLES

Motor vehicle emissions refer to exhaust and road dust emissions from the automobiles that would travel to and from the Project site. The Project would employ 10 full-time employees and 10 part-time employees. To estimate emissions, it was assumed that the Project would generate up to 50 trips per day, which assumes all 20 staff members would visit the site in one day and result in an average trip rate of 2.5 trips per employee. This is a conservative assumption as most days would not have all staff members on-site. As noted above, the Project is located in a rural portion of California, and it was assumed that workers would travel from nearby urban centers to the Project site. The nearest major urban areas are Fresno (56 miles), Merced (44.8 miles), and Madera (49 miles), from the Project site. A trip distance of 56 miles was used for the analysis. It was assumed that all trips to the Project site would be primary trips.

To accommodate all water demand, one water truck was conservatively assumed to visit the site each day. The trip length would be 25 miles one-way, and the vehicle type would be heavy heavy-duty truck. These conservative estimates would account for day to day operations and routine maintenance, such as solar panel washing.



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4.3.2 VEHICLE FLEET MIX

The vehicle fleet mix is defined as the mix of motor vehicle classes active during the operation of the Project. Emission factors are assigned to the expected vehicle mix as a function of vehicle class, speed, and fuel use (gasoline- and diesel-powered vehicles). CalEEMod default fleet mix for Merced County was used for this analysis. Only employee trips were modeled within CalEEMod, the default fleet mix accounts for passenger cars, heavy to light trucks, and buses. Since most employees would likely drive passenger vehicles that have lower emissions per mile, this presents a conservative estimate of emissions. Operational water trucks were evaluated as heavy duty trucks in EMFAC2021.

4.3.3 AREA SOURCES

Consumer Products

Consumer products are various solvents used in non-industrial applications that emit ROG during their product use. These typically include cleaning supplies, kitchen aerosols, cosmetics, and toiletries. The default CalEEMod values were used for this Project.

Architectural Coatings (Painting)

Paints release ROG emissions. The buildings would be repainted on occasion. CalEEMod defaults for the wall painting size and ROG paint concentration were used for this purpose.

Landscaping Emissions

CalEEMod estimates a total of 180 days for which landscaping equipment would be used to estimate potential emissions for the Project. Landscape equipment emissions are based on a weighted average landscape equipment emission factor derived from CARB's Small Off-Road Engines Model.

Other Indirect Emissions (Water Use, Wastewater Use, and Solid Waste)

CalEEMod includes calculations for indirect GHG emissions for electricity consumption, water consumption, and solid waste disposal. For water consumption, CalEEMod calculates the embedded energy (e.g., treatment, conveyance, distribution) associated with providing each gallon of potable water to the Project. For solid waste disposal, GHG emissions are associated with the disposal of solid waste generated by the Project into landfills. CalEEMod default data from 2027 (the earliest possible year of operation) were used for inputs associated with wastewater use and solid waste. For indoor water use, the Project is estimated to use approximately 19,551 gallons of potable water per year in the operation and maintenance building. For outdoor water use, the Project would use roughly 58,653 gallons per year for herbicide application; and roughly 824,403 gallons per year for cleaning of the solar panels. Therefore, it was estimated that the Project would use approximately 902,607 gallons per year during operation.



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4.3.4 BACKUP GENERATOR AND ON-SITE TRUCKS

The Project would also install a back-up diesel generator on the Project site. The proposed back-up generator would have a horsepower of 268 and was assumed to operate a maximum of 100 hours per year. This assumption accounts for monthly maintenance and routine checks.

In addition, to account for the use of maintenance trucks operating on-site, three diesel-fueled off-highway trucks were assumed to operate for 2 hours each day.

4.3.5 DISPLACED EMISSIONS MODELING ASSUMPTIONS

By generating electricity for up to 40 years, the project would help California meet its RPS targets, including SB 100, which mandates 100 percent of California's electricity consumption to come from renewable sources by 2045. Accordingly, the electricity generated during solar generation would replace electricity generated by existing power plants. The Project site lies within PG&E's service area. To calculate the displaced GHG emissions, off-model calculations were performed using PG&E's latest GHG efficiency metric in 2019. The solar panels were assumed to generate electricity approximately 5.38 hours per day, with an efficiency of 18.46 percent (Turbine Generator 2022).

4.4 Decommissioning Modeling Assumptions

The anticipated operational term of the Project is up to 40 years. After operation, the Project would be decommissioned to return the site to previous conditions. Decommissioning is assumed to take place 40 years after implementation of the Project. Decommissioning would take place over one year and would include a 10-week demolition phase followed by stabilization and revegetation of the site.

Decommissioning was modeled within CalEEMod with default equipment assumptions. It is estimated that a total of approximately 8,146 water truck trips (one-way) would be required during decommissioning. On-site pickup trucks were modeled using EMFAC 2021 as medium heavy-duty trucks. Calculations are provided in Appendix A. The amount of worker, hauling, and vendor trip numbers and trip lengths were assumed to be the same as construction.



5.0 Air Quality Impact Analysis

This section calculates the expected emissions from construction and operation of the Project as a necessary requisite for assessing the regulatory significance of Project emissions on a regional and localized level.

5.1 California Environmental Quality Act Guidelines

According to the CEQA Guidelines Appendix G Environmental Checklist, the following questions are analyzed and evaluated to determine whether a project would result in significant impacts to air quality. Where available, the significance criteria established by the applicable air quality management or air pollution district may be relied upon to make the following determinations.

Would the project:

1. Conflict with or obstruct implementation of the applicable air quality plan?
2. 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?
3. Expose sensitive receptors to substantial pollutant concentrations?
4. Result in other emissions (such as those leading to odors) affecting a substantial number of people?

5.2 Thresholds of Significance

While the final determination of significance thresholds is within the purview of the lead agency pursuant to CEQA Guidelines Section 15064(b), the SJVAPCD has adopted quantitative air pollution thresholds (Table 7) to assist lead agencies in determining the significance of project emissions. If the lead agency finds that the project has the potential to exceed these air pollution thresholds, the project should be considered to have significant air quality impacts.



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Table 7. San Joaquin Valley Air Pollution Control District Significance Thresholds

Pollutant	Construction Emissions (tons/year)	Operational Emission (tons/year)
Carbon monoxide (CO)	100	100
Oxides of nitrogen (NOx)	10	10
Reactive organic gas (ROG)	10	10
Sulfur oxides (SOx)	27	27
Particulate matter 10 microns diameter or less (PM ₁₀)	15	15
Fine particulate matter 2.5 microns diameter or less (PM _{2.5})	15	15

Source: San Joaquin Valley Air Pollution Control District. 2015. *Guidance for Assessing and Mitigating Air Quality Impacts*.

To address the potential for air pollutant hotspots, SJVAPCD has provided guidance for screening localized impacts in the GAMAQI that establishes a screening threshold of 100 pounds per day of any criteria pollutant. If a project exceeds 100 pounds per day of any criteria pollutant, then ambient air quality modeling would be necessary. If the project does not exceed 100 pounds per day of any criteria pollutant, then it can be assumed that it would not cause a violation of an ambient air quality standard. SJVAPCD also has adopted thresholds of significance for health risks from exposure to TACs. A project would result in a significant impact if the project would increase the cancer risk for the person with maximum exposure potential by 20 in a million or result in a non-cancer hazard index greater than 1.

5.3 Air Impact Analysis

5.3.1 IMPACT ANALYSIS OF IMPACT AIR-1

Impact AIR-1: Would the project conflict with or obstruct implementation of the applicable air quality plan?

The CEQA Guidelines indicate that a significant impact would occur if a project would conflict with or obstruct implementation of the applicable air quality plan. The SJVAPCD GAMAQI proposes the following criteria for determining project consistency with the current AQMPs:

- Will the project result in an increase in the frequency or severity of existing air quality violations or cause or contribute to new violations, or delay timely attainment of air quality standards or the interim emissions reductions specified in the AQMPs?
- Will the project conform to the assumptions in the AQMPs?
- Will the project comply with applicable control measures in the AQMPs?

The use of criteria listed above is a standard approach for CEQA analysis of projects in the SJVAPCD's jurisdictions and other air districts for the following reasons:

- Significant contribution to existing or new exceedances of the air quality standards would be inconsistent with the goal of attaining the air quality standards.



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- AQMP emissions inventories and attainment modeling are based on growth assumptions for the area within the SJVAPCD's jurisdiction.
- AQMPs rely on a set of air district-initiated control measures and implementation of federal and state measures to reduce emissions within their jurisdictions, with the goal of attaining the air quality standards.

AQMPs are plans for reaching attainment of the NAAQS and CAAQS. The assumptions, inputs, and control measures are analyzed to determine whether the SJVAB can reach attainment for the ambient air quality standards. To show attainment of the standards, SJVAPCD analyzes the growth projections in the valley, contributing factors in air pollutant emissions and formations, and existing and adopted emissions controls. The SJVAPCD then formulates a control strategy to reach attainment that includes both state and SJVAPCD regulations and other local programs and measures. The applicable AQMPs include the 2004 Carbon Monoxide Plan, the 2022 8-Hour Ozone Plan, the 2023 1-Hour Ozone Maintenance Plan, the 2007 PM₁₀ Maintenance Plan, and the 2018 PM_{2.5} Plan.

Contribution to Air Quality Violations

A measure of determining whether a project is inconsistent with the AQMPs is whether the project would result in increased frequency or severity of existing air quality violations, cause or contribute to new violations, or delay timely attainment of air quality standards or the interim emission reductions specified in the air quality plans. Because of the region's non-attainment status for O₃, PM_{2.5}, and PM₁₀, if Project-generated emissions of either of the O₃ precursor pollutants (ROG and NO_x), PM₁₀, or PM_{2.5} would exceed the SJVAPCD's significance thresholds, then the Project would be considered to conflict with the attainment plans.

As shown in Impact AIR-2, emissions of ROG, NO_x, PM₁₀, and PM_{2.5} from construction and operation of the Project would not exceed the SJVAPCD's significance thresholds. As shown in Impact AIR-3, the Project would not expose sensitive receptors to a substantial pollutant concentration. Therefore, the Project would not contribute to air quality violations.

Consistency with Assumptions in Air Quality Plans

The primary way of determining consistency with the AQMPs' assumptions is determining consistency with the applicable general plan to see that the Project's population density and land use are consistent with the growth assumptions used in the AQMPs for the SJVAB.

As required by California law, general plans contain a land use element that details the types and quantities of land uses that the city or county estimates will be needed for future growth and designates locations for land uses to regulate growth. The Merced County Association of Governments uses the growth projections and land use information in adopted general plans and other sources to estimate future average daily trips and vehicles miles traveled, which are then provided to SJVAPCD to estimate future emissions in the AQMPs. Existing and future pollutant emissions computed in the AQMPs are based on land uses from area general plans. AQMPs detail the control measures and emission



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reductions required for reaching attainment of the air standards based on these growth and emission estimates.

The applicable general plan for the Project is the 2030 General Plan, which was adopted in 2013, prior to the SJVAPCD's adoption of the applicable AQMPs. Per the 2030 Merced County General Plan, the land use designation for the Project site is Agricultural. The Agricultural designation allows for the development of energy generation facilities, and the Project is consistent with the County General Plan. Furthermore, the proposed solar use would not induce population or housing growth that could result in a substantial increase in future average daily trips, vehicles miles traveled, or associated emissions within the County. Operational staff and associated vehicle trips would be limited and most of the operational labor force is expected to be from surrounding local communities. Further, many of the employees would be part-time employees who would only occasionally access the Project site for vegetation management, panel washing, contract maintenance, and other similar tasks. The Project would employ up to 20 staff, which falls within the 2030 General Plan's employment projections of 137,200 by 2030. Accordingly, long-term emissions associated with operational vehicle trips would be negligible and would not conflict with any assumptions of the applicable AQMPs. For example, the AQMPs assumes the regional fleet will trend towards cleaner technology with CARB incentive programs like the Low Emission Vehicle Program and Zero-Emission Vehicle Program. Therefore, the Project would be consistent with the buildout assumptions included in the County's General Plan and, therefore, the Project would also be consistent with the modeling used to prepare the AQMPs. The impact would be less than significant.

Control Measures

The AQMP contains several control measures that are enforceable requirements through the adoption of rules and regulations. A detailed description of rules and regulations that apply to the Project is provided in Section 2.2. The Project would be required, through permit conditions, to comply with all applicable SJVAPCD rules and regulations and would not conflict with or obstruct implementation of the applicable AQMP. For example, construction and decommissioning activities would comply with Regulation VIII and the best management practices (BMPs) disclosed within Rule 8021. The Project would also be subject to Rule 2010 when constructing new stationary sources, such as the proposed emergency generator. Pursuant to Rule 2010, the Project would coordinate with the SJVAPCD to obtain an Authority to Construct and Permit to Operate all stationary sources on the Project site, as needed.

Conclusion

The Project would not conflict with or obstruct implementation of the applicable AQMPs.

Level of Significance Before Mitigation

Less-than-significant impact.

Mitigation Measures

No mitigation is necessary.



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Level of Significance After Mitigation

Less-than-significant impact.

5.3.2 IMPACT ANALYSIS OF IMPACT AIR-2

Impact AIR-2: 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?

To result in a less-than-significant impact, the following criteria must be true:

- **Regional Analysis.** Emissions of non-attainment pollutants must be below SJVAPCD's regional significance thresholds. This is an approach recommended by SJVAPCD in its GAMAQI.
- **Summary of Projections.** The Project must be consistent with current air AQMPs, including control measures and regulations. This is an approach consistent with CEQA Guidelines Section 15130(b).

Step 1: Regional Analysis

Air pollutant emissions have regional and localized effects. This analysis assesses the regional effects of the Project's criteria pollutant emissions in comparison to SJVAPCD thresholds of significance for short-term construction activities, short-term decommissioning activities, and long-term operation of the Project. Localized emissions from Project construction and operation are also assessed using concentration-based thresholds that determine if the Project would result in a localized exceedance of any ambient air quality standards or would make a cumulatively considerable contribution to an existing exceedance.

The primary pollutants of concern during Project construction and operation are ROG, NO_x, PM₁₀, and PM_{2.5}. The SJVAPCD GAMAQI adopted in 2015 contains thresholds for ROG and NO_x, SO_x, CO, PM₁₀, and PM_{2.5} (Table 7).

The SJVAB often exceeds the state and national O₃ standards. Therefore, if the Project emits a substantial quantity of O₃ precursors, the Project may contribute to an exceedance of the O₃ standard. The SJVAB also exceeds air quality standards for PM₁₀, and PM_{2.5}; therefore, substantial Project emissions may contribute to an exceedance for these pollutants. SJVAPCD Regulation VIII would require fugitive dust control measures that are consistent with BMPs established by the SJVAPCD to reduce the Project's construction-generated fugitive dust impacts to a less-than-significant level. Regulation VIII BMPs include:

- Applying water before/during earthwork activity and onto unpaved traffic areas, phasing work to limit dust, and setting up wind fences to limit Visible Dust Emissions to 20 percent opacity;
- Applying soil stabilization at regulated construction sites after normal working hours, on weekends, and on holidays;



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- In the event of carryout and trackout dust, the material must be cleaned up at least daily and immediately if it extends more than 50 feet from the exit point of a paved road. Larger construction site, or sites with a high amount of traffic, must prevent carryout and trackout from occurring by installing gravel pads, grizzlies, wheel washers, paved interior roads, or a combination thereof at each exit point from the Project site.
- Unpaved roads should limit speeds to 15 miles per hour or less.
- Storage piles and bulk materials should be watered, wetted, or covered to limit visible dust emissions.

Construction and Decommissioning Emissions

Construction and decommissioning emissions associated with the Project are shown in Table 8. See the modeling parameters and assumptions section of this assessment for a discussion of the modeling inputs. As shown in Table 8, the emissions from construction and decommissioning fall below SJVAPCD thresholds, and the impact would be less than significant.

Table 8. Construction Emissions

Emissions Source		Emissions (tons/year)					
		ROG	NOx	CO	SOx	PM ₁₀	PM _{2.5}
Project Construction	Year 2025	0.66	4.94	12.62	0.02	2.31	0.61
	Year 2026	0.81	6.26	14.02	0.03	2.31	0.64
Decommissioning	Year 2065 ¹	0.35	3.12	5.94	0.02	3.40	1.22
Significance Thresholds		10	10	100	27	15	15
Any Year Exceed Significance Thresholds?		No	No	No	No	No	No

Source of Emissions: CalEEMod Output (Attachment A).

Source of Thresholds: San Joaquin Valley Air Pollution Control District. 2015. *Guidance for Assessing and Mitigating Air Quality Impacts*.

Notes:

1. The last year CalEEMod will calculate on-road emissions is 2050. As such, decommissioning emissions were calculated with a construction year of 2050. This is a conservative approach to analysis, as actual decommissioning would occur in the year 2065 and the emissions associated with decommissioning would be less than the emissions presented above.

Key:

CO = carbon monoxide NOx = oxides of nitrogen PM_{2.5} = fine particulate matter less than 2.5 microns in diameter
PM₁₀ = particulate matter less than 10 microns in diameter ROG = reactive organic gas SOx = sulfur oxides

The use of heavy equipment associated with the installation of the PG&E interconnection infrastructure would generate criteria pollutant emissions as well; however, emissions related to the substation improvements would be minimal compared to construction of the remainder of the Project. Moreover, the Project applicant intends to use a “green fleet” for construction. The green fleet would include the use of lower emission engines for off-road equipment. The construction emissions presented in Table 8 do not



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account for the emission reductions that would occur from the green fleet and, as such, Table 8 presents a conservative estimate of construction emissions. The impact would be less than significant.

Operation and Maintenance Emissions

Emissions during operation of the Project would be generated during routine site maintenance, periodic PV panel washing, employee trips to and from the Project site, and routine maintenance of the backup generator. The Project is anticipated to hire up to 10 full-time employees and up to 10 part-time employees. The SJVAPCD considers construction and operations emissions separately when making significance determination. See the modeling parameters and assumptions section of this assessment for a discussion of the modeling inputs. As shown in Table 9, the emissions are below the significance thresholds and are less than significant.

Table 9. Operational Emissions

Source	Emissions (tons/year)					
	ROG	NOx	CO	SOx	PM ₁₀	PM _{2.5}
Mobile	0.07	0.27	1.28	<0.01	0.37	0.10
Area	0.02	<0.01	0.02	<0.01	<0.01	<0.01
Energy	<0.01	0.01	<0.01	<0.01	<0.01	<0.01
Off-Road	0.06	0.33	0.41	<0.01	0.01	0.01
Stationary	0.02	0.06	0.06	<0.01	<0.01	<0.01
<i>Total</i>	<i>0.18</i>	<i>0.67</i>	<i>1.76</i>	<i>0.01</i>	<i>0.39</i>	<i>0.11</i>
Significance Thresholds	10	10	100	27	15	15
Exceed Significance Thresholds?	No	No	No	No	No	No

Source: CalEEMod Output (Attachment A).

Notes:

Emissions were quantified using CalEEMod based on Project details and estimated operating year for the Project. Totals may not sum exactly due to rounding.

Key:

CO = Carbon monoxide NOx = Oxides of nitrogen PM_{2.5} = Fine particulate matter less than 2.5 microns in diameter
PM₁₀ = Particulate matter less than 10 microns in diameter ROG = Reactive Organic Gas SOx = Sulfur oxides

The criteria pollutant emissions analysis, as shown above, assessed whether the Project would exceed SJVAPCD's thresholds of significance. Operation of the PG&E power line connection would not result in the generation of emissions, and maintenance of the power line connection would result in negligible emissions associated with periodic inspections.

As shown in Table 8 and Table 9, criteria pollutant emissions would not exceed any threshold of significance during Project construction, decommissioning, or long-term operation. Therefore, unmitigated Project emissions would not cumulatively contribute to a significant impact according to this criterion.



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Step 2: Summary of Projections

CEQA Guidelines Section 15130(b) states the following:

The following elements are necessary to an adequate discussion of significant cumulative impacts: 1) Either: (A) A list of past, present, and probable future projects producing related or cumulative impacts, including, if necessary, those projects outside the control of the agency, or (B) 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.

In accordance with CEQA Guidelines Section 15130(b), this analysis of cumulative impacts is based on a summary of projections analysis. The SJVAB is in non-attainment for O₃ and PM₁₀ and PM_{2.5}, which means that concentrations of these pollutants currently exceed the applicable ambient air quality standards.

Cumulative impacts may be analyzed using other plans that evaluate relevant cumulative effects. The geographic scope for cumulative criteria pollution from air quality impacts is the boundaries of the SJVAB, because that is the area in which the air pollutants generated by the sources within the SJVAB circulate and are often trapped. SJVAPCD is required to prepare and maintain air quality attainment plans and a SIP to document the strategies and measures to be undertaken to reach attainment of ambient air quality standards. While SJVAPCD does not have direct authority over land use decisions, it is recognized that changes in land use and circulation planning would help the SJVAB achieve clean air mandates. SJVAPCD evaluated emissions from land uses and transportation in the entire SJVAB when it developed its attainment plans.

In accordance with CEQA Guidelines Section 15064, subdivision (h)(3), a lead agency may determine that a Project's incremental contribution to a cumulative effect is not cumulatively considerable if the Project complies with the requirements in a previously approved plan or mitigation program.

As discussed in Impact AIR-1, the Project would be consistent with all applicable control measures in the SJVAPCD's AQMPs, and the Project was determined to be consistent with current AQMPs, including control measures and regulations.

As noted in the regulatory setting section, the NAAQS and CAAQS are set to be protective of human health and SJVAPCD's thresholds are designed to allow SJVAPCD to come into attainment with the NAAQS and CAAQS. The regional analysis of construction and operational emissions, as shown above, indicates that the Project would not exceed the SJVAPCD's significance thresholds, and the Project is consistent with the applicable AQMPs, and thus is within emission levels that would not have significant health impacts. The Project's emissions would not have a measurable effect on human health and would not result in significant cumulative health impacts from non-attainment pollutants.

Conclusion

The Project would not result in a cumulatively considerable net increase of any criteria pollutant for which the Project region is non-attainment under applicable federal or state ambient air quality standards.



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Level of Significance Before Mitigation

Less-than-significant impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

Less-than-significant impact.

5.3.3 IMPACT ANALYSIS OF IMPACT AIR-3

Impact AIR-3: Would the project expose sensitive receptors to substantial pollutant concentrations?

This discussion addresses whether the Project would expose sensitive receptors to localized concentrations of air pollutants or TACs during construction or operation.

A sensitive receptor is a person in a population who is particularly susceptible to health effects due to exposure to an air contaminant. The following are land uses (i.e., sensitive sites) where sensitive receptors are typically located:

- Long-term health care facilities
- Rehabilitation centers
- Convalescent centers
- Hospitals
- Retirement homes
- Residences
- Schools, playgrounds, and childcare centers

The Project site is surrounded by agricultural lands and lies east of the California Aqueduct and Interstate-5. As depicted in Figure 1, Project Location, the closest sensitive receptor is a residence located approximately 3,750 feet northwest of the Project site.

Construction

During construction activities associated with the Project, the potential exists for sensitive receptors in the Project area to be exposed to localized impacts from criteria pollutants (i.e., CO, NO₂, PM, ROG), naturally occurring asbestos, fugitive dust, Valley Fever, and DPM. The potential impacts are evaluated below.

Localized Impacts

Emissions occurring at or near the Project have the potential to create a localized impact, also referred to as an air pollutant hotspot. Localized emissions are considered significant when, combined with background emissions, they would result in exceedance of any health-based air quality standard. In



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locations that already exceed standards for these pollutants, significance is based on a significant impact level that represents the amount that is considered a cumulatively considerable contribution to an existing violation of an air quality standard.

SJVAPCD has provided guidance for screening localized impacts in the GAMAQI that establishes a screening threshold of 100 pounds per day of any criteria pollutant. If a project exceeds 100 pounds per day of any criteria pollutant, then ambient air quality modeling would be necessary. If the project does not exceed 100 pounds per day of any criteria pollutant, then it can be assumed that it would not cause a violation of an ambient air quality standard.

Local construction impacts would be short-term in nature, lasting only for the duration of construction and decommissioning. Because of the short duration and limited amount of construction anticipated for the Project, application of BMPs through compliance with *Regulation VIII Fugitive Dust Prohibitions* to minimize construction emissions, and levels of emissions less than the SJVAPCD's emission significance thresholds, localized construction concentrations are considered less than significant. BMPs from SJVAPCD Rule 8021 are described above. It should also be noted that the on-site construction emissions would be less than 100 pounds per day for each of the criteria pollutants (Table 10). Based on SJVAPCD's guidance, the construction emissions would not cause an ambient air quality standard violation. Impacts would be less than significant.

Table 10. Localized Concentrations of Emissions for Construction

Emissions Source	Emissions (pounds per day)			
	NOx ¹	CO	PM ₁₀ ²	PM _{2.5} ²
Construction Maximum	28.54	37.87	0.93	0.84
Decommissioning Maximum ³	8.38	10.77	0.32	0.21
Significance Thresholds	100	100	100	100
Any Year Exceed Significance Thresholds?	No	No	No	No

Source of Emissions: CalEEMod Output (Attachment A).

Source of Thresholds: San Joaquin Valley Air Pollution Control District. 2015. *Guidance for Assessing and Mitigating Air Quality Impacts*. February 19. Website: <https://www.valleyair.org/transportation/GAMAQI-2015/FINAL-DRAFT-GAMAQI.PDF>. Accessed April 16, 2021.

Notes:

¹ NOx emissions used as a proxy for NO₂.

² PM₁₀ and PM_{2.5} emissions are from the unmitigated output and as a result are more conservative as they do not reflect compliance with Regulation VIII—Fugitive PM₁₀ Prohibitions. The table only accounts for on-site construction emissions.

³ The last year CalEEMod will calculate on-road emissions is 2050. As such, decommissioning emissions were calculated with a construction year of 2050. This is a conservative approach to analysis, as actual decommissioning would occur in the year 2065 and the emissions associated with decommissioning would be less than the emissions presented above.

⁴ Although not anticipated, if the most emissions-intensive days of consecutive phases were to overlap, the combined emissions from both phases would still not exceed the thresholds of significance.

Key: CO = carbon monoxide NOx = oxides of nitrogen

PM_{2.5} = fine particulate matter less than 2.5 microns in diameter

PM₁₀ = particulate matter less than 10 microns in diameter



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Reactive Organic Gas

ROG is emitted during paving activities, and the amount emitted is dependent on the amount of ROG in the paving materials. There are three types of asphalt that are typically used in paving: asphalt cements, cutback asphalts, and emulsified asphalts. SJVAPCD Rule 4641 prohibits the use of rapid cure cutback asphalt, medium cure cutback asphalt, slow cure asphalt that contains more than a half percent of organic compounds that evaporate at 500 degrees Fahrenheit (°F) or lower, and emulsified asphalt containing organic compounds over three percent by volume that evaporate at 500°F or lower. An exception to this allows the use of medium cure asphalt when the National Weather Service official forecast of the high temperature for the 24-hour period following application is below 50°F.

The acute (i.e., short-term) health effects of direct exposure to asphalt fumes include irritation of the eyes, nose, and throat. Other effects include respiratory tract symptoms and pulmonary function changes. However, the closest sensitive receptor is located approximately 3,750 feet northwest of the Project site. At that distance, possible exposure to ROG emissions from paving materials would be negligible. In addition, the restrictions that are placed on asphalt in the San Joaquin Valley reduce ROG emissions from asphalt.

The Project would construct on-site roadways and pathways throughout the Project site. However, the roads would be gravel, and the only paving that would occur would be in areas such as the parking lot (in compliance with Americans with Disabilities Act regulations) or via the addition of an apron to the county road. Therefore, asphalt paving at the Project site would be minimal, and the impact to sensitive receptors from ROG during construction is less than significant.

Naturally Occurring Asbestos (NOA)

According to the U.S. Geological Survey, no NOA is present within the Project area (USGS 2011). Therefore, development of the Project is not anticipated to expose receptors to NOA. Impacts would be less than significant.

Fugitive Dust

The potential for localized PM₁₀ and PM_{2.5} health impacts is a concern for sensitive receptors. The closest sensitive receptor is located approximately 3,750 feet northwest of the Project site. At that distance, possible exposure to fugitive dust emissions would be minimal. Further, the Project would comply with SJVAPCD's Regulation VIII by preparing and complying with a Dust Control Plan that incorporates BMPs for reducing fugitive dust. BMPs required under SJVAPCD Rule 8021 are listed above. With implementation of these BMPs, potential impacts to sensitive receptors resulting from fugitive dust would be less than significant.

Valley Fever

Valley fever, or *coccidioidomycosis*, is an infection caused by inhalation of the spores of the fungus *Coccidioides immitis* (*C. immitis*). The spores live in soil and can live for an extended time in harsh environmental conditions. Activities or conditions that increase the amount of fugitive dust contribute to



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greater exposure, and they include dust storms, grading, and recreational off-road activities. The San Joaquin Valley is considered an endemic area for Valley fever.

Construction activities would generate fugitive dust that could contain *C. immitis* spores. The Project would minimize the generation of fugitive dust during construction activities by complying with SJVAPCD's Regulation VIII and implementing the BMPs contained therein. BMPs include using water or chemical stabilizers to reduce opacity to less than 20 percent to prevent airborne dust that carries valley fever. Nevertheless, to ensure that existing sensitive receptors and on-site construction workers would not be exposed to *C. immitis* spores during construction activities, Mitigation Measure AQ-1 is required, which would implement a Valley Fever Management Plan. The Valley Fever Management Plan would include appropriate worker training, dust management, and safety procedures during construction. Impacts would be less than significant with mitigation incorporated.

Diesel Particulate Matter

Construction activities have the potential to generate DPM emissions related to the number and types of equipment typically associated with construction. Off-road, heavy-duty diesel equipment used for site grading and other construction activities result in the generation of DPM, which is a primary pollutant of concern when evaluating the health risk posed to sensitive receptors. According to CARB, the concentration of DPM is a factor of distance from the source of emissions. DPM concentrations decrease dramatically within the first 500 feet of the source with an 80 percent drop off in concentration at approximately 1,000 feet from the source (CARB 2005).

There are no sensitive receptors located within 1,000 feet of the Project site. The closest sensitive receptor is located approximately 3,750 feet northwest of the Project site. At that distance, there would be no possibility of localized health risks from Project TACs, including DPM, and preparation of a quantitative health risk assessment was not warranted. The concentration of DPM at the nearest receptor as a result of Project construction would be negligible and would not induce a significant health risk. Impacts would be less than significant.

Operation

The potential for sensitive receptors in the Project area to be exposed to localized impacts from criteria pollutants (i.e., CO, NO₂, PM), fugitive dust, Valley Fever, and DPM are evaluated below.

Localized Impacts

Localized impacts could occur in areas with a single large source of emissions, such as a fuel power plant, or with multiple sources concentrated in a small area, such as a distribution center. The Project is proposing to develop a solar generation Project that will produce clean energy. Table 11 demonstrates the daily operational emissions from the Project and demonstrates that during operation, the Project would not exceed localized concentrations.



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Table 11. Localized Concentrations of Emissions for Operation

Emissions Source	Emissions (pounds per day) ¹			
	NOx ²	CO	PM ₁₀	PM _{2.5}
Project Operation	4.61	12.4	2.19	0.67
Significance Thresholds	100	100	100	100
Any Year Exceed Significance Thresholds?	No	No	No	No

Source of Emissions: CalEEMod Output (Attachment A).

Source of Thresholds: San Joaquin Valley Air Pollution Control District. 2015. Guidance for Assessing and Mitigating Air Quality Impacts. February 19. Website: <https://www.valleyair.org/transportation/GAMAQI-2015/FINAL-DRAFT-GAMAQI.PDF>. Accessed April 16, 2021.

Notes:

¹ Daily emission rates include all on-site and off-site sources.

² NOx emissions used as a proxy for NO₂.

Key: CO = carbon monoxide NOx = oxides of nitrogen

PM_{2.5} = fine particulate matter less than 2.5 microns in diameter

PM₁₀ = particulate matter less than 10 microns in diameter

Fugitive Dust and Valley Fever

During operation, dust emissions are anticipated to be negligible because most of the Project area would be occupied by buildings, solar paneling infrastructure, and gravel roads and pathways. Thus, the potential for the Project to generate fugitive dust, including dust that may expose sensitive receptors to Valley Fever, during operations would be less than significant.

Diesel Particulate Matter

The greatest potential during long-term operations for exposure to TACs is from the use of heavy-duty diesel trucks and stationary generators that use diesel fuel. The Project is a solar generation plant. Once operational, the Project would employ up to 10 full-time employees and up to 10 part-time employees for occasional maintenance on the Project site. During operations, the majority of vehicle trips to the Project site would be from employees; and, as a result, Project operation would generate very few diesel truck trips.

The Project may have an emergency generator on the Project site. However, the emergency generator would only be in operation for standard testing procedures or in the unusual circumstance where primary power is lost requiring emergency power generation for BESS HVAC systems. As a result, the generator is not expected to result in significant emissions of DPM. Furthermore, as discussed above, DPM concentration dissipates with distance from the site. Because the nearest sensitive receptor lies approximately 3,700 feet from the Project site, any DPM generated by the emergency generator would dissipate with distance from the source. Additionally, the generator would be permitted by SJVAPCD and would be regulated below thresholds. Once operational, the Project would not be expected to expose sensitive receptors to substantial amounts of TACs.



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Conclusion

The Project would not expose sensitive receptors to substantial pollutant concentrations during operation. During construction, the potential exists for receptors to be exposed to dust containing *C. immitis* spores, which could lead to Valley Fever infection. This is considered a potentially significant impact. However, with implementation of Mitigation Measure AQ-1, which requires the preparation and implementation of a Valley Fever Management Plan, the impact would be reduced to a less-than-significant level.

Level of Significance Before Mitigation

Potentially significant impact.

Mitigation Measures

MM AQ-1: Valley Fever Management Plan. Prior to the initiation of ground disturbing activities, a Valley Fever Management Plan shall be provided to the County for review and approval. The Valley Fever Management Plan shall include a program to limit the potential for exposure to *C. immitis* from construction activities and to identify appropriate worker training, dust management, and safety procedures that shall be implemented. In addition to awareness and recognition training, these measures include performing job hazard assessments (JHAs) for all job classifications employed on site during construction. These JHAs shall identify the potential for exposure as well as the appropriate precautions and controls to minimize exposure.

Level of Significance After Mitigation

Less-than-significant impact with mitigation incorporated.

5.3.4 IMPACT ANALYSIS OF IMPACT AIR-4

Impact AIR-4: Would the project result in other emissions (such as those leading to odors) affecting a substantial number of people?

While offensive odors rarely cause any physical harm, they can still be unpleasant, leading to considerable distress among the public and often generating citizen complaints to local governments and SJVAPCD. The occurrence and severity of odor impacts depends on numerous factors, including nature, frequency, and intensity of the source, the wind speed and direction, and the sensitivity of the receptor.

Construction and decommissioning activities associated with the Project could result in short-term odorous emissions from diesel exhaust associated with diesel-fueled equipment. However, these emissions would be intermittent and would dissipate rapidly from the source. In addition, this diesel-powered equipment would only be present on-site temporarily during construction and decommissioning activities. Furthermore, the Project site is not located close to sensitive receptors that would be potentially impacted by odors. As depicted in Figure 1, Project Location, the closest sensitive receptor is a residence located approximately 3,750 feet northwest of the Project site. In general, construction and decommissioning activities would not create objectionable odors affecting a substantial number of people, and the impact would be less than significant.



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Land uses typically considered as associated with odors include wastewater treatment facilities, waste disposal facilities, or agricultural operations. The Project does not contain land uses typically associated with emitting objectionable odors and is not located within the screening distances to sources of odors recommended by the SJVAPCD. In addition, the Project site is not located in the immediate vicinity of sensitive receptors that would be potentially impacted by odors. Thus, the impact would be less than significant.

Conclusion

The Project would not result in other emissions (such as those leading to odors) affecting a substantial number of people.

Level of Significance Before Mitigation

Less-than-significant impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

Less-than-significant impact.



6.0 Greenhouse Gas Impact Analysis

6.1 California Environmental Quality Act Guidelines

The CEQA Guidelines define a significant effect on the environment as “a substantial, or potentially substantial, adverse change in the environment.” To determine whether a project would have a significant impact on GHGs, the type, level, and impact of emissions generated by the project must be evaluated. The following GHG significance thresholds are contained in CEQA Guidelines Appendix G.

Would the project:

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

This section discusses potential impacts concerning GHGs associated with the Project and provides mitigation measures where necessary.

6.1.1 THRESHOLDS

The SJVAPCD’s guidance for valley land use agencies in addressing GHG emission impacts for new projects under CEQA presents a tiered approach to analyzing project significance with respect to GHG emissions. Project GHG emissions are considered less than significant if they can meet any of the following conditions, evaluated in the order presented:

- 1. Project is exempt from CEQA requirements;
- 2. Project complies with an approved GHG emission reduction plan or GHG mitigation program;
- 3. Project implements Best Performance Standards; or
- 4. Project demonstrates that specific GHG emissions would be reduced or mitigated by at least 29 percent compared to BAU, including GHG emission reductions achieved since the 2002–2004 baseline period.

On November 20, 2015, the California Supreme Court issued its decision on the *Center for Biological Diversity v. California Department of Fish and Wildlife* on the Newhall Ranch project case. The Court determined that there is no substantial evidence to link a specific project’s achievement of CARB’s scoping plan’s statewide average reduction below BAU to the conclusion that the project’s reduction would meet AB 32’s 2020 goals. Furthermore, since the release of SJVAPCD’s guidance, SB 32 has been issued which requires the state to further reduce GHG emissions beyond the goals laid out in AB 32. As a result, the 29 percent reduction in emissions as compared to a BAU standard are outdated and were not used for this analysis.



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CEQA Guidelines Section 15064.4 provides guidance for determining the significance of impacts from GHGs as follows:

(a) The determination of the significance of greenhouse gas emissions calls for a careful judgment by the lead agency consistent with the provisions in Section 15064. A lead agency shall make a good-faith effort, based to the extent possible on scientific and factual data, to describe, calculate or estimate the amount of greenhouse gas emissions resulting from a project. A lead agency shall have discretion to determine, in the context of a particular project, whether to:

- (1) Quantify greenhouse gas emissions resulting from a project; and/or
- (2) Rely on a qualitative analysis or performance-based standards.

(b) In determining the significance of a project's greenhouse gas emissions, the lead agency should focus its analysis on the reasonably foreseeable incremental contribution of the project's emissions to the effects of climate change. A project's incremental contribution may be cumulatively considerable even if it appears relatively small compared to statewide, national or global emissions. The agency's analysis should consider a timeframe that is appropriate for the project. The agency's analysis also must reasonably reflect evolving scientific knowledge and state regulatory schemes. A lead agency should consider the following factors, among others, when determining the significance of impacts from greenhouse gas emissions on the environment:

- (1) The extent to which the project may increase or reduce greenhouse gas emissions as compared to the existing environmental setting;
- (2) Whether the project emissions exceed a threshold of significance that the lead agency determines applies to the project.
- (3) The extent to which the project complies with regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of greenhouse gas emissions (see, e.g., Section 15183.5(b)). Such requirements must be adopted by the relevant public agency through a public review process and must reduce or mitigate the project's incremental contribution of greenhouse gas emissions. If there is substantial evidence that the possible effects of a particular project are still cumulatively considerable notwithstanding compliance with the adopted regulations or requirements, an EIR must be prepared for the project. In determining the significance of impacts, the lead agency may consider a project's consistency with the state's long-term climate goals or strategies, provided that substantial evidence supports the agency's analysis of how those goals or strategies address the project's incremental contribution to climate change and its conclusion that the project's incremental contribution is not cumulatively considerable.

(c) A lead agency may use a model or methodology to estimate greenhouse gas emissions resulting from a project. The lead agency has discretion to select the model or methodology it considers most appropriate to enable decision makers to intelligently take into account the project's incremental contribution to climate change. The lead agency must support its selection



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of a model or methodology with substantial evidence. The lead agency should explain the limitations of the particular model or methodology selected for use.

6.1.2 PROJECT THRESHOLD

The SJVAPCD does not have a numerical threshold for which the project can determine significance. However, according to CARB, achieving a no net increase in GHG emissions is an appropriate overall objective for new development projects (CARB 2022); and other air districts have set no-net increase thresholds (San Luis Obispo County Air Pollution Control District [SLOCAPCD] 2021). Therefore, projects that have zero GHG emissions or a net reduction in GHG emissions are considered to be less than significant as these projects help the state in reaching its overall climate change goals. The no-net increase approach is used to determine whether the Project would generate GHG emissions that have a significant impact on the environment.

In addition, the project will be required to comply with applicable state, regional, and local GHG reduction plans, including CARB's 2022 Scoping Plan, MCAG's 2022 RTP/SCS, and the County's 2030 General Plan. To determine whether the Project would conflict with an applicable plan, policy, or regulation adopted for the purposes of reducing GHG emissions, the Project was evaluated for consistency with the applicable state, regional, and local GHG reduction plans.

6.2 Greenhouse Gas Impact Analysis

6.2.1 IMPACT ANALYSIS OF GHG-1

Impact GHG-1: Would the project generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?

The following emissions estimate is consistent with CEQA Guidelines Section 15064.4. CalEEMod was used to estimate the Project's GHG emissions. Modeling assumptions are described in Section 4.

Constructions Emission Inventory

Construction GHGs would be emitted temporarily by off-road construction equipment, vehicle travel by workers, and material deliveries to the Project site. After the lifetime of the Project, the site would be decommissioned. Decommissioning would be similar to construction of the site; however, decommissioning would utilize the latest available technology which would be more efficient than those available during construction. The estimated construction and decommissioning GHG emissions are shown in Table 12. Because construction GHG emissions are temporary, they are typically amortized over the life of the Project and added to operational emissions. As discussed in Section 4.4.7, the Project is anticipated to have a lifetime of 40 years.



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Table 12. Construction Greenhouse Gas Emissions

Construction Year	Metric Tons of Carbon Dioxide Equivalents (MT CO ₂ e)
Construction—2025 ¹	4,129.41
Construction—2026 ¹	4,709.41
Decommissioning—2065	2,967.77
Total	11,806.58
Amortized over 40 years ²	295.16

Source: CalEEMod Output (Attachment A).

Notes:

¹ Construction emissions include CalEEMod emissions and on-site pickup truck emissions.

² GHG emissions are amortized over the 40-year life of the Project.

The use of heavy equipment associated with the installation of the PG&E interconnection infrastructure would generate GHG emissions as well; however, emissions related to the substation improvements would be minimal compared to construction of the remainder of the Project.

Operational Emission Inventory

Operational or long-term emissions occur over the life of the Project. Operational activities of the Project would generate GHG emissions primarily from operation of maintenance equipment on-site and employee vehicle trips to and from the Project site. GHG emissions would be displaced as power is generated at the proposed solar plant instead of at fossil fuel burning power plants in the region. The net operational GHG emissions associated with the Project are shown in Table 13 and demonstrate that implementation of the Project will result in a net reduction of GHG emissions.

Table 13. Operational Greenhouse Gas Emissions

Source	Emissions of Metric Tons of Carbon Dioxide Equivalents (MT CO ₂ e) Per Year
Mobile	419.74
Area	0.07
Energy	10.77
Water	0.18
Waste	1.69
Refrigerants	0.09
Off-Road Equipment	166.10
Stationary Sources	10.24
<i>Total Operational Emissions</i>	<i>608.88</i>
Amortized Construction and Decommissioning Emissions	295.16
<i>Subtotal</i>	<i>904.04</i>
Displaced Emissions	-2,520.27
Total	-1,616.23

Source: CalEEMod Output (Attachment A).



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Operation of the PG&E power line connection would not result in the generation of emissions, and maintenance of the power line connection would result in negligible emissions associated with periodic inspections.

Conclusion

As shown in Table 13, the Project would result in a net reduction of GHG emissions. In addition, the Project would contribute its fair share to help the state meet its GHG reduction targets in the energy sector by providing renewable energy and battery storage. However, high-voltage switchgear for the Project may have circuit breakers that contain SF₆ gas, which is a GHG with a high GWP. SF₆ is used as an insulator and arc suppressor in the circuit breakers. Under normal operating conditions the SF₆ gas would be contained in the equipment, and emissions to the atmosphere would only occur through a leak in the circuit breaker housing. Mitigation Measure GHG-1 would be implemented to ensure that all breakers purchased for the Project will have a manufacturers' guaranteed SF₆ leakage rate of 0.5 percent per year or less. Therefore, with implementation of mitigation, the Project would not generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment, and the impact would be less than significant.

Level of Significance Before Mitigation

Potentially significant impact.

Mitigation Measures

MM GHG-1: Circuit Breakers. Prior to construction activities, the applicant will ensure that breakers used for the Project shall have a manufacturer-guaranteed sulfur hexafluoride (SF₆) leakage rate of 0.5 percent per year or less.

Level of Significance After Mitigation

Less-than-significant impact with mitigation incorporated.

6.2.2 IMPACT ANALYSIS OF GHG-2

Impact GHG-2: Would the project conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

A project would have a significant impact with respect to GHG emissions and global climate change if it would substantially conflict with the provisions of CEQA Guidelines Section 15064.4(b). Pursuant to CEQA Guidelines Appendix G, a significant GHG impact is identified if the project could conflict with applicable GHG reduction plans, policies, or regulations.

Consistency with State GHG Reduction Strategies

CARB's 2022 Scoping Plan sets a framework for California to meet the reduction targets of SB 32 and AB 1279. The 2022 Scoping Plan builds upon previous iterations of state scoping plans to achieve carbon



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neutrality and reduce anthropogenic GHG emissions by 85 percent of year 1990 levels no later than 2045, as directed by AB 1279. Table 14 evaluates Project consistency with the GHG reduction strategies identified in the 2022 Scoping Plan. As shown therein, the Project would be consistent with all applicable measures and, as a result, would support the overall carbon neutrality goal established by the 2022 Scoping Plan.

Table 14. Project Consistency with 2022 Scoping Plan Greenhouse Gas Reduction Strategies

Measure	Consistency Determination
Deploy ZEVs and reduce driving demand	Consistent. While the Project itself would not deploy ZEVs, the Project would provide an additional source of clean electricity and additional grid electricity to power the state's growing fleet of ZEVs.
Coordinate supply of liquid fossil fuels with declining CA fuel demand	Not Applicable. This measure is aimed at petroleum refineries and fossil fuel extraction operations. The Project would not interfere with this goal. Moreover, the Project would further the state's goal of reducing fuel demand by providing an additional source of clean energy.
Generate clean electricity	Consistent. The Project would construct a solar power plant and energy storage facility capable of generating 75 MW of electricity.
Decarbonize Buildings	Consistent. The Project would construct a solar power plant and energy storage facility capable of generating 75 MW of electricity. All buildings constructed on the Project site will be consistent with the most current CALGreen Standards in effect at the time of construction.
Decarbonize Industrial Energy Supply	Consistent. The Project would construct a solar power plant and energy storage facility capable of generating 75 MW of electricity. As such, the Project would provide an additional source of clean energy that would be available in the grid for industrial end users.
Reduce non-combustion emissions (Methane)	Consistent. The Project would not include any land uses that generate significant levels of methane, such as landfills or dairy farms.
Reduce non-combustion emissions (Hydrofluorocarbons [HFCs])	Consistent. The Project will comply with all SJVAPCD and state regulations governing short-lived climate pollutants (SLCPs), including HFCs.
Compensate for remaining emissions	Not Applicable. This measure is aimed at the state government to reduce statewide emissions to meet AB 1279 goals.

Source: CARB 2022b.

To help achieve the state's GHG reduction goals, SB 100 sets ambitious renewable energy targets. The Project involves the construction, operation and maintenance, and decommissioning of a solar facility that would produce a new renewable source of energy in the County. Therefore, the Project would directly support California's RPS goal under SB 100 of increasing the percentage of electricity procured from renewable sources to 60 percent by 2030 and a target of 100 percent from eligible renewable energy resources and zero-carbon resources by 2045.

The Project would be required to comply with state laws governing solid waste disposal and water use, including AB 939, the California Integrated Waste Management Act, and SB 606, Water Conservation and Drought Planning. Furthermore, the Project would not conflict with any state-wide regulations



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governing vehicle efficiency, including the Pavley Regulations established by AB 1493, the LCFS established by EO S-01-07, and the ZEV goals established by EO B-48-18 and EO N-79-20.

Based on the discussion above, the Project would not conflict with any state plan, policy, or regulation adopted for the purpose of reducing GHG emissions.

Consistency with Regional GHG Reduction Strategies

The MCAG's 2022 RTP/SCS was prepared to comply with SB 375, which requires a reduction in GHG emissions from the transportation sector. None of the goals, objectives, or actions identified in the MCAG's 2022 RTP/SCS specifically relate to the Project. Action Item 4.1.5 calls for the support of vehicle electrification and electrification infrastructure; the Project would indirectly support this Action Item by providing additional electric resources to the electrical grid. In addition, the Project would not affect local transportation or land use during operations and would not conflict with any policies identified in the RTP/SCS. Overall, by providing a new source of renewable energy, the Project would generally support the overarching goal of the RTP/SCS to reduce GHG emissions. Therefore, the Project would not conflict with the applicable regional plan adopted for the purpose of reducing GHG emissions.

Consistency with Local GHG Reduction Strategies

Table 15 evaluates Project consistency with the GHG reduction strategies identified in the 2030 Merced County General Plan. As shown below, the Project would be consistent with all applicable policies. Thus, the Project would not conflict with the local policies that were adopted for the purpose of reducing GHG emissions.

Table 15. Project Consistency with 2030 Merced County General Plan Greenhouse Gas Reduction Strategies

Measure	Consistency Determination
Policy NR-2.1: Renewable Energy Use. Promote the development and use of renewable energy resources to reduce dependency on petroleum-based energy sources.	Consistent. The Project would construct a solar power plant and energy storage facility capable of generating 75 MW of electricity. Therefore, the Project would directly increase the availability of renewable energy resources and help reduce County-wide dependency on petroleum.
Policy NR-2.2: Clean Alternative Energy Requirement. Encourage new electricity providers to use only clean alternative energy sources (e.g., solar, thermal, wind).	Consistent. The Project is a solar energy development project that would connect to PG&E infrastructure at the Mercy Spring Substation. Thus, the Project would directly support an electricity provider in providing clean alternative solar energy.
Policy NR-2.4: Solar Power. Encourage on-site solar power use in residential, commercial, and industrial buildings, and solar power facilities in rural locations that do not harm long-term agricultural productivity and habitat values.	Consistent. The Project would construct a solar power facility at a rural location and, thus, would directly support this policy. As discussed in Sections 4.2, Agriculture and Forestry Resources, and 4.4, Biological Resources, the Project would result in less than significant impacts to agricultural and biological resources.



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Measure	Consistency Determination
Policy NR-2.9: Energy Conservation. Encourage and maximize energy conservation and identification of alternative energy sources (e.g., wind or solar).	Consistent. The Project would construct a solar power plant and energy storage facility capable of generating 75 MW of electricity. Additionally, all structures constructed on the site will be consistent with the most current CALGreen Standards in effect at the time of construction, which would maximize energy conservation.

Source: Merced County 2013.

Conclusion

The Project proposes to construct a 75 MW solar power plant in a rural area of Merced County. The Project would result in a net reduction in GHG emissions and would be consistent with the state's goals of reducing GHG emissions and with CARB's 2022 Scoping Plan. The Project would not conflict with an applicable plan, and impacts would be considered less than significant.

Level of Significance Before Mitigation

Less-than-significant impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

Less-than-significant impact.



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APPENDIX A

Criteria Air Pollutant and Greenhouse Gas Emissions Results



SUMMARY CONSTRUCTION TABLES

Annual (tons/year)

Emissions Source	Emissions (Tons/Year)					
	ROG	NO _x	CO	SO _x	PM ₁₀	PM _{2.5}
Project Construction						
2025 CalEEMod	0.58	3.32	11.50	0.01	2.24	0.58
2025 On-Site Trucks	0.01	0.12	0.14	0.00	0.01	0.00
2025 Water Trucks	0.07	1.49	0.98	0.01	0.06	0.03
2025 TOTAL	0.66	4.94	12.62	0.02	2.31	0.61
2026 CalEEMod	0.73	4.64	12.90	0.02	2.24	0.61
2026 On-Site Trucks	0.01	0.12	0.14	0.00	0.01	0.00
2026 Water Trucks	0.07	1.49	0.98	0.01	0.06	0.03
2026 TOTAL	0.81	6.26	14.02	0.03	2.31	0.64
Decommissioning						
2050 CalEEMod	0.28	1.83	4.92	0.01	3.33	1.19
2050 On-Site Trucks	0.00	0.02	0.01	0.00	0.00	0.00
2050 Water Trucks	0.07	1.27	1.01	0.01	0.07	0.03
2050 TOTAL	0.35	3.12	5.94	0.02	3.40	1.22
Significance Thresholds	10	10	100	27	15	15
Any Year Exceed Significance Thresholds?	No	No	No	No	No	No

TPY		
MTCO _{2e}		
3,195.00		
142.34	0	0
792.07	0	0
4,129.41		
3,775.00		
142.34	0	0
792.07		
4,709.41		
2,234.00		
79.67	0	0
654.09	0	0
2,967.77		
11,806.58		
295.16		

Daily, On-Site Only (lbs/day)

Emissions Source	Emissions (pounds per day)			
	NO _x	CO	PM ₁₀	PM _{2.5}
Project Construction				
Civil Work 2025	7.80	8.09	0.81	0.32
Facility Construction 2025	9.11	9.91	0.34	0.31
Facility Construction 2026	8.47	9.91	0.31	0.28
Testing and Commissioning 2026	27.6	36.8	0.89	0.82
On-site trucks	0.94	1.07	0.04	0.02
Max Daily TOTAL	28.54	37.87	0.93	0.84
Decommissioning				
CalEEMod Max	8.21	10.7	0.3	0.2
On-site trucks	0.17	0.07	0.02	0.01
Max Daily TOTAL	8.38	10.77	0.32	0.21
Significance Thresholds	100	100	100	100
Any Year Exceed Significance Thresholds?	No	No	No	No

Note: Water haul trucks excluded because these emissions would be primarily off-site

Mobile Emissions - Construction

Vehicle Emission Factors

Source: EMFAC2021 (v1.0.2) Emission Rates

Region Type: County

Region: Merced

Calendar Year: 2025

Season: Annual

Vehicle Classification: EMFAC2007 Categories

Units: miles/day for CVMT and EVMT, g/mile for RUNEX, PMBW and PMTW, mph for Speed, kWh/mile for Energy Consumption, gallon/mile for Fuel Consumption. PHEV calculated based on total VMT

Region	Calendar Year	Vehicle Category	Model Year	Speed	Fuel	Total VMT	VMT by fuel type	NOx_RUNEX	PM2.5_RUNEX	PM10_RUNEX	CO2_RUNEX	CH4_RUNEX	N2O_RUNEX	ROG_RUNEX	TOG_RUNEX
Merced	2025	MHDT	Aggregate	15	Gasoline	597.2344259	0.134534096	0.79815613	0.003339003	0.00363147	2559.211649	0.045186975	0.038113784	0.224746708	0.327949868
Merced	2025	MHDT	Aggregate	15	Diesel	3842.044865	0.865465904	2.486180193	0.027083998	0.028308616	1562.972088	0.004430571	0.246246889	0.095388982	0.108593095
4439.279291															

Region	Calendar Year	Vehicle Category	Model Year	Speed	Fuel	Total VMT	VMT by fuel type	NOx_RUNEX	NOx_IDLEX	NOx_STREX	PM2.5_RUNEX	PM2.5_IDLEX	PM2.5_STREX	PM2.5_PMTW	PM2.5_PMBW
Merced	2025	HHDT	Aggregate	Aggregate	Gasoline	54.18661265	4.13666E-05	25.52762406	24.27867645		0	1.776148884	0.009497318	0	0.002926088
Merced	2025	HHDT	Aggregate	Aggregate	Diesel	1309857.702	0.999958633	1.604162371	83.75403283	2.834915256	0.027941015	0.033481436	0	0.008955886	0.026579005
1309911.889															

On-Site Pickup Truck Emissions

Air Quality Emissions

Fuel	Number of Onsite Trucks	Daily Miles 1	Workdays/Year	Annual Miles	NOx_RUNEX	PM2.5_RUNEX	PM10_RUNEX	CO2_RUNEX	CH4_RUNEX	N2O_RUNEX	ROG_RUNEX	TOG_RUNEX	CO_RUNEX	SOx_RUNEX	NH3_RUNEX
Gasoline	0.941738671	120	300	33902.59217	27059.56177	113.2008529	123.1162561	86763908.8	1531.95559	1292.156059	7619.495969	11118.35063	116869.8526	857.749571	1523.24988
Diesel	6.058261329	120	300	218097.4078	84287.95313	918.2177451	959.735477	52988805.26	150.2078474	8348.407848	3233.933765	3681.58742	9635.858531	501.7722991	7051.423488
TOTAL	7			Total (g/year)	111347.5149	1031.418598	1082.851733	139752714.1	1682.163437	9640.563907	10853.42973	14799.93805	126505.7111	1359.52187	8574.673368
Total (lbs/year)					244.9645328	2.269120916	2.382273813	307455.9709	3.700759562	21.2092406	23.87754542	32.55986372	278.3125645	2.990948114	18.86428141
Total (lbs/day)					0.94217128	0.008727388	0.009162592	1182.522965	0.014233691	0.081574002	0.091836713	0.125230245	1.07043294	0.011503647	0.072554928
Total (tons/year)					0.122482266	0.00113456	0.001191137	153.7279855	0.00185038	0.01060462	0.011938773	0.016279932	0.139156282	0.001495474	0.009432141

1 Per SJVAPCD rules, on unpaved roads trucks are required to travel 15 mph. If operating for 8 consecutive hours, then trucks would travel 120 trips per day

GHG Emissions

Fuel	Number of Onsite Trucks	Daily Miles 1	Workdays/Year	Annual Miles	CO2_RUNEX	CH4_RUNEX	N2O_RUNEX
Gasoline	0.941738671	120	300	33902.59217	86763908.8	1531.95559	1292.156059
Diesel	6.058261329	120	300	218097.4078	52988805.26	150.2078474	8348.407848
TOTAL	7			Total (g/year)	139752714.1	1682.163437	9640.563907
Total (tons/year)					153.7279855	0.00185038	0.01060462
Total (MT/year)					139.4312828	0.001678294	0.009618391
GWP					1	25	298
CO2e MT/year					139.4312828	0.041957362	2.866280402
TOTAL					142.34		

GWP from IPCC, 4th Assessment.

Annual Water Truck Emissions

Air Quality Emissions

Fuel	Daily Miles (roundtrip)	Vehicles/Yr	Round Trips/Year	Annual Miles	NOx	PM2.5	PM10	CO2	CH4	N2O	ROG	CO	SOx
Diesel	50	8146	8146	407300	1358728.905	26126.47621	57701.31453	758222599.8	2984.144143	119458.2794	64247.80507	887520.8924	7179.914611
Total (g/year)					1358728.905	26126.47621	57701.31453	758222599.8	2984.144143	119458.2794	64247.80507	887520.8924	7179.914611
Total (lbs/year)					2989.20359	57.47824765	126.942892	1668089.72	6.565117114	262.8082146	141.3451712	1952.545963	15.79581214
Total (lbs/day)					11.496963689	0.221070183	0.488241892	6415.729691	0.02525045	1.010800826	0.543635274	7.509792166	0.060753124
Total (tons/year)					1.494601795	0.028739124	0.063471446	834.0448598	0.003282559	0.131404107	0.070672586	0.976272982	0.007897906

1 Water trucks assumed to travel up to 25 miles/trip.

GHG Emissions

Fuel	Annual Miles	CO2	CH4	N2O
Diesel	407300	758222599.8	2984.144143	119458.2794
Total (tons/year)		834.0448598	0.003282559	0.131404107
Total (MT/year)		756.4786878	0.002977281	0.119183525
GWP		1	25	298
CO2e MT/year		756.4786878	0.074432015	35.51669055
TOTAL		792.07		

Vehicle Emission Factors

CO_RUNEX	SOx_RUNEX	NH3_RUNEX	PM10_PMBW	PM2.5_PMBW	Fuel Consumption	Energy Consumption
3.447224685	0.025300413	0.044930189	0.061495877	0.021523557	0.297475896	0
0.284221881	0.014800411	0.207990689	0.061495877	0.021523557	0.153904306	0

PM10_RUNEX	PM10_IDLEX	PM10_STREX	PM10_PMTW	PM10_PMBW	CO2_RUNEX	CO2_IDLEX	CO2_STREX	CH4_RUNEX	CH4_IDLEX	CH4_STREX	N2O_RUNEX	N2O_IDLEX	N2O_STREX	ROG_RUNEX
0.0374775	0.0103292	0	0.003182387	0.020000006	0.107078573	2750.644931	0	49.51982618	0.826345109	0	3.96043E-05	0.512976061	0	0.033557332
0.029204383	0.034995318	0	0.035823544	0.075940015	1532.679358	16445.16293	0	0.00064258	0.334203444	0	0.241474257	2.590942117	0	0.013834574

On-Site Pickup Truck Emissions

PM10_PMBW	PM2.5_PMBW	PM10 TOTAL	PM2.5 TOTAL
2084.869652	729.7043783	2207.985908	842.9052313
2084.869652	729.7043783	3044.605129	1647.922123
4169.739305	1459.408757	5252.591038	2490.827355
9.17342647	3.210699265	11.55570028	5.47982018
0.03528241	0.012348843	0.044445001	0.021076231
0.004586713	0.00160535	0.00577785	0.00273991

Vehicle Emission Factors

ROG_IDLEX	ROG_STREX	ROG_HOTSOAK	ROG_RUNLOSS	ROG_DIURN	TOG_RUNEX	TOG_IDLEX	TOG_STREX	TOG_HOTSOAK	TOG_RUNLOSS	TOG_DIURN	NH3_RUNEX	CO_RUNEX	CO_IDLEX	CO_STREX
5.661196136	0	0.000215027	0.166053628	1.496457831	12.85656827	8.260804112	0	0.000235427	0.166053628	1.496457831	12.85656827	0.031142772	267.5234607	0
7.195308506	0	0	0	0	0.015749609	8.191311018	0	0	0	0	0.21913437	0.064183704	105.7425571	0

Vehicle Emission Factors

SOx_RUNEX	SOx_IDLEX	SOx_STREX
0.556024244	0.027192926	0
0.014513557	0.155725859	0

0.00049

Mobile Emissions - Decommissioning

Vehicle Emission Factors

Source: EMFAC2021 (v1.0.2) Emission Rates
Region Type: County
Region: Merced
Calendar Year: 2050
Season: Annual
Vehicle Classification: EMFAC2007 Categories
Units: miles/day for CVMT and EVMT, g/mile for RUNEX, PMBW and PMTW, mph for Speed, kWh/mile for Energy Consumption, gallon/mile for Fuel Consumption. PHEV calculated based on total VMT.

Region	Calendar Year	Vehicle Category	Model Year	Speed	Fuel	Total VMT	VMT by fuel type	NOx_RUNEX	PM2.5_RUNEX	PM10_RUNEX	CO2_RUNEX	CH4_RUNEX	N2O_RUNEX	ROG_RUNEX
Merced	2050	MHDT	Aggregate	15	Gasoline	327.9463916	0.088471244	0.083954191	0.002989129	0.00325095	2194.148402	0.006439836	0.009660423	0.02262563
Merced	2050	MHDT	Aggregate	15	Diesel	3378.867001	0.911528756	0.793854962	0.002199969	0.002299441	1322.530767	0.000642617	0.208365261	0.013835368
3706.813393														

Region	Calendar Year	Vehicle Category	Model Year	Speed	Fuel	Total VMT	VMT by fuel type	NOx_RUNEX	NOx_IDLEX	NOx_STREX	PM2.5_RUNEX	PM2.5_IDLEX	PM2.5_STREX	PM2.5_PMTW
Merced	2050	HHDT	Aggregate	Aggregate	Gasoline	31.59477431	1.55262E-05	2.451931355	0	2.103004898	0.001431728	0	0.000477455	0.005000001
Merced	2050	HHDT	Aggregate	Aggregate	Diesel	2034903.319	0.999984474	1.277058939	75.57633524	2.515930467	0.026424055	0.030629863	0	0.00897871
2034934.914														

On-Site Pickup Truck Emissions

Air Quality Emissions

Fuel	Number of Onsite Trucks	Daily Miles 1	Workdays/Year	Annual Miles	NOx_RUNEX	PM2.5_RUNEX	PM10_RUNEX	CO2_RUNEX	CH4_RUNEX	N2O_RUNEX	ROG_RUNEX	TOG_RUNEX	CO_RUNEX	SOx_RUNEX
Gasoline	0.619298707	120	300	22294.75345	1871.737982	66.64188325	72.4791285	48917997.67	143.5745498	215.3767541	504.4328499	736.0672305	5486.709311	483.6042093
Diesel	6.380701293	120	300	229705.2465	17698.80067	49.04775802	51.26547999	29485497.38	14.32698748	4645.452121	308.4561116	351.153803	2199.755124	279.2100282
TOTAL	7			Total (g/year)	19570.53865	115.6896413	123.7446085	78403495.06	157.9015373	4860.828875	812.8889615	1087.221034	7686.464435	762.8142376
				Total lbs/year)	43.05518502	0.254517211	0.272238139	172487.6891	0.347383382	10.69382352	1.788355715	2.391886274	16.91022176	1.678191323
				Total (lbs/day)	0.165596865	0.000978912	0.00104707	663.4141889	0.00133609	0.04113009	0.006878291	0.009199563	0.065039314	0.006454582
				Total (tons/year)	0.021527593	0.000127259	0.000136119	86.24384456	0.000173692	0.005346912	0.000894178	0.001195943	0.008455111	0.000839096

1 Per SJVAPCD rules, on unpaved roads trucks are required to travel 15 mph. if operating for 8 consecutive hours, then trucks would travel 120 trips per day

GHG Emissions

Fuel	Number of Onsite Trucks	Daily Miles 1	Workdays/Year	Annual Miles	CO2_RUNEX	CH4_RUNEX	N2O_RUNEX
Gasoline	0.619298707	120	300	22294.75345	48917997.67	143.5745498	215.3767541
Diesel	6.380701293	120	300	229705.2465	29485497.38	14.32698748	4645.452121
TOTAL	7			Total (g/year)	78403495.06	157.9015373	4860.828875
				Total (tons/year)	86.24384456	0.000173692	0.005346912
				Total (MT/year)	78.22316702	0.000157538	0.004849649
				GWP	1	25	298
				CO2e MT/year	78.22316702	0.003938459	1.445195393
				TOTAL	79.67		

GWP from IPCC, 4th Assessment.

Water Truck Emissions

Air Quality Emissions

Fuel	Daily Miles (roundtrip)	Vehicles/Yr	Round Trips/Year	Annual Miles	NOx	PM2.5	PM10	CO2	CH4	N2O	ROG	CO	SOx
Diesel	50	8146	8146	407300	1156285.702	26510.47016	59970.66677	626128680.5	3054.525745	98646.8286	65763.10166	921855.1625	5929.064186
				Total (g/year)	1156285.702	26510.47016	59970.66677	626128680.5	3054.525745	98646.8286	65763.10166	921855.1625	5929.064186
				Total lbs/year)	2543.828545	58.32303436	131.9354669	1377483.097	6.719956638	217.0230229	144.6788237	2028.081357	13.04394121
				Total (lbs/day)	9.783955943	0.224319363	0.507444103	5298.011912	0.025845987	0.834703934	0.556457014	7.800312913	0.050169005
				Total (tons/year)	1.271914273	0.029161517	0.065967733	688.7415486	0.003359978	0.108511511	0.072339412	1.014040679	0.006521971

GHG Emissions

Fuel	Annual Miles	CO2	CH4	N2O
Diesel	407300	626128680.5	3054.525745	98646.8286
Total (tons/year)		688.7415486	0.003359978	0.108511511
Total (MT/year)		624.6885845	0.0030475	0.098419941
GWP		1	25	298
CO2e MT/year		624.6885845	0.076187508	29.32914239
TOTAL		654.09		

Vehicle Emission Factors

TOG_RUNEX	CO_RUNEX	SOx_RUNEX	NH3_RUNEX	PM10_PMBW	PM2.5_PMBW	Fuel Consumption	Energy Consumption
0.033015267	0.246098676	0.021691391	0.045	0.061495877	0.021523557	0.255041924	0
0.015750513	0.098666941	0.012523576	0.219882253	0.061495877	0.021523557	0.130228288	0

PM2.5_PMBW	PM10_RUNEX	PM10_IDLEX	PM10_STREX	PM10_PMTW	PM10_PMBW	CO2_RUNEX	CO2_IDLEX	CO2_STREX	CH4_RUNEX	CH4_IDLEX	CH4_STREX	N2O_RUNEX	N2O_IDLEX
0.033885691	0.001557134	0	0.000519276	0.020000006	0.096816259	1793.991762	0	42.43356328	0.091015724	0	0.00131909	0.103723602	0
0.029072951	0.027618834	0.032014809	0	0.035914841	0.083065574	1254.274777	14149.59043	0	0.000514774	0.349233774	0	0.197611502	2.229273735

On-Site Pickup Truck Emissions

NH3_RUNEX	PM10_PMBW	PM2.5_PMBW	PM10 TOTAL	PM2.5 TOTAL
1003.263905	1371.035426	479.862399	1443.514554	546.5042822
4902.220617	1371.035426	479.862399	1422.300906	528.910157
5905.484523	2742.070851	959.7247979	2865.81546	1075.414439
12.99206595	6.032555873	2.111394555	6.304794011	2.365911766
0.049969484	0.023202138	0.008120748	0.024249208	0.009099661
0.006496033	0.003016278	0.001055697	0.003152397	0.001182956

Vehicle Emission Factors

N2O_STREX	ROG_RUNEX	ROG_IDLEX	ROG_STREX	ROG_HOTSOAK	ROG_RUNLOSS	ROG_DIURN	TOG_RUNEX	TOG_IDLEX	TOG_STREX	TOG_HOTSOAK	TOG_RUNLOSS	TOG_DIURN	NH3_RUNEX	CO_RUNEX
0.107359526	0.421696741	0	0.007789678	0.010324158	0.161922483	1.654746409	0.615338894	0	0.008528717	0.010324158	0.161922483	1.654746409	0.045	28.58937702
0	0.011082941	7.518907395	0	0	0	0	0.012617085	8.559703721	0	0	0	0	0.219976345	0.041514985

Vehicle Emission Factors

CO_IDLEX	CO_STREX	SOx_RUNEX	SOx_IDLEX	SOx_STREX
0	5.091331167	0.017735435	0	0.000419499
111.0908555	0	0.011877232	0.13398816	0

0.00049

Construction Equipment

Type	Number	Total hours	Notes
On-Site Pickup Trucks	7	-	Emissions modeled using EMFAC
Commuters	60	-	Emissions modeled using EMFAC
Dump Truck	3	-	Haul trucks accounted for in CalEEMod; 3 trips per day
Off-road haul truck	1	8 hours per day	Applied in CalEEMod
Vibratory Roller	1	520	Used during 314-day Facility Construction phase. 520 total hours/314 days = 1.66 average hours per day
Excavators	2	520	Used during 156-day Civil Work phase and 158-day Testing and Commissioning phase. 520 total hours/(156+158 days) = 1.66 average hours per day
Grader	2	520	Used during 156-day Civil Work phase. 520 total hours/156 days = 3.33 average hours per day
Loader	2	1,040	Used during 156-day Civil Work phase and 314-day Facility Construction phase. 1,040 total hours/(156+314 days) = 2.21 average hours per day
Crane	1	696	Used during 314-day Facility Construction phase. 696 total hours/314 days = 2.22 average hours per day
Utility Truck/Pile Driver	6	1,040	Used during 314-day Facility Construction phase and 158-day Testing and Commissioning phase. 1,040 total hours/(314+158 days) = 2.20 average hours per day

Construction Task	Workdays	Proposed Equipment	Equipment Modeled	Pieces of Equipment	Average Usage (hours/day)	Horsepower	Load Factor
Civil work	156	Staff Commute Vans	Light-duty trucks (LDT2)	60	1	-	-
		On-site Pickup Trucks	Medium heavy-duty trucks (MHDT)	7	8	-	-
		Water Haul Trucks	Heavy heavy-duty trucks (HHDT)	26	8	-	-
		Excavator	Excavators	2	2	158	0.38
		Off-road haul truck	Off-highway trucks	1	8	402	0.38
		Grader	Graders	2	4	187	0.41
		Loader	Tractor/loader/ backhoes	2	3	97	0.37
Facility Construction	314	Staff Commute Vans	Light-duty trucks (LDT2)	60	1	-	-
		On-site Pickup Trucks	Medium heavy-duty trucks (MHDT)	7	8	-	-
		Water Haul Trucks	Heavy heavy-duty trucks (HHDT)	26	8	-	-
		Vibratory roller	Rollers	1	2	80	0.38
		Loader	Tractor/loader/ backhoes	2	3	97	0.37
		Utility truck/pile driver	Off-highway trucks	6	3	402	0.38
		Hydraulic cranes	Cranes	1	3	231	0.29
Testing and Commissioning	158	Staff Commute Vans	Light-duty trucks (LDT2)	60	1	-	-
		On-site Pickup Trucks	Medium heavy-duty trucks (MHDT)	7	8	-	-
		Water Haul Trucks	Heavy heavy-duty trucks (HHDT)	26	8	-	-
		Skidsteer	Skid Steer Loaders	10	6	71	0.37
		Excavator	Excavators	2	2	158	0.38
		Utility truck/pile driver	Off-highway trucks	6	3	402	0.38
		Utility Terrain Vehicle	Off-highway trucks	8	4	402	0.38
		Generator	Generator Sets	2	4	84	0.74

Zeta Solar and BESS Detailed Report

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1. Basic Project Information

1.1. Basic Project Information

Data Field	Value
Project Name	Zeta Solar and BESS
Construction Start Date	1/1/2025
Operational Year	2027
Lead Agency	—
Land Use Scale	Project/site
Analysis Level for Defaults	County
Windspeed (m/s)	2.80
Precipitation (days)	21.4
Location	36.91461815044501, -120.80946577400056
County	Merced
City	Unincorporated
Air District	San Joaquin Valley APCD
Air Basin	San Joaquin Valley
TAZ	2313
EDFZ	5
Electric Utility	Pacific Gas & Electric Company
Gas Utility	Pacific Gas & Electric
App Version	2022.1.1.26

1.2. Land Use Types

Land Use Subtype	Size	Unit	Lot Acreage	Building Area (sq ft)	Landscape Area (sq ft)	Special Landscape Area (sq ft)	Population	Description
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General Light Industry	2.10	1000sqft	0.05	2,100	0.00	—	—	operation and maintenance building
User Defined Industrial	1.00	User Defined Unit	650	0.00	0.00	—	—	solar site
Unrefrigerated Warehouse-No Rail	3.00	1000sqft	0.07	3,000	0.00	—	—	warehouse
Other Non-Asphalt Surfaces	14.6	1000sqft	0.33	0.00	0.00	—	—	concrete pads

1.3. User-Selected Emission Reduction Measures by Emissions Sector

No measures selected

2. Emissions Summary

2.1. Construction Emissions Compared Against Thresholds

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

Un/Mit.	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	12.4	10.4	57.6	207	0.24	1.40	28.1	28.9	1.30	6.67	7.90	—	54,093	54,093	1.59	2.86	144	55,103
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	7.19	5.93	39.9	89.6	0.16	0.99	14.3	14.7	0.92	3.37	4.22	—	29,590	29,590	0.98	1.44	1.88	30,044
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	5.20	4.02	25.4	70.6	0.10	0.60	11.9	12.3	0.56	2.83	3.36	—	22,399	22,399	0.70	1.23	26.9	22,802
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.95	0.73	4.64	12.9	0.02	0.11	2.17	2.24	0.10	0.52	0.61	—	3,708	3,708	0.12	0.20	4.45	3,775

2.2. Construction Emissions by Year, Unmitigated

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

Year	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2025	9.16	7.80	40.1	193	0.16	0.82	28.1	28.9	0.77	6.67	7.44	—	46,071	46,071	1.24	2.86	144	47,099
2026	12.4	10.4	57.6	207	0.24	1.40	27.5	28.9	1.30	6.60	7.90	—	54,093	54,093	1.59	2.81	133	55,103
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2025	4.61	3.88	22.7	67.6	0.08	0.44	14.3	14.7	0.41	3.37	3.73	—	22,059	22,059	0.66	1.44	1.88	22,502
2026	7.19	5.93	39.9	89.6	0.16	0.99	13.7	14.7	0.92	3.30	4.22	—	29,590	29,590	0.98	1.44	1.72	30,044
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2025	3.79	3.20	18.2	63.0	0.07	0.35	11.9	12.3	0.33	2.83	3.16	—	18,890	18,890	0.54	1.23	26.9	19,297
2026	5.20	4.02	25.4	70.6	0.10	0.60	11.7	12.3	0.56	2.80	3.36	—	22,399	22,399	0.70	1.21	24.7	22,802
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2025	0.69	0.58	3.32	11.5	0.01	0.06	2.17	2.24	0.06	0.52	0.58	—	3,127	3,127	0.09	0.20	4.45	3,195
2026	0.95	0.73	4.64	12.9	0.02	0.11	2.13	2.24	0.10	0.51	0.61	—	3,708	3,708	0.12	0.20	4.09	3,775

2.4. Operations Emissions Compared Against Thresholds

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

Un/Mit.	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	1.52	1.34	4.44	12.4	0.04	0.16	2.03	2.19	0.15	0.52	0.67	2.96	3,913	3,916	0.41	0.16	9.42	3,983
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Unmit.	1.46	1.28	4.61	9.91	0.04	0.16	2.03	2.19	0.15	0.52	0.67	2.96	3,727	3,730	0.41	0.17	0.78	3,790
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	1.13	0.98	3.65	9.66	0.03	0.11	2.00	2.11	0.10	0.51	0.61	2.96	3,612	3,615	0.40	0.16	4.38	3,678
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.21	0.18	0.67	1.76	0.01	0.02	0.37	0.39	0.02	0.09	0.11	0.49	598	599	0.07	0.03	0.72	609

2.5. Operations Emissions by Sector, Unmitigated

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

Sector	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.48	0.41	1.36	8.85	0.03	0.03	2.03	2.05	0.02	0.52	0.54	—	2,621	2,621	0.06	0.15	8.87	2,676
Area	0.16	0.15	< 0.005	0.22	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	0.91	0.91	< 0.005	< 0.005	—	0.92
Energy	< 0.005	< 0.005	0.03	0.02	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	64.6	64.6	0.01	< 0.005	—	65.0
Water	—	—	—	—	—	—	—	—	—	—	—	0.04	0.90	0.93	< 0.005	< 0.005	—	1.07
Waste	—	—	—	—	—	—	—	—	—	—	—	2.92	0.00	2.92	0.29	0.00	—	10.2
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.55	0.55
Off-Road	0.40	0.33	1.82	2.23	0.01	0.06	—	0.06	0.06	—	0.06	—	1,000	1,000	0.04	0.01	—	1,003
Stationary	0.48	0.44	1.23	1.12	< 0.005	0.06	0.00	0.06	0.06	0.00	0.06	0.00	225	225	0.01	< 0.005	0.00	226
Total	1.52	1.34	4.44	12.4	0.04	0.16	2.03	2.19	0.15	0.52	0.67	2.96	3,913	3,916	0.41	0.16	9.42	3,983
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.46	0.39	1.53	6.54	0.02	0.03	2.03	2.05	0.02	0.52	0.54	—	2,436	2,436	0.06	0.16	0.23	2,484
Area	0.12	0.12	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Energy	< 0.005	< 0.005	0.03	0.02	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	64.6	64.6	0.01	< 0.005	—	65.0
Water	—	—	—	—	—	—	—	—	—	—	—	0.04	0.90	0.93	< 0.005	< 0.005	—	1.07
Waste	—	—	—	—	—	—	—	—	—	—	—	2.92	0.00	2.92	0.29	0.00	—	10.2
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.55	0.55
Off-Road	0.40	0.33	1.82	2.23	0.01	0.06	—	0.06	0.06	—	0.06	—	1,000	1,000	0.04	0.01	—	1,003
Stationary	0.48	0.44	1.23	1.12	< 0.005	0.06	0.00	0.06	0.06	0.00	0.06	0.00	225	225	0.01	< 0.005	0.00	226
Total	1.46	1.28	4.61	9.91	0.04	0.16	2.03	2.19	0.15	0.52	0.67	2.96	3,727	3,730	0.41	0.17	0.78	3,790
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.46	0.39	1.46	6.99	0.02	0.03	2.00	2.03	0.02	0.51	0.53	—	2,485	2,485	0.06	0.15	3.83	2,535
Area	0.14	0.14	< 0.005	0.11	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	0.45	0.45	< 0.005	< 0.005	—	0.45
Energy	< 0.005	< 0.005	0.03	0.02	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	64.6	64.6	0.01	< 0.005	—	65.0
Water	—	—	—	—	—	—	—	—	—	—	—	0.04	0.90	0.93	< 0.005	< 0.005	—	1.07
Waste	—	—	—	—	—	—	—	—	—	—	—	2.92	0.00	2.92	0.29	0.00	—	10.2
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.55	0.55
Off-Road	0.40	0.33	1.82	2.23	0.01	0.06	—	0.06	0.06	—	0.06	—	1,000	1,000	0.04	0.01	—	1,003
Stationary	0.13	0.12	0.34	0.31	< 0.005	0.02	0.00	0.02	0.02	0.00	0.02	0.00	61.6	61.6	< 0.005	< 0.005	0.00	61.8
Total	1.13	0.98	3.65	9.66	0.03	0.11	2.00	2.11	0.10	0.51	0.61	2.96	3,612	3,615	0.40	0.16	4.38	3,678
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.08	0.07	0.27	1.28	< 0.005	< 0.005	0.37	0.37	< 0.005	0.09	0.10	—	411	411	0.01	0.03	0.63	420
Area	0.03	0.02	< 0.005	0.02	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	0.07	0.07	< 0.005	< 0.005	—	0.07
Energy	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	10.7	10.7	< 0.005	< 0.005	—	10.8
Water	—	—	—	—	—	—	—	—	—	—	—	0.01	0.15	0.15	< 0.005	< 0.005	—	0.18
Waste	—	—	—	—	—	—	—	—	—	—	—	0.48	0.00	0.48	0.05	0.00	—	1.69
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.09	0.09
Off-Road	0.07	0.06	0.33	0.41	< 0.005	0.01	—	0.01	0.01	—	0.01	—	166	166	0.01	< 0.005	—	166

Stationa	0.02	0.02	0.06	0.06	< 0.005	< 0.005	0.00	< 0.005	< 0.005	0.00	< 0.005	0.00	10.2	10.2	< 0.005	< 0.005	0.00	10.2
Total	0.21	0.18	0.67	1.76	0.01	0.02	0.37	0.39	0.02	0.09	0.11	0.49	598	599	0.07	0.03	0.72	609

3. Construction Emissions Details

3.1. Civil Work (2025) - Unmitigated

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

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.16	0.98	7.80	8.09	0.02	0.28	—	0.28	0.26	—	0.26	—	2,669	2,669	0.11	0.02	—	2,678
Dust From Material Movement	—	—	—	—	—	—	0.53	0.53	—	0.06	0.06	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.16	0.98	7.80	8.09	0.02	0.28	—	0.28	0.26	—	0.26	—	2,669	2,669	0.11	0.02	—	2,678
Dust From Material Movement	—	—	—	—	—	—	0.53	0.53	—	0.06	0.06	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.50	0.42	3.33	3.46	0.01	0.12	—	0.12	0.11	—	0.11	—	1,141	1,141	0.05	0.01	—	1,145
Dust From Material Movement	—	—	—	—	—	—	0.23	0.23	—	0.02	0.02	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.09	0.08	0.61	0.63	< 0.005	0.02	—	0.02	0.02	—	0.02	—	189	189	0.01	< 0.005	—	189
Dust From Material Movement	—	—	—	—	—	—	0.04	0.04	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	2.98	2.58	4.70	85.6	0.00	0.00	11.9	11.9	0.00	2.78	2.78	—	12,970	12,970	0.44	0.40	53.0	13,152
Vendor	0.23	0.17	6.80	1.79	0.05	0.10	1.88	1.98	0.10	0.52	0.62	—	6,765	6,765	0.05	0.99	19.1	7,082
Hauling	0.01	< 0.005	0.21	0.04	< 0.005	< 0.005	0.05	0.05	< 0.005	0.01	0.02	—	173	173	< 0.005	0.03	0.42	181
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	2.81	2.39	6.24	56.0	0.00	0.00	11.9	11.9	0.00	2.78	2.78	—	11,533	11,533	0.46	0.40	1.38	11,664
Vendor	0.22	0.17	7.32	1.76	0.05	0.10	1.88	1.98	0.10	0.52	0.62	—	6,766	6,766	0.05	1.00	0.50	7,064

Hauling	0.01	< 0.005	0.22	0.05	< 0.005	< 0.005	0.05	0.05	< 0.005	0.01	0.02	—	173	173	< 0.005	0.03	0.01	181
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	1.20	1.03	2.33	26.7	0.00	0.00	5.00	5.00	0.00	1.17	1.17	—	5,090	5,090	0.19	0.17	9.80	5,155
Vendor	0.10	0.07	3.06	0.75	0.02	0.04	0.79	0.84	0.04	0.22	0.26	—	2,891	2,891	0.02	0.43	3.53	3,022
Hauling	< 0.005	< 0.005	0.09	0.02	< 0.005	< 0.005	0.02	0.02	< 0.005	0.01	0.01	—	73.8	73.8	< 0.005	0.01	0.08	77.4
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.22	0.19	0.43	4.88	0.00	0.00	0.91	0.91	0.00	0.21	0.21	—	843	843	0.03	0.03	1.62	853
Vendor	0.02	0.01	0.56	0.14	< 0.005	0.01	0.14	0.15	0.01	0.04	0.05	—	479	479	< 0.005	0.07	0.58	500
Hauling	< 0.005	< 0.005	0.02	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	12.2	12.2	< 0.005	< 0.005	0.01	12.8

3.3. Facility Construction (2025) - Unmitigated

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

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.57	1.32	9.11	9.91	0.03	0.34	—	0.34	0.31	—	0.31	—	3,760	3,760	0.15	0.03	—	3,773
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.57	1.32	9.11	9.91	0.03	0.34	—	0.34	0.31	—	0.31	—	3,760	3,760	0.15	0.03	—	3,773
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.68	0.57	3.94	4.28	0.02	0.15	—	0.15	0.13	—	0.13	—	1,625	1,625	0.07	0.01	—	1,630
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.12	0.10	0.72	0.78	< 0.005	0.03	—	0.03	0.02	—	0.02	—	269	269	0.01	< 0.005	—	270
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	2.98	2.58	4.70	85.6	0.00	0.00	11.9	11.9	0.00	2.78	2.78	—	12,970	12,970	0.44	0.40	53.0	13,152
Vendor	0.23	0.17	6.80	1.79	0.05	0.10	1.88	1.98	0.10	0.52	0.62	—	6,765	6,765	0.05	0.99	19.1	7,082
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	2.81	2.39	6.24	56.0	0.00	0.00	11.9	11.9	0.00	2.78	2.78	—	11,533	11,533	0.46	0.40	1.38	11,664
Vendor	0.22	0.17	7.32	1.76	0.05	0.10	1.88	1.98	0.10	0.52	0.62	—	6,766	6,766	0.05	1.00	0.50	7,064
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	1.22	1.04	2.36	27.0	0.00	0.00	5.06	5.06	0.00	1.18	1.18	—	5,146	5,146	0.19	0.17	9.91	5,212
Vendor	0.10	0.07	3.09	0.75	0.02	0.04	0.80	0.85	0.04	0.22	0.26	—	2,923	2,923	0.02	0.43	3.57	3,055
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Worker	0.22	0.19	0.43	4.93	0.00	0.00	0.92	0.92	0.00	0.22	0.22	—	852	852	0.03	0.03	1.64	863
Vendor	0.02	0.01	0.56	0.14	< 0.005	0.01	0.15	0.15	0.01	0.04	0.05	—	484	484	< 0.005	0.07	0.59	506
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.5. Facility Construction (2026) - Unmitigated

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

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.54	1.30	8.47	9.91	0.03	0.31	—	0.31	0.28	—	0.28	—	3,764	3,764	0.15	0.03	—	3,777
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.54	1.30	8.47	9.91	0.03	0.31	—	0.31	0.28	—	0.28	—	3,764	3,764	0.15	0.03	—	3,777
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.66	0.55	3.62	4.24	0.01	0.13	—	0.13	0.12	—	0.12	—	1,609	1,609	0.07	0.01	—	1,614
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.12	0.10	0.66	0.77	< 0.005	0.02	—	0.02	0.02	—	0.02	—	266	266	0.01	< 0.005	—	267
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	2.87	2.47	4.32	78.3	0.00	0.00	11.9	11.9	0.00	2.78	2.78	—	12,698	12,698	0.43	0.40	48.8	12,876
Vendor	0.23	0.12	6.45	1.58	0.05	0.10	1.88	1.98	0.10	0.52	0.62	—	6,642	6,642	0.05	0.95	17.7	6,942
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	2.35	1.94	5.48	51.2	0.00	0.00	11.9	11.9	0.00	2.78	2.78	—	11,297	11,297	0.45	0.40	1.27	11,428
Vendor	0.22	0.12	6.87	1.55	0.05	0.10	1.88	1.98	0.10	0.52	0.62	—	6,643	6,643	0.05	0.95	0.46	6,926
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	1.17	0.84	2.01	24.4	0.00	0.00	5.00	5.00	0.00	1.17	1.17	—	4,985	4,985	0.19	0.17	9.01	5,049
Vendor	0.10	0.05	2.89	0.66	0.02	0.04	0.79	0.84	0.04	0.22	0.26	—	2,839	2,839	0.02	0.40	3.26	2,963
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.21	0.15	0.37	4.45	0.00	0.00	0.91	0.91	0.00	0.21	0.21	—	825	825	0.03	0.03	1.49	836
Vendor	0.02	0.01	0.53	0.12	< 0.005	0.01	0.14	0.15	0.01	0.04	0.05	—	470	470	< 0.005	0.07	0.54	491
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.7. Testing and Commissioning (2026) - Unmitigated

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

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	4.62	3.87	27.6	36.8	0.11	0.89	—	0.89	0.82	—	0.82	—	11,650	11,650	0.47	0.09	—	11,690
Paving	0.00	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	4.62	3.87	27.6	36.8	0.11	0.89	—	0.89	0.82	—	0.82	—	11,650	11,650	0.47	0.09	—	11,690
Paving	0.00	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	2.00	1.68	11.9	15.9	0.05	0.39	—	0.39	0.35	—	0.35	—	5,043	5,043	0.20	0.04	—	5,060
Paving	0.00	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipm ent	0.36	0.31	2.18	2.91	0.01	0.07	—	0.07	0.06	—	0.06	—	835	835	0.03	0.01	—	838
Paving	0.00	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	2.87	2.47	4.32	78.3	0.00	0.00	11.9	11.9	0.00	2.78	2.78	—	12,698	12,698	0.43	0.40	48.8	12,876
Vendor	0.23	0.12	6.45	1.58	0.05	0.10	1.88	1.98	0.10	0.52	0.62	—	6,642	6,642	0.05	0.95	17.7	6,942
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	2.35	1.94	5.48	51.2	0.00	0.00	11.9	11.9	0.00	2.78	2.78	—	11,297	11,297	0.45	0.40	1.27	11,428
Vendor	0.22	0.12	6.87	1.55	0.05	0.10	1.88	1.98	0.10	0.52	0.62	—	6,643	6,643	0.05	0.95	0.46	6,926
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	1.18	0.85	2.04	24.7	0.00	0.00	5.07	5.07	0.00	1.19	1.19	—	5,049	5,049	0.19	0.17	9.12	5,114
Vendor	0.10	0.05	2.92	0.67	0.02	0.04	0.80	0.85	0.04	0.22	0.27	—	2,875	2,875	0.02	0.41	3.30	3,001
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.22	0.15	0.37	4.51	0.00	0.00	0.92	0.92	0.00	0.22	0.22	—	836	836	0.03	0.03	1.51	847
Vendor	0.02	0.01	0.53	0.12	< 0.005	0.01	0.15	0.15	0.01	0.04	0.05	—	476	476	< 0.005	0.07	0.55	497
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

4. Operations Emissions Details

4.1. Mobile Emissions by Land Use

4.1.1. Unmitigated

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

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
General Light Industry	0.48	0.41	1.26	8.83	0.02	0.02	2.01	2.03	0.02	0.51	0.53	—	2,539	2,539	0.06	0.14	8.69	2,589
User Defined Industrial	< 0.005	< 0.005	0.09	0.02	< 0.005	< 0.005	0.02	0.02	< 0.005	0.01	0.01	—	82.3	82.3	< 0.005	0.01	0.19	86.3
Unrefrigerated Warehouse-No Rail	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Other Non-Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.48	0.41	1.36	8.85	0.03	0.03	2.03	2.05	0.02	0.52	0.54	—	2,621	2,621	0.06	0.15	8.87	2,676
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
General Light Industry	0.46	0.39	1.43	6.52	0.02	0.02	2.01	2.03	0.02	0.51	0.53	—	2,354	2,354	0.06	0.14	0.23	2,398
User Defined Industrial	< 0.005	< 0.005	0.10	0.02	< 0.005	< 0.005	0.02	0.02	< 0.005	0.01	0.01	—	82.3	82.3	< 0.005	0.01	< 0.005	86.2

Unrefrig erated Wareho use-No	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Other Non-Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.46	0.39	1.53	6.54	0.02	0.03	2.03	2.05	0.02	0.52	0.54	—	2,436	2,436	0.06	0.16	0.23	2,484
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
General Light Industry	0.08	0.07	0.25	1.27	< 0.005	< 0.005	0.36	0.37	< 0.005	0.09	0.10	—	398	398	0.01	0.02	0.62	405
User Defined Industrial	< 0.005	< 0.005	0.02	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	13.6	13.6	< 0.005	< 0.005	0.01	14.3
Unrefrig erated Wareho use-No Rail	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Other Non-Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.08	0.07	0.27	1.28	< 0.005	< 0.005	0.37	0.37	< 0.005	0.09	0.10	—	411	411	0.01	0.03	0.63	420

4.2. Energy

4.2.1. Electricity Emissions By Land Use - Unmitigated

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

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

General Light Industry	—	—	—	—	—	—	—	—	—	—	—	—	13.9	13.9	< 0.005	< 0.005	—	14.1
User Defined Industrial	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Unrefrigerated Warehouse-No Rail	—	—	—	—	—	—	—	—	—	—	—	—	18.0	18.0	< 0.005	< 0.005	—	18.2
Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	31.9	31.9	0.01	< 0.005	—	32.2
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
General Light Industry	—	—	—	—	—	—	—	—	—	—	—	—	13.9	13.9	< 0.005	< 0.005	—	14.1
User Defined Industrial	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Unrefrigerated Warehouse-No Rail	—	—	—	—	—	—	—	—	—	—	—	—	18.0	18.0	< 0.005	< 0.005	—	18.2
Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	31.9	31.9	0.01	< 0.005	—	32.2
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
General Light Industry	—	—	—	—	—	—	—	—	—	—	—	—	2.31	2.31	< 0.005	< 0.005	—	2.33

User Defined Industrial	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Unrefrigerated Warehouse-No Rail	—	—	—	—	—	—	—	—	—	—	—	—	2.98	2.98	< 0.005	< 0.005	—	3.01
Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	5.29	5.29	< 0.005	< 0.005	—	5.34

4.2.3. Natural Gas Emissions By Land Use - Unmitigated

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

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
General Light Industry	< 0.005	< 0.005	0.02	0.02	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	27.6	27.6	< 0.005	< 0.005	—	27.7
User Defined Industrial	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Unrefrigerated Warehouse-No Rail	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	5.13	5.13	< 0.005	< 0.005	—	5.14
Other Non-Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Total	< 0.005	< 0.005	0.03	0.02	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	32.7	32.7	< 0.005	< 0.005	—	32.8

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
General Light Industry	< 0.005	< 0.005	0.02	0.02	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	27.6	27.6	< 0.005	< 0.005	—	27.7
User Defined Industrial	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Unrefrig erated Wareho use-No Rail	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	5.13	5.13	< 0.005	< 0.005	—	5.14
Other Non-Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Total	< 0.005	< 0.005	0.03	0.02	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	32.7	32.7	< 0.005	< 0.005	—	32.8
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
General Light Industry	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	4.57	4.57	< 0.005	< 0.005	—	4.58
User Defined Industrial	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Unrefrig erated Wareho use-No Rail	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	0.85	0.85	< 0.005	< 0.005	—	0.85
Other Non-Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Total	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	5.41	5.41	< 0.005	< 0.005	—	5.43

4.3. Area Emissions by Source

4.3.1. Unmitigated

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

Source	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	0.11	0.11	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.01	0.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	0.04	0.04	< 0.005	0.22	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	0.91	0.91	< 0.005	< 0.005	—	0.92
Total	0.16	0.15	< 0.005	0.22	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	0.91	0.91	< 0.005	< 0.005	—	0.92
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	0.11	0.11	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.01	0.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	0.12	0.12	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	0.02	0.02	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Architect Coatings	< 0.005	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	< 0.005	< 0.005	< 0.005	0.02	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	0.07	0.07	< 0.005	< 0.005	—	0.07
Total	0.03	0.02	< 0.005	0.02	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	0.07	0.07	< 0.005	< 0.005	—	0.07

4.4. Water Emissions by Land Use

4.4.1. Unmitigated

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

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
General Light Industry	—	—	—	—	—	—	—	—	—	—	—	0.04	0.90	0.93	< 0.005	< 0.005	—	1.07
User Defined Industrial	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Unrefrigerated Warehouse-No Rail	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	0.04	0.90	0.93	< 0.005	< 0.005	—	1.07
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

General Light Industry	—	—	—	—	—	—	—	—	—	—	—	0.04	0.90	0.93	< 0.005	< 0.005	—	1.07
User Defined Industrial	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Unrefrigerated Warehouse-No Rail	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	0.04	0.90	0.93	< 0.005	< 0.005	—	1.07
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
General Light Industry	—	—	—	—	—	—	—	—	—	—	—	0.01	0.15	0.15	< 0.005	< 0.005	—	0.18
User Defined Industrial	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Unrefrigerated Warehouse-No Rail	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	0.01	0.15	0.15	< 0.005	< 0.005	—	0.18

4.5. Waste Emissions by Land Use

4.5.1. Unmitigated

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

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
General Light Industry	—	—	—	—	—	—	—	—	—	—	—	1.40	0.00	1.40	0.14	0.00	—	4.91
User Defined Industrial	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Unrefrig erated Wareho use-No Rail	—	—	—	—	—	—	—	—	—	—	—	1.52	0.00	1.52	0.15	0.00	—	5.32
Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	2.92	0.00	2.92	0.29	0.00	—	10.2
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
General Light Industry	—	—	—	—	—	—	—	—	—	—	—	1.40	0.00	1.40	0.14	0.00	—	4.91
User Defined Industrial	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Unrefrig erated Wareho use-No Rail	—	—	—	—	—	—	—	—	—	—	—	1.52	0.00	1.52	0.15	0.00	—	5.32
Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	2.92	0.00	2.92	0.29	0.00	—	10.2

Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
General Light Industry	—	—	—	—	—	—	—	—	—	—	—	0.23	0.00	0.23	0.02	0.00	—	0.81
User Defined Industrial	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Unrefrigerated Warehouse-No Rail	—	—	—	—	—	—	—	—	—	—	—	0.25	0.00	0.25	0.03	0.00	—	0.88
Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	0.48	0.00	0.48	0.05	0.00	—	1.69

4.6. Refrigerant Emissions by Land Use

4.6.1. Unmitigated

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

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
General Light Industry	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.55	0.55
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.55	0.55
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

General Light Industry	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.55	0.55
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.55	0.55
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
General Light Industry	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.09	0.09
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.09	0.09

4.7. Offroad Emissions By Equipment Type

4.7.1. Unmitigated

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

Equipm ent Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-High way Trucks	0.40	0.33	1.82	2.23	0.01	0.06	—	0.06	0.06	—	0.06	—	1,000	1,000	0.04	0.01	—	1,003
Total	0.40	0.33	1.82	2.23	0.01	0.06	—	0.06	0.06	—	0.06	—	1,000	1,000	0.04	0.01	—	1,003
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-High way Trucks	0.40	0.33	1.82	2.23	0.01	0.06	—	0.06	0.06	—	0.06	—	1,000	1,000	0.04	0.01	—	1,003
Total	0.40	0.33	1.82	2.23	0.01	0.06	—	0.06	0.06	—	0.06	—	1,000	1,000	0.04	0.01	—	1,003
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Highway Trucks	0.07	0.06	0.33	0.41	< 0.005	0.01	—	0.01	0.01	—	0.01	—	166	166	0.01	< 0.005	—	166
Total	0.07	0.06	0.33	0.41	< 0.005	0.01	—	0.01	0.01	—	0.01	—	166	166	0.01	< 0.005	—	166

4.8. Stationary Emissions By Equipment Type

4.8.1. Unmitigated

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

Equipment Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Emergency Generator	0.48	0.44	1.23	1.12	< 0.005	0.06	0.00	0.06	0.06	0.00	0.06	0.00	225	225	0.01	< 0.005	0.00	226
Total	0.48	0.44	1.23	1.12	< 0.005	0.06	0.00	0.06	0.06	0.00	0.06	0.00	225	225	0.01	< 0.005	0.00	226
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Emergency Generator	0.48	0.44	1.23	1.12	< 0.005	0.06	0.00	0.06	0.06	0.00	0.06	0.00	225	225	0.01	< 0.005	0.00	226
Total	0.48	0.44	1.23	1.12	< 0.005	0.06	0.00	0.06	0.06	0.00	0.06	0.00	225	225	0.01	< 0.005	0.00	226
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Emergency Generator	0.02	0.02	0.06	0.06	< 0.005	< 0.005	0.00	< 0.005	< 0.005	0.00	< 0.005	0.00	10.2	10.2	< 0.005	< 0.005	0.00	10.2
Total	0.02	0.02	0.06	0.06	< 0.005	< 0.005	0.00	< 0.005	< 0.005	0.00	< 0.005	0.00	10.2	10.2	< 0.005	< 0.005	0.00	10.2

4.9. User Defined Emissions By Equipment Type

4.9.1. Unmitigated

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

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

4.10. Soil Carbon Accumulation By Vegetation Type

4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

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

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

Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

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

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

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

4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

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

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

Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequest ered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Remove d	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequest ered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Remove d	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

5. Activity Data

5.1. Construction Schedule

Phase Name	Phase Type	Start Date	End Date	Days Per Week	Work Days per Phase	Phase Description
Civil Work	Site Preparation	1/1/2025	7/1/2025	6.00	156	—

Facility Construction	Building Construction	7/1/2025	7/1/2026	6.00	314	—
Testing and Commissioning	Paving	7/1/2026	12/31/2026	6.00	158	—

5.2. Off-Road Equipment

5.2.1. Unmitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Civil Work	Tractors/Loaders/Back hoes	Diesel	Average	2.00	3.00	97.0	0.37
Civil Work	Excavators	Diesel	Average	2.00	2.00	158	0.38
Civil Work	Graders	Diesel	Average	2.00	4.00	187	0.41
Civil Work	Off-Highway Trucks	Diesel	Average	1.00	8.00	402	0.38
Facility Construction	Cranes	Diesel	Average	1.00	3.00	231	0.29
Facility Construction	Tractors/Loaders/Back hoes	Diesel	Average	2.00	3.00	97.0	0.37
Facility Construction	Rollers	Diesel	Average	1.00	2.00	80.0	0.38
Facility Construction	Off-Highway Trucks	Diesel	Average	6.00	3.00	402	0.38
Testing and Commissioning	Excavators	Diesel	Average	2.00	2.00	158	0.38
Testing and Commissioning	Generator Sets	Diesel	Average	2.00	4.00	84.0	0.74
Testing and Commissioning	Off-Highway Trucks	Diesel	Average	6.00	3.00	402	0.38
Testing and Commissioning	Off-Highway Trucks	Diesel	Average	8.00	4.00	402	0.38
Testing and Commissioning	Skid Steer Loaders	Diesel	Average	10.0	6.00	71.0	0.37

5.3. Construction Vehicles

5.3.1. Unmitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Civil Work	—	—	—	—
Civil Work	Worker	300	56.0	LDA,LDT1,LDT2
Civil Work	Vendor	40.0	56.0	HHDT,MHDT
Civil Work	Hauling	2.50	20.0	HHDT
Civil Work	Onsite truck	—	—	HHDT
Facility Construction	—	—	—	—
Facility Construction	Worker	300	56.0	LDA,LDT1,LDT2
Facility Construction	Vendor	40.0	56.0	HHDT,MHDT
Facility Construction	Hauling	0.00	20.0	HHDT
Facility Construction	Onsite truck	—	—	HHDT
Testing and Commissioning	—	—	—	—
Testing and Commissioning	Worker	300	56.0	LDA,LDT1,LDT2
Testing and Commissioning	Vendor	40.0	56.0	HHDT,MHDT
Testing and Commissioning	Hauling	0.00	20.0	HHDT
Testing and Commissioning	Onsite truck	—	—	HHDT

5.4. Vehicles

5.4.1. Construction Vehicle Control Strategies

Non-applicable. No control strategies activated by user.

5.5. Architectural Coatings

Phase Name	Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)
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5.6. Dust Mitigation

5.6.1. Construction Earthmoving Activities

Phase Name	Material Imported (cy)	Material Exported (cy)	Acres Graded (acres)	Material Demolished (sq. ft.)	Acres Paved (acres)
Civil Work	—	—	78.0	0.00	—
Testing and Commissioning	0.00	0.00	0.00	0.00	0.33

5.6.2. Construction Earthmoving Control Strategies

Non-applicable. No control strategies activated by user.

5.7. Construction Paving

Land Use	Area Paved (acres)	% Asphalt
General Light Industry	0.00	0%
User Defined Industrial	0.00	0%
Unrefrigerated Warehouse-No Rail	0.00	0%
Other Non-Asphalt Surfaces	0.33	0%

5.8. Construction Electricity Consumption and Emissions Factors

kWh per Year and Emission Factor (lb/MWh)

Year	kWh per Year	CO2	CH4	N2O
2025	0.00	204	0.03	< 0.005
2026	0.00	204	0.03	< 0.005

5.9. Operational Mobile Sources

5.9.1. Unmitigated

Land Use Type	Trips/Weekday	Trips/Saturday	Trips/Sunday	Trips/Year	VMT/Weekday	VMT/Saturday	VMT/Sunday	VMT/Year
General Light Industry	50.0	50.0	50.0	18,250	2,800	2,800	2,800	1,022,020

User Defined Industrial	1.00	1.00	1.00	365	25.0	25.0	25.0	9,125
Unrefrigerated Warehouse-No Rail	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Other Non-Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

5.10. Operational Area Sources

5.10.1. Hearths

5.10.1.1. Unmitigated

5.10.2. Architectural Coatings

Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)
0	0.00	7,650	2,550	874

5.10.3. Landscape Equipment

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

5.11. Operational Energy Consumption

5.11.1. Unmitigated

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

Land Use	Electricity (kWh/yr)	CO2	CH4	N2O	Natural Gas (kBTU/yr)
General Light Industry	24,915	204	0.0330	0.0040	86,042
User Defined Industrial	0.00	204	0.0330	0.0040	0.00

Unrefrigerated Warehouse-No Rail	32,219	204	0.0330	0.0040	16,002
Other Non-Asphalt Surfaces	0.00	204	0.0330	0.0040	0.00

5.12. Operational Water and Wastewater Consumption

5.12.1. Unmitigated

Land Use	Indoor Water (gal/year)	Outdoor Water (gal/year)
General Light Industry	20,000	883,100
User Defined Industrial	0.00	0.00
Unrefrigerated Warehouse-No Rail	0.00	0.00
Other Non-Asphalt Surfaces	0.00	0.00

5.13. Operational Waste Generation

5.13.1. Unmitigated

Land Use	Waste (ton/year)	Cogeneration (kWh/year)
General Light Industry	2.60	—
User Defined Industrial	0.00	—
Unrefrigerated Warehouse-No Rail	2.82	—
Other Non-Asphalt Surfaces	0.00	—

5.14. Operational Refrigeration and Air Conditioning Equipment

5.14.1. Unmitigated

Land Use Type	Equipment Type	Refrigerant	GWP	Quantity (kg)	Operations Leak Rate	Service Leak Rate	Times Served
General Light Industry	Other commercial A/C and heat pumps	R-410A	2,088	0.30	4.00	4.00	18.0

5.15. Operational Off-Road Equipment

5.15.1. Unmitigated

Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Off-Highway Trucks	Diesel	Average	3.00	2.00	376	0.38

5.16. Stationary Sources

5.16.1. Emergency Generators and Fire Pumps

Equipment Type	Fuel Type	Number per Day	Hours per Day	Hours per Year	Horsepower	Load Factor
Emergency Generator	Diesel	1.00	1.00	100	268	0.73

5.16.2. Process Boilers

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

Equipment Type	Fuel Type
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5.18. Vegetation

5.18.1. Land Use Change

5.18.1.1. Unmitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres
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5.18.1. Biomass Cover Type

5.18.1.1. Unmitigated

Biomass Cover Type	Initial Acres	Final Acres
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5.18.2. Sequestration

5.18.2.1. Unmitigated

Tree Type	Number	Electricity Saved (kWh/year)	Natural Gas Saved (btu/year)
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6. Climate Risk Detailed Report

6.1. Climate Risk Summary

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

Climate Hazard	Result for Project Location	Unit
Temperature and Extreme Heat	32.5	annual days of extreme heat
Extreme Precipitation	0.90	annual days with precipitation above 20 mm
Sea Level Rise	—	meters of inundation depth
Wildfire	18.0	annual hectares burned

Temperature and Extreme Heat data are for grid cell in which your project are located. The projection is based on the 98th historical percentile of daily maximum/minimum temperatures from observed historical data (32 climate model ensemble from Cal-Adapt, 2040–2059 average under RCP 8.5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.

Extreme Precipitation data are for the grid cell in which your project are located. The threshold of 20 mm is equivalent to about ¾ an inch of rain, which would be light to moderate rainfall if received over a full day or heavy rain if received over a period of 2 to 4 hours. Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.

Sea Level Rise data are for the grid cell in which your project are located. The projections are from Radke et al. (2017), as reported in Cal-Adapt (Radke et al., 2017, CEC-500-2017-008), and consider inundation location and depth for the San Francisco Bay, the Sacramento-San Joaquin River Delta and California coast resulting different increments of sea level rise coupled with extreme storm events. Users may select from four scenarios to view the range in potential inundation depth for the grid cell. The four scenarios are: No rise, 0.5 meter, 1.0 meter, 1.41 meters

Wildfire data are for the grid cell in which your project are located. The projections are from UC Davis, as reported in Cal-Adapt (2040–2059 average under RCP 8.5), and consider historical data of climate, vegetation, population density, and large (> 400 ha) fire history. Users may select from four model simulations to view the range in potential wildfire probabilities for the grid cell. The four simulations make different assumptions about expected rainfall and temperature are: Warmer/drier (HadGEM2-ES), Cooler/wetter (CNRM-CM5), Average conditions (CanESM2), Range of different rainfall and temperature possibilities (MIROC5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.

6.2. Initial Climate Risk Scores

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

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.

The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.

The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores do not include implementation of climate risk reduction measures.

6.3. Adjusted Climate Risk Scores

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

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.

The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.

The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores include implementation of climate risk reduction measures.

6.4. Climate Risk Reduction Measures

7. Health and Equity Details

7.1. CalEnviroScreen 4.0 Scores

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

Indicator	Result for Project Census Tract
Exposure Indicators	—
AQ-Ozone	55.4
AQ-PM	12.0
AQ-DPM	19.2
Drinking Water	99.0
Lead Risk Housing	48.2
Pesticides	80.8
Toxic Releases	5.71
Traffic	54.8
Effect Indicators	—
CleanUp Sites	59.0
Groundwater	97.3
Haz Waste Facilities/Generators	7.35
Impaired Water Bodies	96.3
Solid Waste	93.2
Sensitive Population	—
Asthma	93.0
Cardio-vascular	67.6
Low Birth Weights	23.7
Socioeconomic Factor Indicators	—

Education	85.2
Housing	46.5
Linguistic	84.5
Poverty	69.3
Unemployment	95.7

7.2. Healthy Places Index Scores

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

Indicator	Result for Project Census Tract
Economic	—
Above Poverty	18.76042602
Employed	36.78942641
Median HI	22.76401899
Education	—
Bachelor's or higher	6.236365969
High school enrollment	12.44706788
Preschool enrollment	26.60079559
Transportation	—
Auto Access	36.01950468
Active commuting	66.59822918
Social	—
2-parent households	2.55357372
Voting	40.85717952
Neighborhood	—
Alcohol availability	69.80623637
Park access	6.13370974
Retail density	0.384960862
Supermarket access	15.46259464

Tree canopy	6.608494803
Housing	—
Homeownership	38.3036058
Housing habitability	67.2783267
Low-inc homeowner severe housing cost burden	45.47670987
Low-inc renter severe housing cost burden	89.54189657
Uncrowded housing	37.31553959
Health Outcomes	—
Insured adults	31.25882202
Arthritis	0.0
Asthma ER Admissions	15.6
High Blood Pressure	0.0
Cancer (excluding skin)	0.0
Asthma	0.0
Coronary Heart Disease	0.0
Chronic Obstructive Pulmonary Disease	0.0
Diagnosed Diabetes	0.0
Life Expectancy at Birth	19.6
Cognitively Disabled	52.2
Physically Disabled	42.3
Heart Attack ER Admissions	12.0
Mental Health Not Good	0.0
Chronic Kidney Disease	0.0
Obesity	0.0
Pedestrian Injuries	96.5
Physical Health Not Good	0.0
Stroke	0.0
Health Risk Behaviors	—

Binge Drinking	0.0
Current Smoker	0.0
No Leisure Time for Physical Activity	0.0
Climate Change Exposures	—
Wildfire Risk	0.0
SLR Inundation Area	0.0
Children	16.3
Elderly	81.3
English Speaking	12.7
Foreign-born	56.9
Outdoor Workers	2.7
Climate Change Adaptive Capacity	—
Impervious Surface Cover	91.3
Traffic Density	26.9
Traffic Access	0.0
Other Indices	—
Hardship	81.4
Other Decision Support	—
2016 Voting	63.6

7.3. Overall Health & Equity Scores

Metric	Result for Project Census Tract
CalEnviroScreen 4.0 Score for Project Location (a)	85.0
Healthy Places Index Score for Project Location (b)	16.0
Project Located in a Designated Disadvantaged Community (Senate Bill 535)	Yes
Project Located in a Low-Income Community (Assembly Bill 1550)	Yes
Project Located in a Community Air Protection Program Community (Assembly Bill 617)	No

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

7.4. Health & Equity Measures

No Health & Equity Measures selected.

7.5. Evaluation Scorecard

Health & Equity Evaluation Scorecard not completed.

7.6. Health & Equity Custom Measures

No Health & Equity Custom Measures created.

8. User Changes to Default Data

Screen	Justification
Land Use	Land uses based on site plan.
Construction: Construction Phases	Construction schedule provided by applicant.
Construction: Off-Road Equipment	Construction equipment provided by applicant
Construction: Trips and VMT	Construction trips approved by applicant. Water deliveries calculated off-model.
Operations: Vehicle Data	Trip generation rate adjusted per expected employment numbers. Daily water truck trip assigned to the "User Defined Industrial" land use.
Operations: Fleet Mix	The once daily water truck trip has been assigned to the "User Defined Industrial" land use, so fleet mix for that land use was set to 100% HHDT
Operations: Water and Waste Water	Water use provided.
Operations: Off-Road Equipment	Off-highway trucks represents on-site maintenance trucks.

Zeta Solar and BESS Decommissioning Detailed Report

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8. User Changes to Default Data

1. Basic Project Information

1.1. Basic Project Information

Data Field	Value
Project Name	Zeta Solar and BESS Decommissioning
Construction Start Date	1/1/2050
Lead Agency	—
Land Use Scale	Project/site
Analysis Level for Defaults	County
Windspeed (m/s)	2.80
Precipitation (days)	21.4
Location	36.91461815044501, -120.80946577400056
County	Merced
City	Unincorporated
Air District	San Joaquin Valley APCD
Air Basin	San Joaquin Valley
TAZ	2313
EDFZ	5
Electric Utility	Pacific Gas & Electric Company
Gas Utility	Pacific Gas & Electric
App Version	2022.1.1.26

1.2. Land Use Types

Land Use Subtype	Size	Unit	Lot Acreage	Building Area (sq ft)	Landscape Area (sq ft)	Special Landscape Area (sq ft)	Population	Description
User Defined Industrial	1.00	User Defined Unit	650	0.00	0.00	—	—	solar site

1.3. User-Selected Emission Reduction Measures by Emissions Sector

No measures selected

2. Emissions Summary

2.1. Construction Emissions Compared Against Thresholds

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

Un/Mit.	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	5.15	4.45	28.3	94.3	0.21	0.69	56.4	57.0	0.64	20.4	21.0	—	39,797	39,797	0.63	1.33	2.54	40,213
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	4.53	3.91	27.4	65.2	0.18	0.60	47.3	47.9	0.56	16.7	17.3	—	34,676	34,676	0.51	1.33	0.07	35,086
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	1.75	1.51	10.0	27.0	0.07	0.23	18.0	18.3	0.22	6.29	6.51	—	13,343	13,343	0.21	0.48	0.39	13,491
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.32	0.28	1.83	4.92	0.01	0.04	3.29	3.33	0.04	1.15	1.19	—	2,209	2,209	0.03	0.08	0.07	2,234

2.2. Construction Emissions by Year, Unmitigated

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

Year	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2050	5.15	4.45	28.3	94.3	0.21	0.69	56.4	57.0	0.64	20.4	21.0	—	39,797	39,797	0.63	1.33	2.54	40,213

Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2050	4.53	3.91	27.4	65.2	0.18	0.60	47.3	47.9	0.56	16.7	17.3	—	34,676	34,676	0.51	1.33	0.07	35,086
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2050	1.75	1.51	10.0	27.0	0.07	0.23	18.0	18.3	0.22	6.29	6.51	—	13,343	13,343	0.21	0.48	0.39	13,491
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2050	0.32	0.28	1.83	4.92	0.01	0.04	3.29	3.33	0.04	1.15	1.19	—	2,209	2,209	0.03	0.08	0.07	2,234

3. Construction Emissions Details

3.1. Demolition (2050) - Unmitigated

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

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.52	1.28	8.21	10.7	0.03	0.20	—	0.20	0.18	—	0.18	—	3,426	3,426	0.14	0.03	—	3,438
Demolition	—	—	—	—	—	—	0.10	0.10	—	0.02	0.02	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road	0.21	0.18	1.15	1.50	< 0.005	0.03	—	0.03	0.03	—	0.03	—	479	479	0.02	< 0.005	—	480
Demolition	—	—	—	—	—	—	0.01	0.01	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.04	0.03	0.21	0.27	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	79.3	79.3	< 0.005	< 0.005	—	79.5
Demolition	—	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.39	0.38	0.86	18.3	0.00	0.00	11.9	11.9	0.00	2.78	2.78	—	8,788	8,788	0.03	0.02	0.03	8,795
Vendor	0.07	0.07	3.53	0.59	0.05	0.05	1.88	1.93	0.05	0.52	0.57	—	4,114	4,114	0.05	0.60	0.01	4,293
Hauling	0.01	< 0.005	0.20	0.05	< 0.005	< 0.005	0.06	0.06	< 0.005	0.02	0.02	—	151	151	< 0.005	0.02	< 0.005	157
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.05	0.05	0.12	2.84	0.00	0.00	1.64	1.64	0.00	0.38	0.38	—	1,266	1,266	< 0.005	< 0.005	0.06	1,267
Vendor	0.01	0.01	0.48	0.08	0.01	0.01	0.26	0.27	0.01	0.07	0.08	—	575	575	0.01	0.08	0.01	600
Hauling	< 0.005	< 0.005	0.03	0.01	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	21.0	21.0	< 0.005	< 0.005	< 0.005	22.0
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.02	0.52	0.00	0.00	0.30	0.30	0.00	0.07	0.07	—	210	210	< 0.005	< 0.005	0.01	210
Vendor	< 0.005	< 0.005	0.09	0.01	< 0.005	< 0.005	0.05	0.05	< 0.005	0.01	0.01	—	95.1	95.1	< 0.005	0.01	< 0.005	99.3

Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	3.48	3.48	< 0.005	< 0.005	< 0.005	3.64
---------	---------	---------	---------	---------	---------	---------	---------	---------	---------	---------	---------	---	------	------	---------	---------	---------	------

3.3. Site Stabilization (2050) - Unmitigated

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

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	2.08	1.74	10.2	16.6	0.05	0.30	—	0.30	0.28	—	0.28	—	5,296	5,296	0.21	0.04	—	5,314
Dust From Material Movement	—	—	—	—	—	—	19.7	19.7	—	10.1	10.1	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	2.08	1.74	10.2	16.6	0.05	0.30	—	0.30	0.28	—	0.28	—	5,296	5,296	0.21	0.04	—	5,314
Dust From Material Movement	—	—	—	—	—	—	19.7	19.7	—	10.1	10.1	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road	0.60	0.50	2.93	4.77	0.01	0.09	—	0.09	0.08	—	0.08	—	1,524	1,524	0.06	0.01	—	1,529
Dust From Material Movement	—	—	—	—	—	—	5.65	5.65	—	2.91	2.91	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.11	0.09	0.54	0.87	< 0.005	0.02	—	0.02	0.01	—	0.01	—	252	252	0.01	< 0.005	—	253
Dust From Material Movement	—	—	—	—	—	—	1.03	1.03	—	0.53	0.53	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.39	0.38	0.85	28.3	0.00	0.00	11.9	11.9	0.00	2.78	2.78	—	9,840	9,840	0.02	0.02	1.05	9,848
Vendor	0.07	0.07	3.31	0.58	0.05	0.05	1.88	1.93	0.05	0.52	0.57	—	4,112	4,112	0.05	0.60	0.21	4,292
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.39	0.38	0.86	18.3	0.00	0.00	11.9	11.9	0.00	2.78	2.78	—	8,788	8,788	0.03	0.02	0.03	8,795
Vendor	0.07	0.07	3.53	0.59	0.05	0.05	1.88	1.93	0.05	0.52	0.57	—	4,114	4,114	0.05	0.60	0.01	4,293
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.11	0.11	0.25	5.85	0.00	0.00	3.37	3.37	0.00	0.79	0.79	—	2,607	2,607	0.01	0.01	0.13	2,609

Vendor	0.02	0.02	1.00	0.17	0.01	0.01	0.53	0.55	0.01	0.15	0.16	—	1,183	1,183	0.02	0.17	0.03	1,235
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02	0.02	0.04	1.07	0.00	0.00	0.61	0.61	0.00	0.14	0.14	—	432	432	< 0.005	< 0.005	0.02	432
Vendor	< 0.005	< 0.005	0.18	0.03	< 0.005	< 0.005	0.10	0.10	< 0.005	0.03	0.03	—	196	196	< 0.005	0.03	< 0.005	204
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.5. Revegetation (2050) - Unmitigated

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

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipm ent	2.14	1.80	9.77	19.9	0.06	0.29	—	0.29	0.27	—	0.27	—	6,596	6,596	0.27	0.05	—	6,619
Dust From Material Movement	—	—	—	—	—	—	9.20	9.20	—	3.65	3.65	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipm ent	2.14	1.80	9.77	19.9	0.06	0.29	—	0.29	0.27	—	0.27	—	6,596	6,596	0.27	0.05	—	6,619

Dust From Material Movement	—	—	—	—	—	—	9.20	9.20	—	3.65	3.65	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.62	0.52	2.81	5.74	0.02	0.08	—	0.08	0.08	—	0.08	—	1,898	1,898	0.08	0.02	—	1,904
Dust From Material Movement	—	—	—	—	—	—	2.65	2.65	—	1.05	1.05	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.11	0.09	0.51	1.05	< 0.005	0.02	—	0.02	0.01	—	0.01	—	314	314	0.01	< 0.005	—	315
Dust From Material Movement	—	—	—	—	—	—	0.48	0.48	—	0.19	0.19	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.39	0.38	0.85	28.3	0.00	0.00	11.9	11.9	0.00	2.78	2.78	—	9,840	9,840	0.02	0.02	1.05	9,848
Vendor	0.07	0.07	3.31	0.58	0.05	0.05	1.88	1.93	0.05	0.52	0.57	—	4,112	4,112	0.05	0.60	0.21	4,292
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.39	0.38	0.86	18.3	0.00	0.00	11.9	11.9	0.00	2.78	2.78	—	8,788	8,788	0.03	0.02	0.03	8,795
Vendor	0.07	0.07	3.53	0.59	0.05	0.05	1.88	1.93	0.05	0.52	0.57	—	4,114	4,114	0.05	0.60	0.01	4,293
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.11	0.11	0.25	5.85	0.00	0.00	3.37	3.37	0.00	0.79	0.79	—	2,607	2,607	0.01	0.01	0.13	2,609
Vendor	0.02	0.02	1.00	0.17	0.01	0.01	0.53	0.55	0.01	0.15	0.16	—	1,183	1,183	0.02	0.17	0.03	1,235
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02	0.02	0.04	1.07	0.00	0.00	0.61	0.61	0.00	0.14	0.14	—	432	432	< 0.005	< 0.005	0.02	432
Vendor	< 0.005	< 0.005	0.18	0.03	< 0.005	< 0.005	0.10	0.10	< 0.005	0.03	0.03	—	196	196	< 0.005	0.03	< 0.005	204
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

4. Operations Emissions Details

4.10. Soil Carbon Accumulation By Vegetation Type

4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

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

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

Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

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

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

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

4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

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

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

Remove d	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequest ered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Remove d	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequest ered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Remove d	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

5. Activity Data

5.1. Construction Schedule

Phase Name	Phase Type	Start Date	End Date	Days Per Week	Work Days per Phase	Phase Description
Demolition	Demolition	1/1/2050	3/1/2050	6.00	51.0	—
Site Stabilization	Site Preparation	3/1/2050	6/30/2050	6.00	105	—
Revegetation	Grading	6/30/2050	10/29/2050	6.00	105	—

5.2. Off-Road Equipment

5.2.1. Unmitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Demolition	Rubber Tired Dozers	Diesel	Average	2.00	8.00	367	0.40
Demolition	Excavators	Diesel	Average	3.00	8.00	36.0	0.38
Demolition	Concrete/Industrial Saws	Diesel	Average	1.00	8.00	33.0	0.73
Site Stabilization	Tractors/Loaders/Back hoes	Diesel	Average	4.00	8.00	84.0	0.37
Site Stabilization	Rubber Tired Dozers	Diesel	Average	3.00	8.00	367	0.40
Revegetation	Graders	Diesel	Average	1.00	8.00	148	0.41
Revegetation	Excavators	Diesel	Average	2.00	8.00	36.0	0.38
Revegetation	Tractors/Loaders/Back hoes	Diesel	Average	2.00	8.00	84.0	0.37
Revegetation	Scrapers	Diesel	Average	2.00	8.00	423	0.48
Revegetation	Rubber Tired Dozers	Diesel	Average	1.00	8.00	367	0.40

5.3. Construction Vehicles

5.3.1. Unmitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Demolition	—	—	—	—
Demolition	Worker	300	56.0	LDA,LDT1,LDT2

Demolition	Vendor	40.0	56.0	HHDT,MHDT
Demolition	Hauling	3.00	20.0	HHDT
Demolition	Onsite truck	—	—	HHDT
Site Stabilization	—	—	—	—
Site Stabilization	Worker	300	56.0	LDA,LDT1,LDT2
Site Stabilization	Vendor	40.0	56.0	HHDT,MHDT
Site Stabilization	Hauling	0.00	20.0	HHDT
Site Stabilization	Onsite truck	—	—	HHDT
Revegetation	—	—	—	—
Revegetation	Worker	300	56.0	LDA,LDT1,LDT2
Revegetation	Vendor	40.0	56.0	HHDT,MHDT
Revegetation	Hauling	0.00	20.0	HHDT
Revegetation	Onsite truck	—	—	HHDT

5.4. Vehicles

5.4.1. Construction Vehicle Control Strategies

Non-applicable. No control strategies activated by user.

5.5. Architectural Coatings

Phase Name	Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)
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5.6. Dust Mitigation

5.6.1. Construction Earthmoving Activities

Phase Name	Material Imported (cy)	Material Exported (cy)	Acres Graded (acres)	Material Demolished (Building Square Footage)	Acres Paved (acres)
Demolition	0.00	0.00	0.00	5,100	—

Site Stabilization	—	—	158	0.00	—
Revegetation	—	—	315	0.00	—

5.6.2. Construction Earthmoving Control Strategies

Non-applicable. No control strategies activated by user.

5.7. Construction Paving

Land Use	Area Paved (acres)	% Asphalt
User Defined Industrial	0.00	0%

5.8. Construction Electricity Consumption and Emissions Factors

kWh per Year and Emission Factor (lb/MWh)

Year	kWh per Year	CO2	CH4	N2O
2050	0.00	204	0.03	< 0.005

5.18. Vegetation

5.18.1. Land Use Change

5.18.1.1. Unmitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres
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5.18.1. Biomass Cover Type

5.18.1.1. Unmitigated

Biomass Cover Type	Initial Acres	Final Acres
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5.18.2. Sequestration

5.18.2.1. Unmitigated

Tree Type	Number	Electricity Saved (kWh/year)	Natural Gas Saved (btu/year)
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6. Climate Risk Detailed Report

6.1. Climate Risk Summary

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

Climate Hazard	Result for Project Location	Unit
Temperature and Extreme Heat	32.5	annual days of extreme heat
Extreme Precipitation	0.90	annual days with precipitation above 20 mm
Sea Level Rise	—	meters of inundation depth
Wildfire	18.0	annual hectares burned

Temperature and Extreme Heat data are for grid cell in which your project are located. The projection is based on the 98th historical percentile of daily maximum/minimum temperatures from observed historical data (32 climate model ensemble from Cal-Adapt, 2040–2059 average under RCP 8.5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.

Extreme Precipitation data are for the grid cell in which your project are located. The threshold of 20 mm is equivalent to about ¾ an inch of rain, which would be light to moderate rainfall if received over a full day or heavy rain if received over a period of 2 to 4 hours. Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.

Sea Level Rise data are for the grid cell in which your project are located. The projections are from Radke et al. (2017), as reported in Cal-Adapt (Radke et al., 2017, CEC-500-2017-008), and consider inundation location and depth for the San Francisco Bay, the Sacramento-San Joaquin River Delta and California coast resulting different increments of sea level rise coupled with extreme storm events. Users may select from four scenarios to view the range in potential inundation depth for the grid cell. The four scenarios are: No rise, 0.5 meter, 1.0 meter, 1.41 meters

Wildfire data are for the grid cell in which your project are located. The projections are from UC Davis, as reported in Cal-Adapt (2040–2059 average under RCP 8.5), and consider historical data of climate, vegetation, population density, and large (> 400 ha) fire history. Users may select from four model simulations to view the range in potential wildfire probabilities for the grid cell. The four simulations make different assumptions about expected rainfall and temperature are: Warmer/drier (HadGEM2-ES), Cooler/wetter (CNRM-CM5), Average conditions (CanESM2), Range of different rainfall and temperature possibilities (MIROC5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.

6.2. Initial Climate Risk Scores

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

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

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.

The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.

The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores do not include implementation of climate risk reduction measures.

6.3. Adjusted Climate Risk Scores

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

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.

The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.

The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores include implementation of climate risk reduction measures.

6.4. Climate Risk Reduction Measures

7. Health and Equity Details

7.1. CalEnviroScreen 4.0 Scores

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

Indicator	Result for Project Census Tract
Exposure Indicators	—
AQ-Ozone	55.4
AQ-PM	12.0
AQ-DPM	19.2
Drinking Water	99.0
Lead Risk Housing	48.2
Pesticides	80.8
Toxic Releases	5.71
Traffic	54.8
Effect Indicators	—
CleanUp Sites	59.0
Groundwater	97.3
Haz Waste Facilities/Generators	7.35
Impaired Water Bodies	96.3
Solid Waste	93.2
Sensitive Population	—
Asthma	93.0
Cardio-vascular	67.6
Low Birth Weights	23.7
Socioeconomic Factor Indicators	—
Education	85.2
Housing	46.5
Linguistic	84.5
Poverty	69.3
Unemployment	95.7

7.2. Healthy Places Index Scores

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

Indicator	Result for Project Census Tract
Economic	—
Above Poverty	18.76042602
Employed	36.78942641
Median HI	22.76401899
Education	—
Bachelor's or higher	6.236365969
High school enrollment	12.44706788
Preschool enrollment	26.60079559
Transportation	—
Auto Access	36.01950468
Active commuting	66.59822918
Social	—
2-parent households	2.55357372
Voting	40.85717952
Neighborhood	—
Alcohol availability	69.80623637
Park access	6.13370974
Retail density	0.384960862
Supermarket access	15.46259464
Tree canopy	6.608494803
Housing	—
Homeownership	38.3036058
Housing habitability	67.2783267
Low-inc homeowner severe housing cost burden	45.47670987
Low-inc renter severe housing cost burden	89.54189657

Uncrowded housing	37.31553959
Health Outcomes	—
Insured adults	31.25882202
Arthritis	0.0
Asthma ER Admissions	15.6
High Blood Pressure	0.0
Cancer (excluding skin)	0.0
Asthma	0.0
Coronary Heart Disease	0.0
Chronic Obstructive Pulmonary Disease	0.0
Diagnosed Diabetes	0.0
Life Expectancy at Birth	19.6
Cognitively Disabled	52.2
Physically Disabled	42.3
Heart Attack ER Admissions	12.0
Mental Health Not Good	0.0
Chronic Kidney Disease	0.0
Obesity	0.0
Pedestrian Injuries	96.5
Physical Health Not Good	0.0
Stroke	0.0
Health Risk Behaviors	—
Binge Drinking	0.0
Current Smoker	0.0
No Leisure Time for Physical Activity	0.0
Climate Change Exposures	—
Wildfire Risk	0.0
SLR Inundation Area	0.0

Children	16.3
Elderly	81.3
English Speaking	12.7
Foreign-born	56.9
Outdoor Workers	2.7
Climate Change Adaptive Capacity	—
Impervious Surface Cover	91.3
Traffic Density	26.9
Traffic Access	0.0
Other Indices	—
Hardship	81.4
Other Decision Support	—
2016 Voting	63.6

7.3. Overall Health & Equity Scores

Metric	Result for Project Census Tract
CalEnviroScreen 4.0 Score for Project Location (a)	85.0
Healthy Places Index Score for Project Location (b)	16.0
Project Located in a Designated Disadvantaged Community (Senate Bill 535)	Yes
Project Located in a Low-Income Community (Assembly Bill 1550)	Yes
Project Located in a Community Air Protection Program Community (Assembly Bill 617)	No

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

7.4. Health & Equity Measures

No Health & Equity Measures selected.

7.5. Evaluation Scorecard

Health & Equity Evaluation Scorecard not completed.

7.6. Health & Equity Custom Measures

No Health & Equity Custom Measures created.

8. User Changes to Default Data

Screen	Justification
Land Use	Land uses based on site plan.
Construction: Construction Phases	Phases adjusted per demolition and decommissioning process.
Construction: Off-Road Equipment	Construction equipment provided by applicant
Construction: Trips and VMT	Construction trips approved by applicant. Water deliveries calculated off-model.
Operations: Vehicle Data	Trip generation rate adjusted per expected employment numbers. Monthly water truck trip assigned to the "User Defined Industrial" land use.
Operations: Fleet Mix	The once monthly water truck trip has been assigned to the "User Defined Industrial" land use, so fleet mix for that land use was set to 100% HHDT
Operations: Water and Waste Water	Water use updated.
Operations: Off-Road Equipment	Off-highway trucks represents on-site maintenance trucks.

Displaced GHG Emissions

PG&E GHG Pollutant Intensity Factors (lbs/MWh)

GHG	Intensity Factor	GWP	Adjusted Intensity Factor (lbs CO2e/MWh)	Total
CO2	203.983	1	203.983	206.00
CH4	0.033	25	0.825	
N2O	0.004	298	1.192	

Source: CalEEMod, 2023.
IPCC, 4th Assessment.

Assumptions

Assumed 5.38 hours a day of solar generation
[Peak Sun Hours for Solar Panels in California | TurbineGenerator.org](#)
Daily average assumption includes total days of sunshine, summer, and winter hours
Module efficiency of the proposed FSLR panels is 18.46%

Calculating GHG Emissions Saved

Description	Number	Units
Site Size	75	MW
Hours of Peak Solar	5.38	hours
Panel Efficiency 1	18.46%	-
MWh generated per Day	74.4861	MWh
Annual MWH generated	27,187.43	MWh
Average GHG Pollutant Intensity	206	lbs of CO2e/MWh
CO2e	5600609.859	lbs CO2e
CO2e	2520.274437	MT CO2e

1 Panel efficiency specific to the proposed FSLR 465w S6+ panels, provided by Project Team in Jan 2024.