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CalCapture CCS Project

Air Quality and Greenhouse Gas Technical Study



Prepared for:
Carbon TerraVault Holdings, LLC, a carbon
management subsidiary of California Resources
Corporation

September 2025

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Revision	Description	Author	Date	Quality Check	Date	Independent Review	Date

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Appendix A Air Quality and GHG Emission Output Files



Acronyms / Abbreviations

Acronym / Abbreviation	Full Name
2022 Scoping Plan	Final 2022 Scoping Plan for Achieving Carbon Neutrality
µg/m ³	micrograms per cubic meter
AADT	average annual daily trips
AB	Assembly Bill
ACBMs	Asbestos-Containing Building Materials
ACC	Advanced Clean Cars
AQMP	Air Quality Management Plan
BAAQMD	Bay Area Air Quality Management District
BAU	Business as Usual
BPS	Best Performance Standards
CAAQS	California Ambient Air Quality Standards
CAFE	Corporate Average Fuel Economy
CalEEMod	California Emissions Estimator Model
CalGEM	California Geologic Energy Management Division
CALGreen	California Green Building Standards Code
CARB	California Air Resources Board
CCAA	California Clean Air Act
CCAP	Climate Change Action Plan
CCR	California Code of Regulations
CCS	Carbon Capture and Sequestration
CCU	Carbon Capture Unit
CDC	Centers for Disease Control
CDR	carbon dioxide removal
CEC	California Energy Commission
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
CH ₄	methane
CNRA	California Natural Resources Agency
CO	carbon monoxide



CalCapture CCS Project – Air Quality and Greenhouse Gas Technical Study
 Acronyms / Abbreviations

Acronym / Abbreviation	Full Name
CO ₂	carbon dioxide
CO ₂ e	carbon dioxide equivalents
COG	Council of Governments
COVID-19	coronavirus disease 2019
CRC	California Resources Corporation
CTV I	Carbon TerraVault I Project
CUP	Conditional Use Permit
the CUP	Collectively, CUP No. 13, Map 118; CUP No. 14, Map 118; CUP No. 5, Map 119; CUP No. 3, Map 120; CUP No. 2, Map 138; and CUP No. 6, Map 119
CY	cubic yard
DPM	diesel particulate matter
DRRP	Diesel Risk Reduction Plan
EFG+	Econamine FG Plus SM
EHOF	Elk Hills Oilfield
EHPP	Elk Hills Power Plant
EIR	Environmental Impact Report
EISA	Energy Independence & Security Act
EO	Executive Order
EPCA	Energy Policy & Conservation Act
EV	electric vehicle
°F	degrees Fahrenheit
FCAA	Federal Clean Air Act
GAMAQI	Guidance for Assessing and Mitigating Air Quality Impacts
GHG	Greenhouse Gases
GT	gas turbine
GWP	Global Warming Potential
HAP	Hazardous Air Pollutants
HDD	horizontal directional drilling
HFC	hydrofluorocarbons
HRSG	heat recovery steam generator
IPCC	Intergovernmental Panel on Climate Change
Kern COG	Kern Council of Governments
kV	kilovolt



CalCapture CCS Project – Air Quality and Greenhouse Gas Technical Study
 Acronyms / Abbreviations

Acronym / Abbreviation	Full Name
lbs/day	pounds per day
LCFS	Low Carbon Fuel Standard
LEV	Low-Emission Vehicle
LP	low pressure
MM	mitigation measure
MMBtu/hour	Million British thermal units per hour
MMT	million metric tons
MMTCO ₂	million metric tons of carbon dioxide
MMTCO ₂ e	million metric tons of carbon dioxide equivalents
MMTPY	million metric tons of carbon dioxide per year
mph	miles per hour
MTCO ₂ e	metric tons of carbon dioxide equivalents
MW	megawatt
MWe	megawatt-equivalent
N ₂ O	nitrous oxide
NAAQS	National Ambient Air Quality Standards
NESHAP	National Emissions Standards for Hazardous Air Pollutants
NF ₃	nitrogen trifluoride
NHTSA	National Highway Traffic Safety Administration
NIOSH	National Institute for Occupational Safety and Health
NO ₂	nitrogen dioxide
NO _x	oxides of nitrogen
NOA	naturally occurring asbestos
NOD	Notice of Determination
O ₃	ozone
Pb	lead
PFC	perfluorocarbon
PERP	Portable Equipment Registration Program
PM	particulate matter
PM _{2.5}	fine particulate matter; particulate matter 2.5 microns or smaller
PM ₁₀	particulate matter; particulate matter 10 microns or smaller
ppb	parts per billion



CalCapture CCS Project – Air Quality and Greenhouse Gas Technical Study
 Acronyms / Abbreviations

Acronym / Abbreviation	Full Name
ppm	parts per million
Project	CalCapture Carbon Capture and Sequestration Project
psig	pounds per square inch
RACT	Reasonable Available Control Technology
RFS	renewable fuel standards
RO	reverse osmosis
ROG	reactive organic gases
RPS	Renewable Portfolio Standard
RTP/SCS	Regional Transportation Plan/Sustainable Communities Strategy
SB	Senate Bill
SCAQMD	South Coast Air Quality Management District
SF ₆	sulfur hexafluoride
SIL	significant impact level
SIP	State Implementation Plan
SJVAB	San Joaquin Valley Air Basin
SJVAPCD	San Joaquin Valley Air Pollution Control District
SLCP	short-lived climate pollutants
SO ₂	sulfur dioxide
SO _x	oxides of sulfur
ST	steam turbine
Stantec	Stantec Consulting Services Inc.
TAC	toxic air contaminant
UIC	Underground Injection Control
U.S. EPA	U.S. Environmental Protection Agency
USGS	U.S. Geological Survey
VDE	visible dust emissions
VOC	volatile organic compounds
ZEV	zero emission vehicle



1 Introduction

Stantec Consulting Services Inc. (Stantec) has prepared this Air Quality and Greenhouse Gas Technical Study on behalf of Carbon TerraVault Holdings, LLC (CTV), a carbon management subsidiary of California Resources Corporation (CRC), for the CalCapture Carbon Capture Sequestration (CCS) Project (Project), located in the Elk Hills Oilfield (EHOF) near Tupman, Kern County, California (Project site). The Regional Location and Project Location are shown in Figures 1 and 2.

The purpose of this study is to analyze potential air quality and greenhouse gas (GHG) impacts that could occur from the construction and operation of the Project. This evaluation relies on guidance and thresholds established by the U.S. Environmental Protection Agency (U.S. EPA), the California Air Resources Board (CARB), the San Joaquin Valley Air Pollution Control District (SJVAPCD), the California Energy Commission (CEC), and Kern County's Guidelines for Preparing an Air Quality Assessment for Use in Environmental Impact Reports.

1.1 Project Description

The proposed Project would capture carbon dioxide (CO₂) generated as a by-product by CRC's 550-megawatt-equivalent (MWe) Elk Hills Power Plant (EHPP), located in the EHOF near Tupman, Kern County, California. The EHPP was commissioned in 2003 and is powered by two General Electric 7FA gas turbines (GTs), with two heat recovery steam generators (HRSGs) providing steam to a General Electric D11 steam turbine (ST). The Carbon Capture Unit (CCU), not including pipelines or temporary staging and parking areas, would be located immediately south of the EHPP in a 7.64-acre existing disturbed area.

Implementation of the Project will require approval of a Petition for Modification Application from the California Energy Commission (CEC), who has the exclusive authority for licensing thermal power plants of 50 MW or larger, as well as related transmission lines, fuel supply lines, and other facilities.

The CCU would utilize Fluor's Econamine FG PlusSM (EFG+) process to capture and concentrate the CO₂. The EFG+ process is designed to capture 95 percent of the CO₂ from the total flue gas feed to the unit. The EFG+ CCU can be divided into seven primary subsystems or sections: Flue Gas Cooling, CO₂ Absorption, Solvent Regeneration, Solvent Maintenance, Chemical Storage and Supply, CO₂ Compression, and Utility Support Systems. The treated flue gas is vented to the atmosphere directly from the EFG+ CCU plant absorber. The concentrated CO₂ would then be compressed, dehydrated, and stripped of oxygen prior to conveyance to the permitted manifold pad, permitted as part of the approved Carbon TerraVault I (CTV I) project (State Clearinghouse No. 2022030180), which will direct the CO₂ to the U.S. Environmental Protection Agency (U.S. EPA) approved Class VI Underground Injection Control (UIC) wells to be injected into a depleted oil and gas reservoir located on the CRC property and approved as part of the CTV I project. The previously approved CTV I manifold pad, injection wells, depleted oil and gas reservoir and related facilities further discussed in Section 1.2 below are not part of the CalCapture CCS Project analyzed in this report.



CalCapture CCS Project – Air Quality and Greenhouse Gas Technical Study

Introduction

A new, approximately 0.5-mile, 8- to 10-inch pipeline, installed primarily below ground utilizing either trenching or horizontal directional drilling (HDD) techniques, would transport the CO₂ from the CCU to the tie-in with the Carbon TerraVault I (CTV I) permitted 35R manifold facility (pad). It is anticipated that the proposed Project would capture approximately 4,400 metric tons of CO₂ per day (MTPD) (1.6 million metric tons of CO₂ per year [MMTPY]). The proposed Project is estimated to be in operation for up to 26 years.¹

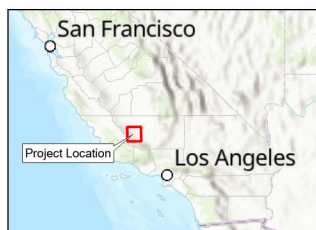
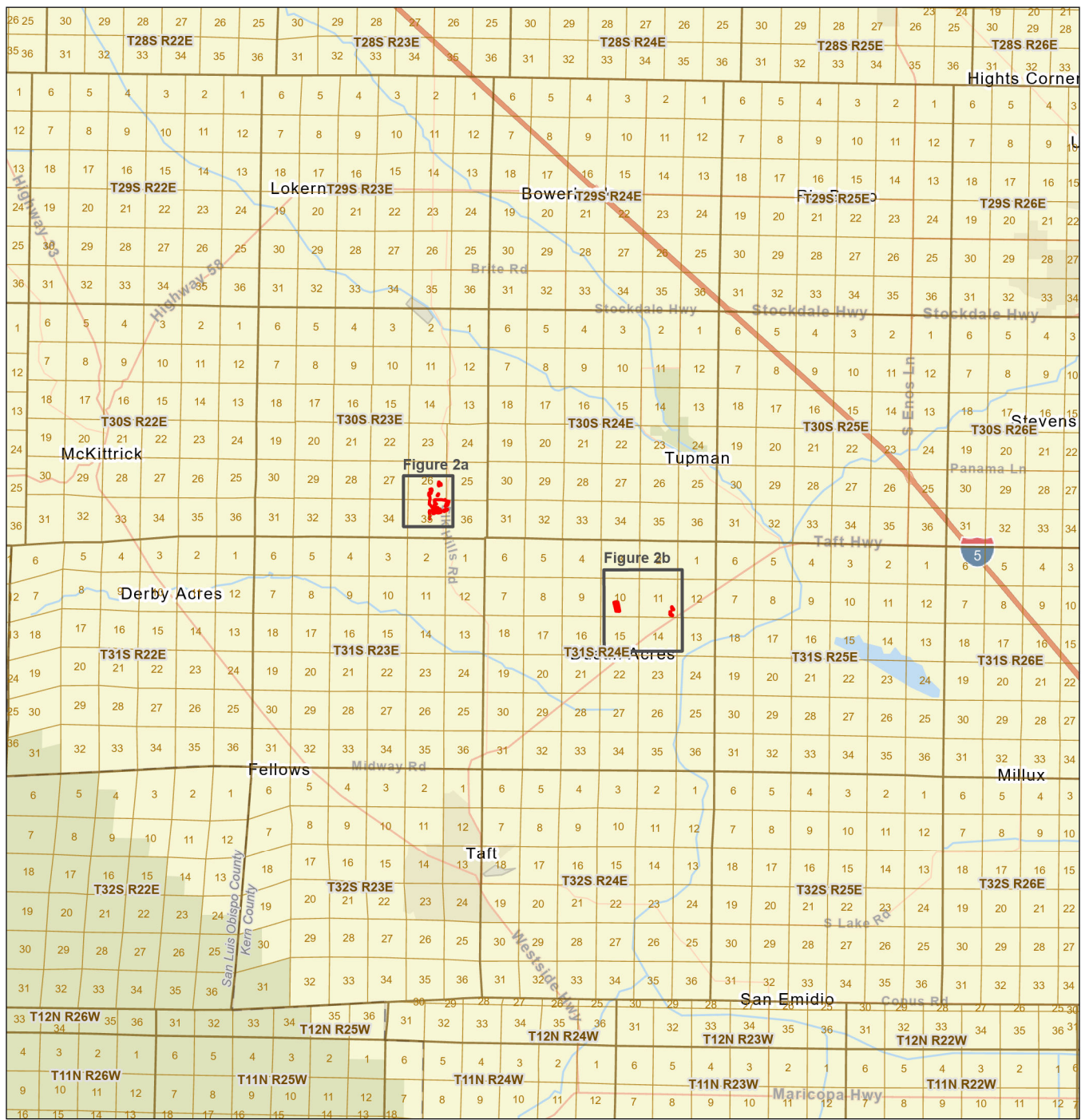
Water use during operation of the CalCapture CCU would be minimized by the inclusion of a hybrid cooling system (Wet Surface Air Coolers [WSAC], air coolers, secondary glycol cooling, and water cooling). Additionally, the CCU would be equipped with a water treatment system, consisting of a reverse osmosis (RO) Unit that is designed to recover and reuse water from the Cooling Tower blowdown. The recovered water is utilized as make-up to the CO₂ absorption system and the Wash Water WSAC Basin. A wastewater stream (less than 10 gallons per minute) would be collected at the CalCapture CCU and transferred by a new surface pipeline to the EHPP for disposal via an existing UIC Class I injection well.

The proposed Project includes a single connection to the CRC Power System and would include a connection of a new 115-kilovolt (kV) transmission line to a new CRC electrical substation. The proposed Project would require a new transmission tie line to connect the Project switching station to the existing CRC substation. Electrical power would be supplied to the CalCapture Substation with a new dedicated electrical transformer. The new 115-kV transmission tie line is expected to be built using pre-engineered steel poles with anchor bolt foundation designs.

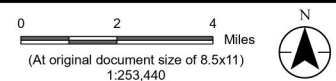
During construction, temporary offices and existing parking areas would be used by construction personnel. Temporary office and parking areas have been designated on previously disturbed areas to the south and northeast of the Project site. Two additional areas are located approximately 5.5 miles southeast of the Project site. There are no permanent new buildings proposed for the Project, and no grading would occur within the temporary office and parking areas. Total temporary staging and parking area would be approximately 30.74 acres.

¹The life of the project is dependent on the sources permitted for injection into the CTV I approved storage reservoir, the ability of the project year by year to obtain CO₂ and inject at the maximum 2,210,000 million tons per year, and the total estimated storage capacity of up to 48 million tons of CO₂.





- Project Area
- Township and Range
- Section



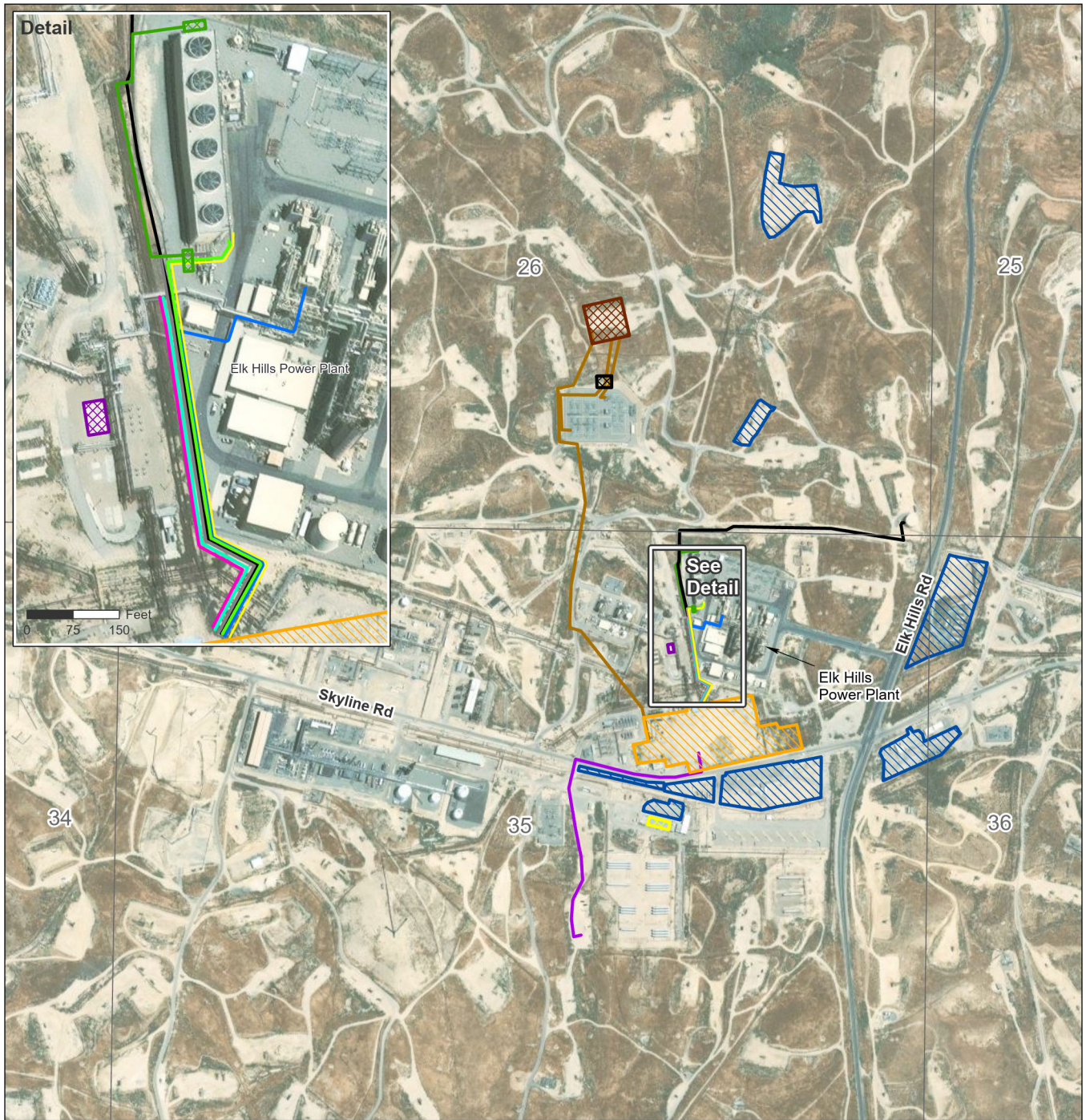
Project Location: Kern County, CA
 Prepared by MMD on 2025-06-26
 TR by CT 2025-06-26
 IR by ES on 2025-06-26
 Client/Project: 185806775

California Resources Corporation
 CalCapture Carbon Capture and Sequestration Project
 Figure No. 1

Title
 Regional Vicinity

Notes
 1. Coordinate System: NAD 1983 StatePlane California V FIPS 0405 Feet
 2. Data Sources: Stantec, USGS, 2025.
 3. Background: Esri, GEBCO, NOAA, National Geographic, Garmin, HERE, Geonames.org
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Notes
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 2. Data Sources: Stantec, USGS, 2025.
 3. Background: Esri, GEBCO, NOAA, National Geographic, Garmin, HERE, Geonames.org
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- Capture Facility
- Temporary Parking, Office, and Staging Areas
- Proposed Sub Location (250 x 250)
- Substation Extension Proposal
- New BPSTG & Transformer
- Warehouse
- Cooling Water Sump

Township, Range, Section*

- Section

*Entire map extent within Township 30S Range 23E.

- Electrical Lines
- CO2 Line
- CWR Line
- CWS Line
- Condensate Line
- HP Steam Line
- LP Steam Line
- Raw Water Line
- RO Permeate Stream Pipeline
- CWS Line Alternative

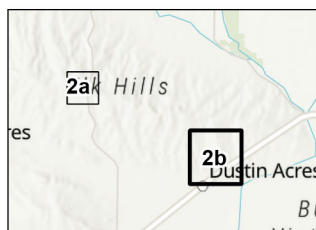
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Project Location Prepared by MMD on 2025-07-31
 Kern County, CA TR by CT 2025-07-31
Client/Project IR by ES on 2025-07-31
 185806775

California Resources Corporation
 CalCapture Carbon Capture and Sequestration Project
Figure No.
2a
Title
Site Plan

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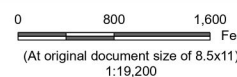


 Temporary Parking, Office, and Staging Areas

Township, Range, Section*

 Section

*Entire map extent within Township 31S Range 24E.



Project Location Prepared by MMD on 2025-07-31
Kern County, CA TR by CT 2025-07-31
Client/Project IR by ES on 2025-07-31
185806775

California Resources Corporation
CalCapture Carbon Capture and Sequestration Project
Figure No.

2b

Title
Site Plan

Notes
1. Coordinate System: NAD 1983 StatePlane
California V FIPS 0405 Feet
2. Data Sources: Stantec, USGS, 2025.
3. Background: Esri, GEBCO, NOAA, National
Geographic, Garmin, HERE, Geonames.org
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1.2 CTV I Background Information

On December 31, 2024, the U.S. EPA issued four UIC Class VI well permits to CTV, a carbon management subsidiary of CRC.

The specific U.S. EPA permits issued for the four wells are as follows:

- R9UIC-CA6-FY22 1.1 for well 373-35R
- R9UIC-CA6-FY22 1.2 for well 345C-36R
- R9UIC-CA6-FY22 1.3 for well 353XC-35R
- R9UIC-CA6-FY22 1.4 for well 363C-27R

These four wells would be utilized to inject the CO₂ captured from the proposed Project into the Monterey Formation 26R storage reservoir located approximately 6,000 feet below the ground surface. The CTV I project area is located within the EHO, which is a suitable area for long-term CO₂ storage and sequestration. The CTV I project was designed to implement sustainable CCS in support of California's initiative to combat climate change by reducing CO₂ levels in the atmosphere.

In addition to the Class VI Permit, CTV obtained a land use permit from the Kern County Planning and Natural Resources Department (Kern County) in 2024. Specifically, the CTV I project was approved by the Kern County Board of Supervisors on October 21, 2024, based on a final Environmental Impact Report (EIR, State Clearinghouse #2022030180) prepared by Kern County and certified by it on the same date. A Notice of Determination was filed with the Kern County Clerk on October 22, 2024. The CTV I project is subject to the terms, conditions and restrictions set forth in the Conditional Use Permits (CUP) issued by Kern County and identified as CUP No. 13, Map 118; CUP No. 14, Map 118; CUP No. 5, Map 119; CUP No. 3, Map 120; CUP No. 2, Map 138; and CUP No. 6, Map 119 (collectively, "the CUP"). Implementation of the CUP authorizes the construction and operation of underground CO₂ facility pipelines to support the CTV I CCS facility and related infrastructure (e.g., injection/monitoring wells, CO₂ manifold piping and metering facilities) within the 9,104-acre project site, located within the EHO.

Four monitoring wells permitted by the California Geologic Energy Management Division (CalGEM), as part of the CUP issued by Kern County for the CTV I project would be used for CO₂ monitoring. In addition, six CTV I permitted wells would be used to monitor for seismic activity. The seismic monitoring wells will be used to detect seismic events at or above magnitude (M) 1.0 in real time as required by the California Air Resources Board (CARB) CCS Protocol under the Low Carbon Fuel Standard (LCFS) (C.4.3.2.3). Additionally, the California Integrated Seismic Network will be monitored continuously for indication of a 2.7 M or greater earthquake or greater occurring within a 1-mile radius of injection operations from commencement of injection activity to its completion.

Monitoring activities would extend beyond the injection phase of the Project pursuant to Code of Federal Regulation (CFR) Title 40 Section 146.93 until site closure is granted. Monitoring requirements during post-injection are similar to those during injection, with activities such as sampling occurring quarterly and monitoring well integrity testing at frequency per U.S. EPA requirement.



As noted above, the facilities approved as part of the CTV I project, including but not limited to the manifold, pad, injection wells, monitoring wells and related transmission lines, pipelines and other related facilities that have already been approved by applicable agencies with jurisdiction over those facilities, including the U.S. EPA, CalGEM and Kern County, are not included as part of the proposed Project. Accordingly, such facilities are not analyzed in this report.

1.2.1 Steam Extraction Option

To supply the required thermal energy to the CCU, the proposed Project includes steam supply from the existing steam turbine low pressure (LP) inlet/ intermediate pressure (IP)-LP crossover via addition of a new controlled extraction. Supply of steam from the LP inlet/IP-LP crossover will require modification to the existing steam turbine to accommodate the new controlled extraction. This equipment will support operation of the CCU via new steam extraction, but it will also maintain the capability for the to operate with the extraction closed when the CCU is not in operation. In case the steam extraction cannot meet the full required thermal energy to the CCU, a supplemental natural gas fired boiler at the CCU, with up to 160 million British thermal units per hour (MMBtu/hr) fuel input, has been considered in the project impacts. Flue gas from the boiler would be ducted to the CCU for CO₂ capture.

As an option to steam extraction from the existing EHPP, CRC is also including a non-condensing back pressure in the proposed Project.

The steam supply tie-in will be located at the common steam header from EHPP, after combining flow from both HRSGs. The back pressure will be designed to exhaust at 55 pounds per square inch (psi) and the steam exhausting from the back pressure turbines will be superheated, with the amount of superheat varying depending on the steam supply location and the operating load. Further desuperheating to meet specific CCU requirements will be accomplished within the CCU.

The back pressure would electrically interconnect with the existing electrical infrastructure at EHO. A new step-up transfer would be used to step up from the back pressure turbine generator voltage to the existing substation. The new backpressure turbine could be located within a developed area between EHPP and the adjacent cogeneration facility.

The steam supply piping would follow similar pathway/corridor as the current main steam extraction/supply from EHPP to the adjacent cogeneration facility. Steam exhausting from the new backpressure turbine would be routed to the tie-in location at the CCU.

1.3 Project Location

The Project is located within the EHO in the southwestern edge of the San Joaquin Valley near Tupman in Kern County, California.

The Project comprises portions of six parcels owned by CRC. The Project is contained within the following sections of EHO: sections 26, 34, and 35 of Township 30 South Range 23 East and sections 10 and 11 of Township 31 South Range 24 East, Mount Diablo Base and Meridian (MDB&M), Kern



CalCapture CCS Project – Air Quality and Greenhouse Gas Technical Study

Introduction

County, State of California (Table 1). The proposed Project would be located on approximately 52 acres within the identified parcels.

Table 1 Project Parcel Data

Assessor's Parcel Number	Section/ Township/ Range	Acreage*
158-090-19	Section 35/ Township 30S/ Range 23E	590.61
158-090-16	Section 35/ Township 30S/ Range 23E	14.78
158-090-02	Section 26/ Township 30S/ Range 23E	640
158-090-04	Section 34/ Township 30S/ Range 23E	682.86
298-070-05	Section 11/Township 31S/Range 24E	640
298-070-06	Section 10/Township 31S/Range 24E	640

Notes:

Assessor's parcel acreages from Kern County Web Map ([Kern County GIS](#), 2025).



2 Air Quality

2.1 Environmental Setting

The Project site is located within the San Joaquin Valley Air Basin (SJVAB) and within the jurisdiction of 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 includes a variety of industrial-based sources and on- and off-road mobile sources (SJVAPCD 2015).

2.1.1 Climate, Topography, Wind, and Meteorology

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 [O_3]), and the SJVAB averages over 260 sunny days per year. The SJVAB is generally shaped like an oblong 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 to 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 to 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 (CO) 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 O_3 (SJVAPCD 2015).

Because of the prevailing daytime winds and time-delayed nature of O_3 , concentrations are highest in the southern portion of the SJVAB. Summers often have periods of hazy visibility and occasionally unhealthy air. Winter air quality tends to be characterized by localized odors from agricultural operations; localized soot or smoke around residential, agricultural, and hazard-reduction wood burning; or localized dust near mineral resource recovery operations (SJVAPCD 2015).



2.1.2 Kern County Climate Data

In 2024, Kern County's total precipitation (rainfall and snow) was 10.34 inches with an average temperature of 63.75 degrees Fahrenheit (°F) and an average wind speed of 5.35 miles per hour (mph). The monthly temperature range, precipitation data, and wind speed for Kern County in 2024 are provided in Table 2.

Table 2 Kern County Climate Data

Month	Monthly \ Low Temperature (°F)	Monthly Maximum Temperature (°F)	Monthly Average Temperature (°F)	Monthly Precipitation (inches)	Average Wind Speed (mph)
January	37.7	56.7	47.2	1.87	4.0
February	40.0	58.8	49.4	3.99	4.9
March	40.9	62.3	51.6	2.18	5.3
April	44.8	70.9	57.9	0.90	6.1
May	52.9	80.1	66.5	0.17	6.9
June	64.7	93.2	79.0	0.00	6.9
July	71.4	101.8	86.6	0.05	6.4
August	65.3	94.5	79.9	0.00	6.0
September	61.3	91.2	76.3	0.02	5.3
October	55.4	83.3	69.3	0.03	4.5
November	39.0	62.5	50.8	0.88	4.2
December	38.9	62.1	50.5	0.25	3.7

Sources: National Centers for Environmental Information 2025; Iowa State University 2025

2.1.3 Criteria Air Pollutants

Criteria air pollutants include O₃, CO, nitrogen dioxide (NO₂), sulfur dioxide (SO₂), particulate matter (PM; measured both in units of smaller than 2.5 microns in diameter [PM_{2.5}] and in units of PM smaller than 10 microns in diameter [PM₁₀]), and lead (Pb) (U.S. EPA 2025a).

Ozone. Most ground-level O₃ is formed as a result of complex photochemical reactions in the atmosphere between ROG, NO_x, and oxygen. ROG and NO_x are considered precursors to the formation of O₃, a highly reactive gas that can damage lung tissue and affect respiratory function. While O₃ in the lower atmosphere is considered a damaging air pollutant, O₃ in the upper atmosphere is beneficial, as it protects the Earth from harmful ultraviolet radiation. However, atmospheric processes preclude ground-level O₃ from reaching the upper atmosphere (U.S. EPA 2025b). Exposure to O₃ can cause coughing, difficult breathing, damage to the airways, increase lung susceptibility to infection, and increase the frequency of asthma attacks. These effects have been found to be more serious in people with lung diseases like asthma. Long-term exposure to O₃ can create asthma or aggravate existing asthma (U.S. EPA 2024a).



Carbon Monoxide. 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 (U.S. EPA 2024b).

Nitrogen Dioxide. 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 ecosystems (U.S. EPA 2024c).

Sulfur Dioxide. SO₂ is primarily emitted from the combustion of coal and oil by steel mills, pulp and paper mills, and non-ferrous smelters. SO₂ also contributes to acid rain, which in turn, can lead to the acidification of lakes and streams (U.S. EPA 2025c). Short-term exposure to SO₂ can exacerbate asthma and cause respiratory irritation such as wheezing, shortness of breath, and chest tightness. High concentration of SO₂ can aggravate existing respiratory and cardiovascular diseases in asthmatics and others who suffer from emphysema or bronchitis (CARB 2025a).

Particulate Matter. 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 may contain inorganic ions, metallic compounds, elemental carbon, organic compounds, and compounds from the earth's crust. Particles are defined by their diameter for air quality regulatory purposes. PM₁₀ are inhalable into the lungs and can induce adverse health effects. Therefore, PM_{2.5} comprises a portion of PM₁₀. Emissions from combustion of gasoline, oil, diesel fuel, or wood produce much of the PM_{2.5} pollution found in outdoor air, as well as significant proportion of PM₁₀. PM₁₀ also includes dust from construction sites, landfills and agriculture, wildfires and brush/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 SO₂, NO_x, and certain organic compounds (U.S. EPA 2024d).

Short-term exposure of PM_{2.5} can cause premature mortality, increased hospital admissions for heart or lung causes, acute and chronic bronchitis, asthma attacks, emergency room visits, respiratory symptoms, and restricted activity days. Long-term exposure to PM_{2.5} is linked to premature death especially for people with chronic heart or lung disease and reduced lung function in children. Infants, children, and older adults with preexisting heart or lung diseases are the most susceptible to the impacts of PM_{2.5}. Other health impacts attributable to long-term PM_{2.5} exposure include heart disease, lung cancer, chronic obstructive pulmonary disease, lower-respiratory infection, stroke, type 2 diabetes, and adverse birth outcomes. Long-term exposure to PM_{2.5} has also been shown to increase coronavirus disease 2019 (COVID-19) severity leading to higher rates of hospitalization than in less polluted areas (Mendy 2021). Therefore, those in areas with higher level of PM_{2.5} ambient air levels would be more susceptible to a variety of diseases including the impacts from respiratory virus outbreaks like COVID-19.

Short-term exposure of PM₁₀ can worsen respiratory diseases, including asthma and chronic obstructive pulmonary disease (CARB 2025b).



Lead. Sources of Pb include pipes, fuel, and paint, although the use of Pb in these materials has declined dramatically over the years. Historically, a 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 (U.S. EPA 2024e). Through regulations, U.S. EPA 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.

2.1.4 Attainment Status

The U.S. EPA 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). Non-attainment-Transitional is a designation given by the state to indicate exceedance of the state standard no more than three times at any monitoring location within the district in a single calendar year. 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 Federal Clean Air Act (FCAA) 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 (U.S. EPA 2024f). The CAAQS are equal to or more stringent than the NAAQS and include pollutants for which national standards do not exist. Table 3 presents the applicable CAAQS and NAAQS.

Table 3 California and National Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards ¹	National Standards ²	
			Primary	Secondary
O ₃	8-hour	0.070 ppm (137 µg/m ³)	0.070 ppm (137 µg/m ³)	Same as Primary Standards
	1-hour	0.09 ppm (180 µg/m ³)	—	
CO	8-hour	9.0 ppm (10 mg/m ³)	9 ppm (10 mg/m ³)	—
	1-hour	20 ppm (23 mg/m ³)	35 ppm (40 mg/m ³)	
NO ₂	Annual arithmetic mean	0.030 ppm (57 µg/m ³)	0.053 ppm (100 µg/m ³)	Same as Primary Standard
	1-hour	0.18 ppm (339 µg/m ³)	100 ppb (188 µg/m ³)	
SO ₂	24-hour	0.04 ppm (105 µg/m ³)	—	—



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Pollutant	Averaging Time	California Standards ¹	National Standards ²	
			Primary	Secondary
PM ₁₀	3-hour	—	—	0.5 ppm (1300 µg/m ³)
	1-hour	0.25 ppm (655 µg/m ³)	75 ppb	—
	Annual arithmetic mean	20 µg/m ³	—	Same as Primary Standards
	24-hour	50 µg/m ³	150 µg/m ³	
PM _{2.5}	Annual arithmetic mean	12 µg/m ³	9.0 µg/m ³	15 µg/m ³
	24-hour	No separate standard	35 µg/m ³	Same as Primary Standards
Sulfates	24-hour	25 µg/m ³	—	—
Pb	30-day average	1.5 µg/m ³	—	—
	Rolling 3-month average	—	0.15 µg/m ³	Same as Primary Standard
Hydrogen sulfide (H ₂ S)	1-hour	0.03 ppm (42 µg/m ³)	—	—
Vinyl chloride (chloroethene)	24-hour	0.01 ppm (26 µg/m ³)	—	—
Visibility reducing particles	8-hour	In 1989, the Air Resources Board converted the general statewide 10-mile visibility standard to instrumental equivalents, which are extinction of 0.23 per kilometer.	—	—

Notes:

¹ CO, SO₂ (1- and 24-hour), NO₂, O₃, PM₁₀, and visibility reducing particles standards are not to be exceeded.

² Not to be exceeded more than once a year except for annual standards.

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

The current attainment designations for the SJVAB are shown in Table 4. The SJVAB is designated as non-attainment for federal and state O₃ and PM_{2.5} and state PM₁₀.

Table 4 San Joaquin Valley Air Basin Attainment Status

Pollutant	Designation/Classification of Federal Standards ¹	Designation/Classification of State Standards ²
O ₃ – One hour	No Federal Standard ³	Non-attainment/Severe
O ₃ – Eight Hour	Non-attainment/Extreme ⁴	Non-attainment
PM ₁₀	Attainment ⁵	Non-attainment
PM _{2.5}	Non-attainment ⁶	Non-attainment
CO	Attainment/Unclassified	Attainment/Unclassified
NO ₂	Attainment/Unclassified	Attainment
SO ₂	Attainment/Unclassified	Attainment
Pb	No Designation/Classification	Attainment



Pollutant	Designation/Classification of Federal Standards ¹	Designation/Classification of State Standards ²
H ₂ S	No Federal Standard	Unclassified
Sulfates	No Federal Standard	Attainment
Visibility Reducing Particles	No Federal Standard	Unclassified
Vinyl Chloride	No Federal Standard	Attainment

Source: SJVAPCD 2025

2.1.5 Ambient Air Quality

Historical local air quality was evaluated by reviewing relevant air pollution concentrations near the Project area. Review of CARB's monitoring stations demonstrates that the Maricopa-Stanislaus Street, Shafter-Walker Street, Bakersfield-5558 California Avenue Monitoring Station, and Bakersfield Municipal Airport Monitoring Station are the nearest monitoring stations to the EHOF and best represent the ambient air quality in the Project vicinity. Table 5 summarizes published monitoring data from these monitoring stations for the years 2021 to 2023 from CARB's Air Quality Data Statistics (CARB 2025f).

Table 5 Nearby Monitoring Station Data

Monitoring Station	Maximum Measured Concentration (State)			Number of Days Exceeding CAAQS			Maximum Monitored Concentration (National)			Number of Days Exceeding NAAQS		
	2021	2022	2023	2021	2022	2023	2021	2022	2023	2021	2022	2023
1-Hour Ozone (ppm)												
Maricopa-Stanislaus Street	0.083	0.081	0.091	0	0	0	*	*	*	*	*	*
Shafter-Walker Street	0.104	0.095	0.090	1	1	0	*	*	*	*	*	*
Bakersfield-5558 California Ave	0.090	0.093	0.088	0	0	0	*	*	*	*	*	*
Bakersfield-Municipal Airport	0.100	0.108	0.098	6	6	3	*	*	*	*	*	*
8-Hour Ozone (ppm)												
Maricopa-Stanislaus Street	0.077	0.077	0.084	11	20	16	0.077	0.077	0.084	10	17	15
Shafter-Walker Street	0.086	0.082	0.080	16	27	8	0.085	0.081	0.079	15	21	6
Bakersfield-5558 California Ave	0.081	0.076	0.079	11	7	7	0.080	0.76	0.079	11	4	7
Bakersfield-Municipal Airport	0.090	0.087	0.085	30	45	26	0.090	0.086	0.084	29	45	25
PM₁₀, 24-hour (ug/m³)												
Bakersfield-5558 California Ave	439.3	133.0	180.2	124	135	106	437.5	134.7	181.3	3	0	1
PM_{2.5}, 24-hour (ug/m³)												
Bakersfield-5558 California Ave	72.3	58.1	63.7	*	*	*	72.3	58.1	63.7	40	34	9
Nitrogen Dioxide, 1-hour (ppm)												



Monitoring Station	Maximum Measured Concentration (State)			Number of Days Exceeding CAAQS			Maximum Monitored Concentration (National)			Number of Days Exceeding NAAQS		
	2021	2022	2023	2021	2022	2023	2021	2022	2023	2021	2022	2023
Shafter-Walker Street	47	34	41	0	0	0	47.8	34.9	41.5	0	0	0
Bakersfield-5558 California Ave	57	53	57	0	0	0	57.2	53.6	57.7	0	0	0
Bakersfield-Municipal Airport	68	58	63	0	0	0	68.1	58.6	63.5	0	0	0

Key: ppm = parts per million; $\mu\text{g}/\text{m}^3$ = micrograms per cubic meter; * = no standard or sufficient data was not available for this measurement.
Source: CARB 2025f

2.1.6 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 psychological (i.e., irritation, anger, or anxiety) to 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 sensitivity 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.

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.

2.1.7 Toxic Air Contaminants

Toxic air contaminants (TACs), as defined by U.S. EPA and CARB, are air pollutants that may cause or contribute to an increase in mortality or serious illness, or that 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 FCAA or the California Clean Air Act (CCAA) and are not subject to NAAQS or CAAQS ambient air quality standards.



The following provides a summary of the TACs of concern associated with the Project and related health effects.

2.1.7.1 Diesel Particulate Matter

Diesel particulate matter (DPM) was identified as a TAC by CARB in August 1998. DPM is emitted from both mobile and stationary sources. 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 2025c). 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, DPM 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 2025c).

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 2025c). In addition to its health effects, DPM significantly contributes to haze and reduced visibility.



2.1.7.2 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 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 (U.S. EPA 2024g).

2.1.8 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.

Existing land use in the vicinity of the Project site is exclusively oil and gas exploration and production. The sensitive receptors closest to the Project site include the residential communities of Tupman to the east, Dustin Acres and Valley Acres to the southeast and McKittrick and Derby Acres to the west. The closest residential receptor lies 4.97 miles from the Project site. The nearest school to the Project is Elk Hills Elementary School located approximately 6.7 miles east within the community of Tupman.

2.1.9 Valley Fever

Valley Fever is an infection caused by a fungus that lives in the soil. About 10,000 cases in the United States 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 grows naturally and 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 the soil with the fungal spores into the air or the dirt is moved by human activity. About 40 percent of the people who come into contact with the fungal spores would develop symptoms that may require medical treatment, and the symptoms would not go away on their own. Some people may develop a more severe infection, especially those with compromised immune systems (Centers for Disease Control [CDC] 2020).



2.2 Regulatory Setting

Air quality within the Project area is regulated by several jurisdictions, including U.S. EPA, CARB, and SJVAPCD. Each of these jurisdictions develop rules, regulations, and policies to attain the goals or directives imposed upon them through legislation. Although U.S. EPA regulations may not be superseded, both state and local regulations may be more stringent.

2.2.1 Federal

2.2.1.1 United States Environmental Protection Agency

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

2.2.1.1.1 Federal Clean Air Act

The FCAA required U.S. EPA to establish NAAQS and also 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 3.

2.2.1.1.2 National Emission Standards for Hazardous Air Pollutants

Pursuant to the FCAA of 1970, U.S. EPA established the National Emission Standards for Hazardous Air Pollutants (NESHAPs). These are technology-based source-specific regulations that limit allowable emissions of Hazardous Air Pollutants (HAPs). Among these sources include asbestos-containing building materials (ACBMs). NESHAPs include requirements pertaining to the inspection, notification, handling, and disposal of ACBMs associated with the demolition and renovation of structures.

2.2.1.1.3 Non-Road Diesel Rule

U.S. EPA has established a series of increasingly strict emissions standards for new off-road diesel equipment, on-road diesel trucks, and locomotives. 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

2.2.2.1 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 summarized in Table 3.

2.2.2.1.1 *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 5 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 reduce emissions. Any planning effort for air quality attainment would thus need to consider both state and federal planning requirements.

2.2.2.1.2 *Assembly Bills 1807 & 2588 - Toxic Air Contaminants*

Within California, TACs are regulated primarily through Assembly Bill (AB) 1807 (Tanner Air Toxics Act) and AB 2588 (Air Toxics Hot Spots Information and Assessment Act of 1987). The Tanner Air Toxics Act 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.

2.2.2.1.3 *Assembly Bill 617*

In response to AB 617 (C. Garcia, Chapter 136, Statutes of 2017), CARB established the Community Air Protection Program. The Community Air Protection Program includes community air monitoring and community emissions reduction program's focus is to reduce exposure in communities most impacted by air pollution. The Legislature has appropriated funding to support early actions to address localized air pollution through targeted incentive funding to deploy cleaner technologies in these communities, as well as 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.

2.2.2.1.4 *Regulatory Attainment Designations*

Under the CCAA, CARB is required to designate areas of the state as attainment, nonattainment, 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 "nonattainment"



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 nonattainment designation can be further classified as serious nonattainment, severe nonattainment, or extreme nonattainment, with extreme nonattainment being the most severe of the classifications. An “unclassified” designation signifies that the data does not support either an attainment or nonattainment designation. The CCAA divides districts into moderate, serious, and severe air pollution categories, with increasingly stringent control requirements mandated for each category.

U.S. EPA 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, nonattainment, and unclassified is more frequently used. U.S. EPA uses the same sub-categories for nonattainment status: serious, severe, and extreme. In 1991, U.S. EPA assigned new nonattainment 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 “unclassified.”

2.2.2.1.5 *Low-Emission Vehicle Program*

CARB first adopted Low-Emission Vehicle (LEV) program standards in 1990. These first LEV standards ran from 1994 through 2003. LEV II regulations, running from 2004 through 2010, represent 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 criteria pollutants and GHGs for new passenger vehicles.

2.2.2.1.6 *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 (CCR) contains California’s emission standards for on-road heavy-duty engines and vehicles, and test procedures. 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 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. 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 NO_x emissions. To help ensure that the benefits of this regulation are achieved, only vehicles compliant with this regulation are registered by the California Department of Motor Vehicles.



2.2.3 Regional

2.2.3.1 San Joaquin Valley Air Pollution Control District

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 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 FCAA and the CCAA.

2.2.3.1.1 *Current Air Quality Plans*

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

- **2024 Plan for the 2012 Annual PM_{2.5} Standard.** SJVAPCD adopted the 2024 Plan for the 2012 Annual PM_{2.5} Standard on June 20, 2024. The Plan contains emission reduction commitments that will allow the San Joaquin Valley to meet NAAQS PM_{2.5} attainment for the 2012 standard of 12 µg/m³ by 2030. The Plan includes implementation of SJVAPCD and CARB regulations as well as incentive-based commitments for stationary, area, and mobile sources to reduce PM_{2.5} emissions by 10.8 tons per day and NO_x by 148.7 tons per day between 2017 and 2030 (SJVAPCD 2024). The SJVAPCD includes quantitative milestone dates in 2025, 2028, and 2031 for the implementation of stationary source reductions and reporting to CARB. The goal for the 2025 milestone year is to develop amendments to District Rule 4901, Wood Burning Fireplaces and Wood Burning Heaters. The 2028 milestone year would include the implementation of Rule 4901 amendments, Rule 4550 (Conservation Management Practices) amendments, and implementation of incentive based commitments for new SJVAPCD programs Fireplace and Woodstove Change-Out Program and Low- Dust Nut Harvester Replacement Program. The 2031 milestone year would require reporting to CARB on the implementation of the amendments and commitments in the 2028 milestone (SJVAPCD 2024).
- **2018 Plan for the 1997, 2006, and 2012 PM_{2.5} Standards.** SJVAPCD adopted the 2018 Plan for the 1997, 2006, and 2012 PM_{2.5} Standards on November 15, 2018. CARB adopted the 2018 Plan on January 24, 2019, and portions were approved by U.S. EPA on June 30, 2020. The plan addresses the 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. The 2018 Plan builds upon previous PM_{2.5} Attainment Plans but identifies new actions to further reduce emissions. The attainment deadline for the 1997 PM_{2.5} Standard is December 31,



2015, the 2006 PM_{2.5} Standard is December 31, 2024 (with a 5-year extension request), and the 2012 PM_{2.5} Standard is December 31, 2025 (SJVAPCD 2018).

- **2022 8-Hour Ozone Plan.** In December 2022, SJVAPCD approved the 2022 Plan for the 2015 8-Hour Ozone Standard (2022 Ozone Plan). The 2022 Ozone Plan develops a strategy to attain the federal 2015 NAAQS of 70 parts per billion as quickly as possible, and no later than the 2037 attainment deadline (SJVAPCD 2022).
- **2016 8-Hour Ozone Plan.** In June 2016, the SJVAPCD Governing Board approved the 2016 Plan for the 2008 8-Hour Ozone Standard (2016 Ozone Plan). The comprehensive strategy in this plan is intended to reduce NO_x emissions by over 60 percent between 2012 and 2031. This would require another 207.7 tons per day in NO_x reductions from stationary and mobile sources throughout the San Joaquin Valley. The SJVAB faces significant and unique challenges in reducing O₃. Specifically, the geography and meteorology exacerbate the formation and retention of air pollution, and the SJVAB has one of the fastest population growth rates in the state. The 2016 Ozone Plan accounts for these challenges and builds upon the SJVAPCD's approved 1-hour O₃ and particulate matter strategies to meet NAAQS. The 2016 Ozone Plan is expected to bring the SJVAB into federal attainment of U.S. EPA's 2008 8-hour O₃ standard as expeditiously as practicable, but no later than December 31, 2031 (SJVAPCD 2016).
- **2020 Reasonably Available Control Technology (RACT) Demonstration.** Pursuant to Sections 182(b) and (f) of the FCAA, areas classified as moderate or higher for O₃ nonattainment are required to implement RACT requirements for sources that are subject to U.S. EPA Control Techniques for major sources of Volatile Organic Compounds (VOCs) and NO_x. RACT requirements ensure that significant sources of emissions in nonattainment areas are controlled to a reasonable extent. SJVAPCD prepared the 2020 RACT Demonstration for the 2015 8-Hour Ozone Standard Demonstration (2020 RACT Demonstration) to build upon previous RACT reports and to provide a comprehensive evaluation of all NO_x and VOC SJVAPCD rules to ensure that each rule meets or exceeds RACT requirements. The document fulfills FCAA requirements and demonstrates that all federal RACT requirements continue to be satisfied in the Valley (SJVAPCD 2020).
- **2023 Maintenance Plan and Redesignation Request for the Revoked 1-Hour Ozone Standard.** In June 2023, SJVAPCD adopted the 2023 Maintenance Plan. The SJVAB has been in attainment for the revoked 1-hour O₃ NAAQS since 2014, and the 2023 Maintenance Plan includes a demonstration that would ensure that the area remains in attainment through 2036 (SJVAPCD 2023).
- **2013 Revoked 1-Hour Ozone Plan.** SJVAPCD developed the 2013 Ozone Plan for U.S. EPA's revoked 1-hour O₃ standard. SJVAPCD had previously prepared a 1-hour Ozone Plan in 2004 that was approved by U.S. EPA. However, in 2010, U.S. EPA withdrew this approval as a result of litigation. SJVAPCD's 2013 Plan for the Revoked 1-Hour Ozone Standard was approved by the Governing Board in September 2013 (SJVAPCD 2013).



- **2007 PM₁₀ Maintenance Plan.** In October 2006, U.S. EPA determined that the SJVAB attained PM₁₀ standards, based on ambient monitoring data from the years 2003 through 2005. To constitute redesignation to attainment, SJVAPCD prepared the 2007 PM₁₀ Maintenance Plan. The 2007 PM₁₀ Maintenance Plan addresses both the 24-hour and the rescinded annual PM₁₀ standards (SJVAPCD 2007).

2.2.3.1.2 Rules and Regulations

SJVAPCD rules and regulations that may apply to 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 3135—Dust Control Plan Fee.** This rule sets fees to cover SJVAPCD review of Dust Control Plans and inspections.
- **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 CFR and the National Emission Standards for Hazardous Air Pollutants for Source Categories from Part 63, Chapter I, Subchapter C, Title 40, CFR.
- **Rule 4101—Visible Emissions.** This rule prohibits the emissions of visible air contaminants into the atmosphere.
- **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.



- **Rule 4601—Architectural Coatings.** The purpose of this rule is to limit VOC emissions from architectural coatings. Emissions are reduced by limits on VOC content and providing requirements on coatings storage, cleanup, and labeling.
- **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 one 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.
- **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.

2.2.4 Local

2.2.4.1 Kern County Guidelines for Preparing an Air Quality Assessment for Use in Environmental Impact Reports

In 2006, Kern County released their Guidelines for Preparing an Air Quality Assessment for Use in Environmental Impact Reports. The purpose of this guidance is to assist with the preparation of technical air quality assessments prepared by Kern County. The guidelines are to ensure uniform analyses of air quality effects within the County (Kern County 2006).

2.2.4.2 Kern County General Plan

The Kern County General Plan presents a vision for the County's future, looking ahead to 2040. State law required that counties and cities adopt and periodically update a General Plan to guide land use development. The purpose of the General Plan is to encourage economic development; work with local, state, and federal agencies to plan the long-term future of Kern County; ensure the protection of environmental resources; and maintain compliance with the provisions of State Planning and Zoning Laws.



The General Plan includes the following policies related to air quality that are applicable to the Project (Kern County 2009):

Land Use, Conservation, and Open Space Element

Air Quality Policies

- **Policy 18:** The air quality implications of new discretionary land use proposals shall be considered in approval of major developments. Special emphasis will be placed on minimizing air quality degradation in the desert to enable effective military operations and in the valley region to meet attainment goals.
- **Policy 19:** In considering discretionary projects for which an Environmental Impact Report must be prepared pursuant to the California Environmental Quality Act, the appropriate decisions making body, as part of its deliberations, will ensure that:
 - All feasible mitigation to reduce significant adverse air quality impacts have been adopted; and
 - The benefits of the proposed Project outweigh any unavoidable significant adverse effects on air quality found to exist after inclusion of all feasible mitigation. This finding shall be made in a statement of overriding considerations and shall be supported by factual evidence to the extent that such a statement is required to the California Environmental Quality Act.
- **Policy 20:** The County shall include fugitive dust control measures as a requirement for discretionary projects and as required by the adopted rules and regulations of the SJVAPCD and the Kern County Air Pollution Control District on ministerial permits.
- **Policy 21:** The County shall support air districts' efforts to reduce PM₁₀ and PM_{2.5} emissions.
- **Policy 22:** Kern County shall continue to work with the SJVAPCD and the Kern County Air Pollution Control District toward air quality attainment with federal, State, and local standards.
- **Policy 23:** The County shall continue to implement the local government control measures in coordination with the Kern Council of Governments and the SJVAPCD.
- **Policy 24:** Kern County shall consult with transit providers to determine project effects and ensure that impacts are mitigated.

Air Quality Implementation Measures

- **Implementation Measure F.** All discretionary permits shall be referred to the appropriate air district for review and comment.
- **Implementation Measure G.** Discretionary development projects involving the use of tractor trailer rigs shall incorporate diesel exhaust reduction strategies including, but not limited to:



- Minimizing idling time.
 - Electrical overnight plug-ins.
- **Implementation Measure H.** Discretionary projects may use one or more of the following to reduce air quality effects:
 - Pave dirt roads within the development.
 - Pave outside storage areas.
 - Use of alternative fuel fleet vehicles or hybrid vehicles.
 - User of emission control devices on diesel equipment.
 - Other strategies that may be recommended by the local Air Pollution Control District.
- **Implementation Measure J.** The County should include PM₁₀ control measures as conditions of approval for subdivision maps, site plans, and grading permits.



3 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 otherwise 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 CO₂, methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), nitrogen trifluoride (NF₃), 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 (U.S. EPA 2025d).

Methane. CH₄ is a colorless, odorless gas, and is the major component of natural gas, about 87 percent by volume. It is also formed and released into 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 (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 (U.S. EPA 2025e).

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 management, sewage treatment, mobile and stationary combustion of fossil fuels, adipic acid production, and nitric acid production. N₂O 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 N₂O is approximately 120 years (U.S. EPA 2025f).



Hydrofluorocarbons. HFCs are man-made chemicals, many of which have been developed as alternatives to O₃-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 HCFC-22 production (or Freon 22, used in air conditioning applications). The atmospheric lifetime for HFCs varies from just over 1 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) (U.S. EPA 2025g).

Perfluorocarbons. PFCs are colorless, highly dense, chemically inert, and nontoxic. There are seven PFC gases: perfluoromethane (CF₄), perfluoroethane (C₂F₆), perfluoropropane (C₃F₈), perfluorobutane (C₄F₁₀), perfluorocyclobutane (C₄F₈), perfluoropentane (C₅F₁₂), and perfluorohexane (C₆F₁₄). 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 CF₄ and C₂F₆ as byproducts. The estimated atmospheric lifetimes for CF₄ and C₂F₆ are 50,000 and 10,000 years, respectively (U.S. EPA 2025g).

Nitrogen Trifluoride. NF₃ is an inorganic, colorless, odorless, toxic, nonflammable gas used as an etchant in microelectronics. NF₃ 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, NF₃ was listed by California as a potential GHG to be listed and regulated under AB 32 (Section 38505 Health and Safety Code).

Sulfur Hexafluoride. SF₆ is an inorganic compound that is colorless, odorless, nontoxic, and generally nonflammable. SF₆ is primarily used as an electrical insulator in high voltage equipment. The electric power industry uses roughly 80 percent of all SF₆ produced worldwide. Leaks of SF₆ occur from aging equipment and during equipment maintenance and servicing. SF₆ has an atmospheric life of 3,200 years (U.S. EPA 2025h).

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; consequently, it is very difficult to quantify associated global-warming potentials. The main sources of black carbon in California are wildfires, off-road vehicles (locomotives, marine vessels, tractors, excavators, dozers, etc.), on-road vehicles (e.g., cars, trucks, and buses), fireplaces, agricultural waste burning, and prescribed burning (planned burns of forest or wildlands). California has been an international leader in reducing emissions of black carbon, including programs that target reducing DPM and PM from burning activities (CARB 2025d).

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 CO₂e 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; 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. World-wide, energy production including the burning of coal, natural gas, and oil for electricity and heat is the largest single source of global GHG emissions.

3.1.3.1 United States of America

In 2022, GHG emissions in the United States totaled 6,343 million metric tons of CO₂e (MMT CO₂e). 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 sectors (13 percent) and the agricultural sector (10 percent). Transportation emissions primarily come from burning fossil fuels for our motor vehicles, 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 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 13 percent of the 2022 GHG emissions (U.S. EPA 2025i).

3.1.3.2 California

In 2022, GHG emissions within California totaled 371.1 MMT of CO₂e. Similar to national emissions, in California, the transportation sector is the largest contributor. Transportation emissions account for approximately 39 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 2024b).



3.1.4 Effects of Global Climate Change

There are uncertainties as to exactly what the climate changes will be in various local areas of the earth. There are also uncertainties associated with the magnitude and timing of other consequences of a warmer planet. In California, the existing and expected impacts of global warming include:

1. **Sea Level Rise, Coastal Flooding, and Coastal Erosion.** Over the past century, sea level along California's coast has risen almost 8 inches and is projected to rise another 20 to 55 inches by the end of the century. Sea level rise and coastal flooding would cause property and infrastructure damage and could result in saltwater contamination of low-level farmlands as well as the Sacramento/San Joaquin Delta, destroying water availability, wildlife ecosystems, and agriculture. Coastal erosion could impact California's ocean-dependent economy by damaging fisheries and tourist destinations (California DOJ 2025).
2. **Losses to the Sierra Snowpack and Water Supply.** The snowpack in the Sierra Nevada results in approximately 15 million acre-feet of water that becomes available in spring and summer and stored in California's dams and water storage facilities. Global climate change has resulted in higher temperatures that results in the snowpack melting earlier and quicker than the California's water infrastructure was built to handle. This would result in flooding and water shortages (California DOJ 2025).
3. **Damage to Agriculture.** Higher temperatures and drought are direct climate change impacts that could damage agriculture. Moreover, potential water shortages, flooding, increased pests, and saltwater intrusion that could occur as a result of climate change could also result in a loss of agricultural production. This would lead to higher prices and potential food shortages (California DOJ 2025).
4. **Increased Demand for Electricity.** As the temperature increases, people are anticipated to rely on air conditioning, especially within Southern California and the Central Valley, driving up electrical demand (California DOJ 2025).
5. **Public Health Impacts.** Increased temperatures can lead to the formation of more O₃ creating smog. The health risks of smog include lung damage, asthma, respiratory and heart disease, and death. Additionally, increased temperatures will lead to a greater number of extreme heat events. Within Kern County, it is anticipated that by the end of the century, the average number of extreme heat days, when the maximum temperature is over 100.8 degrees Fahrenheit, will be 38 days under a medium emissions scenario. This is a 660 percent increase compared to the baseline average of 5 extreme heat days per day (CalAdapt 2025). Higher temperatures and more extreme heat days would lead to a higher number of hospitalization or death from dehydration, heatstroke, heart attack, and respiratory problems especially for populations that do not have access to air conditioning (California DOJ 2025).
6. **Habitat Destruction and Loss of Ecosystems.** Higher temperatures and drought conditions will adversely impact plant and wildlife habitats. As discussed above, sea level rise could lead to saltwater intrusion impacting ecosystems in the wetlands and at the Sacramento/San Joaquin



Delta (California DOJ 2025). Warming stream temperatures can threaten temperature-sensitive fish, like salmon. Biodiversity and thriving ecosystems in California are beneficial by providing clean air, clean water, crop pollination, and recreational activities (California Department of Fish and Wildlife 2025).

7. **Increased Wildfire Risk.** Global climate change impacts including increased temperatures, decreased summer precipitation, and the earlier melting of snowpack are contributing to increased fire activity and prolonged fire seasons. Wildfires are also becoming more intense and frequent, resulting in worsening air pollution, property damage, and GHG emissions (NASA 2025).

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 while also leading to increased public health risks from extreme heat and wildfires.

3.2 Regulatory Setting

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

3.2.1 Federal

3.2.1.1 Federal Clean Air Act

The United State Supreme Court ruled in *Massachusetts v. Environmental Protection Agency*, 127 S.Ct. 1438 (2007), that CO₂ and GHGs are pollutants under the FCAA. U.S. EPA is responsible for regulating GHGs if it determines that they pose an endangerment to public health or welfare. In December 2009, U.S. EPA issued an endangerment finding for GHGs under the FCAA. Currently, U.S. EPA implements public-private partnerships and voluntary programs to reduce GHG emissions, focusing on energy efficiency and the implementation of energy-reducing technologies.

3.2.1.2 Corporate Average Fuel Economy (CAFE) Standards

The Energy Policy and Conservation Act of 1975 (EPCA) mandated that the National Highway Traffic Safety Administration (NHTSA) establish and implement a regulatory program for motor vehicle fuel economy, known as the Corporate Average Fuel Economy (CAFE) program, to reduce national energy consumption. The CAFE program establishes average fuel economy standards for passenger cars and light trucks (see 49 USC Sections 32901 et seq.). The Energy Independence and Security Act (EISA), discussed below, amended the CAFE program requirements by providing the U.S. Department of Transportation additional rulemaking authority and responsibilities. In June 2024, NHTSA finalized CAFE standards for model years 2027 to 2031. The standards will bring the average light-duty vehicle fuel economy to approximately 50.4 miles per gallon by model year 2031. In addition, heavy-duty pickup truck and van fuel efficiency will increase to an average of approximately 35 miles per gallon by model year



2035. NHTSA projects that the foregoing standards will avoid the consumption of almost 70 billion gallons of gasoline through 2050, preventing more than 710 MMTCO₂ emissions by 2050 (NHTSA 2024).

3.2.1.3 Energy Independence and Security Act

The EISA aimed to increase United States energy security, increased CAFE standards for motor vehicles, and included provisions related to energy efficiency, such as renewable fuel standards (RFS), appliance and lighting efficiency standards; and building energy efficiency standards. The EISA required increasing levels of renewable fuels to replace petroleum. U.S. EPA is responsible for developing and implementing regulations to ensure transportation fuel sold into the United States contains a minimum volume of renewable fuel.

The RFS programs regulations were developed in collaboration with refiners, renewable fuel products, and other stakeholders and were created under the Energy Policy Act of 2005. The RFS program established the first renewable fuel volume mandate in the United States. As required under the EISA, the original RFS program required 7.5 billion gallons of renewable fuel to be blended into gasoline by 2012. The RFS program was expanded in several ways that laid the foundation for achieving significant reductions of GHG emissions through the use of renewable fuels, for reducing imported petroleum, and for encouraging the development and expansion of the nation's renewable fuels sector. The updated program is referred to as RFS2, and includes the following:

- EISA expanded the RFS program to include diesel, in addition to gasoline;
- EISA increased the volume of renewable fuel required to be blended into transportation fuel from 9 billion gallons in 2008 to 36 billion gallons by 2022;
- EISA established new categories of renewable fuel and set separate volume requirements for each one; and
- EISA required by U.S. EPA to apply lifecycle GHG performance threshold standards to ensure that each category of renewable fuel emits fewer GHGs than the petroleum fuel it replaces.

Additional provisions of the EISA address energy savings in government and public institutions, promoting research for alternate energy, additional research in carbon capture, international energy programs, and the creation of “green jobs.”

3.2.2 State

3.2.2.1 Assembly Bill 32 and Senate Bill 32

AB 32, the California Global Warming Solutions Act of 2006, requires that GHGs emitted in California be reduced to 1990 levels by the year 2020. GHGs, as defined under AB 32, include CO₂, CH₄, NO_x, 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:

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 (CARB 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. 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 2018).

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."

3.2.2.2 Assembly Bill 1279: The California Climate Crisis

AB 1279 was signed into law in 2022 and 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 requires that by 2045 the statewide anthropogenic GHG emissions are reduced by at least 85 percent below 1990 levels. The bill also requires CARB to ensure that an updated Scoping Plan identifies and recommends measures to achieve carbon neutrality, and to identify and implement policies and strategies that enable CO₂ removal and carbon capture, utilization, and storage technologies to complement AB 1279's emissions reduction requirements.

3.2.2.3 Climate Change Scoping Plan

The Scoping Plan is a blueprint for how the State plans to meet the required GHG reductions under AB 32, SB 32, and AB 1279. CARB is required under AB 32 to update the Scoping Plan at least once every 5 years. The most recent Scoping Plan is the Final 2022 Scoping Plan for Achieving Carbon Neutrality (2022 Scoping Plan) that was adopted in December 2022 and serves as the third update to the initial plan adopted in 2008 (2008 Scoping Plan). The 2008 Scoping Plan addressed how the State can achieve the AB 32 reduction targets by 2020. An updated plan was adopted in 2014 (2013 Scoping Plan) to assess progress towards the 2020 reduction goal and address short-lived climate pollutants (SLCPs). The 2017 Scoping Plan also addressed progress towards the 2020 reduction goal and created a pathway for the State to meet the 2030 reduction goal set under SB 32.

Finally, the 2022 Scoping Plan 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 (CARB 2022). The 2022 Scoping Plan also includes a discussion about the use of natural and working land use sectors for sequestration, carbon storage, and potential emission sources during wildfires. The estimated GHG emission reductions from the 2022 Scoping Plan are provided in Table 6.

Table 6 Estimated Statewide Greenhouse Gas Emissions Reductions in the 2022 Scoping Plan

Emissions Scenario	GHG Emissions (MMT CO₂e)
2019	
2019 State GHG Emissions	404
2030	
2030 Business-As-Usual (BAU) Forecast	312
2030 GHG Emissions without Carbon Removal and Capture	233
2030 GHG Emissions with Carbon Removal and Capture	226
2030 Emissions Target Set by SB 32 (1990 levels by 2030)	260
Reduction below BAU necessary to Schieve 1990 levels by 2030	52
2045	
2045 BAU Forecast	266
2045 GHG Emissions with Carbon Removal and Capture	72
2045 GHG Emissions with Carbon Removal and Capture	-3

Source: CARB 2022

The 2022 Scoping Plan accounts for existing and recent direction in EOs and State Statutes, which identify policies, strategies, and regulations in support of and implementation of the 2022 Scoping Plan. These EOs and State Statutes include AB 1279, SB 100, SB 905, and EO N-79-20. Ultimately, achieving the targets set by SB 32 and AB 1279 will require continued commitment to and successful implementation of existing policies and programs as well as new policy tools and technical solutions to further reduce GHG emissions.

3.2.2.4 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 CO₂e per year (MTCO₂e/year), such as refineries, power plants, and industrial facilities. The Cap-and-Trade Program was initially adopted pursuant to AB 32 with the goal of reducing GHG emissions by creating a cap for GHG emissions from the aforementioned sources. Entities covered under Cap-and-Trade are allocated GHG allowances and can purchase or sell allowances at auction. The Program began in 2013 and the cap for GHG emissions will decline over time resulting in an aggregate decline in statewide emissions. This market-based approach to reducing GHG emissions provides economic incentives for achieving GHG emission reductions.



AB 398 was assigned into law in 2017 and extends the Cap-and-Trade program through December 31, 2030. AB 398 also updated protocols and the allocation of proceeds to reduce GHG emissions.

3.2.2.5 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 2025e).

3.2.2.6 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. The fuel efficiency standards were phased in during the 2009 through 2016 model years.

The second phase of the implementation for AB 1493 was incorporated into Amendments to the LEV III or the Advanced Clean Cars (ACC) program. The ACC 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 rules helped promote a reduction in pollutants from gasoline and diesel-powered cars and helped deliver increasing numbers of zero-emission technologies, such as full battery electric vehicles (EVs), newly emerging plug-in hybrid EVs, and hydrogen fuel cell cars. The regulations also encouraged adequate fueling infrastructure.

3.2.2.7 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 5 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.

3.2.2.8 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 Executive Order (EO) S-14-08, which established the Renewable Portfolio Standard (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 California'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.

3.2.2.9 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.

3.2.2.10 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 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.

3.2.2.11 Senate Bill 905: Carbon Capture, Removal, Utilization, and Storage Program

SB 905 (September 16, 2022) directs CARB to create a carbon, capture, utilization, and storage (CCUS) program on or before January 1, 2025, that adopts regulations creating a unified State permitting application for the approval of CCUS and carbon dioxide removal (CDR) projects.



3.2.2.12 Assembly Bill 1757: California Global Warming Solutions Act of 2006: climate goal: natural and working lands

AB 1757 (September 16, 2022) directs the California Natural Resources Agency (CNRA), CARB, California Environmental Protection Agency (CalEPA), California Department of Food and Agriculture, and an expert advisory committee to set targets for natural carbon sequestration and nature-based climate solutions for 2030, 2038, and 2045 by January 1, 2024, which must be integrated into CARB's Scoping Plan.

3.2.2.13 Executive Order S-3-05: Global Warming Impacts

EO S-3-05 was signed on June 1, 2005. The EO sets the following GHG emission reduction targets: (1) by 2010, California shall reduce GHG emissions to 2000 levels; (2) by 2020, California shall reduce GHG emissions to 1990 levels; and (3) by 2050, California shall reduce GHG emissions to 80 percent below 1990 levels.

3.2.2.14 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 LCFS and directed the Secretary for Environmental Protection to coordinate the actions of CEC, 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 CEC 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, 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 2019 and approved on May 27, 2020. The 2019 Amendments provide clarification related to the Clean Fuel Reward program costs, credit transactions, fuels transactions and compliance reporting (CARB 2020). 2024 Amendments were approved in November 2024 and established new targets to reduce the carbon intensity of transportation fuel by 30 percent by 2030 and 90 percent by 2045. In addition, the 2024 Amendments increase support for zero emission vehicle (ZEV) infrastructure (CARB 2024c).

3.2.2.15 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.

3.2.2.16 Executive Order B-30-15

EO B-30-15 was signed on April 29, 2015. The EO established a new interim statewide reduction target to reduce GHG emissions to 40 percent below 1990 levels by 2030. Additionally, the EO ordered all state agencies with jurisdiction over GHG sources to implement measures to achieve these GHG emissions reductions and it directed CARB to update the Scoping Plan to meet the 2030 goal.

3.2.2.17 Executive Order B-48-18

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.

3.2.2.18 Executive Order N-79-20

In September 2020, Governor Newsom signed EO N-79-20, which 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 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.

3.2.2.19 California Green Building Standards Code

The California Green Building Standards Code (CALGreen), CCR Part 11, Title 24, includes standards for energy efficiency, water efficiency, material conservation, and environmental quality in new residential and nonresidential structures. CALGreen was created in 2008 under SB 1473 to support California’s GHG reduction goals under AB 32. CALGreen is updated on a triennial basis with minor revisions every 18 months.

3.2.3 Regional

3.2.3.1 San Joaquin Valley Air Pollution Control District

SJVAPCD adopted its Climate Change Action Plan (CCAP) in 2008. The CCAP directed SJVAPCD to develop guidance to assist California Environmental Quality Act (CEQA) lead agencies, Project



proponents, permit applicants, and interested parties in assessing and reducing the impacts of Project GHG emissions.

In 2009, SJVAPCD adopted Guidance for Valley Land-use Agencies in Addressing GHG Emission Impacts for New Project under CEQA (SJVAPCD 2009). The document outlined SJVAPCD's methodology for assessing an individual project's GHG significance under CEQA.

3.2.4 Local

3.2.4.1 Kern County General Plan

The General Plan presents a vision for the County's future, looking ahead to 2040. State law requires counties and cities to adopt and periodically update a General Plan to guide land use development. The purpose of the General Plan is to encourage economic development; work with local, state, and federal agencies to plan the long-term future of Kern County; ensure the protection of environmental resources; and maintain compliance with the provisions of State Planning and Zoning Laws.

While the General Plan does not include policies that directly address GHG emissions, the policies related to air quality (see Section 2.2.4) would have co-benefits related to GHGs (Kern County 2009).



4 Methodology

The following section describes the methodology and modeling used to estimate Project emissions during construction and operation. Construction and operational emissions were estimated using the California Emissions Estimator Model (CalEEMod), which 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 operations 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. The CalEEMod model uses a series of default assumptions based on the land uses and land use sizes as well as Project specific data to calculate the emissions. CalEEMod Version 2022.1.1.29 was used for this analysis.

Construction and operational methodology are discussed separately below.

4.1 Construction Assumptions

Based on the Project description, Table 7 shows the land uses and land use sizes were input into the model. The Project may incorporate a steam extractive option to provide the required thermal energy for the carbon capture process and the emissions associated with the construction of those facilities were included within the analysis.

Table 7 Modeled Land Uses

Proposed Land Use ¹	Modeled Land Use	Land Use Size	Unit
Carbon Capture Unit	General Heavy Industrial	5.57	Acres
Substation	General Heavy Industrial	1.5	Acres
Electrical Utility Line	Linear Use	1,720 / 0.326	Feet / Miles
Raw Water Supply Line	Linear Use	2,788 / 0.528	Feet / Miles
Cool Water Supply Line	Linear Use	745 / 0.141	Feet / Miles
Cool Water Return Line	Linear Use	812 / 0.154	Feet / Miles
Steam & Condensate Line	Linear Use	2,072 / 0.392	Feet / Miles
CO ₂ Pipeline	Linear Use	2,196 / 0.416	Feet / Miles
Wastewater Pipeline	Linear Use	4,398 / 0.834	Feet / Miles
Roadways	Linear Use – Roadway	1,550 / 0.294	Feet / Miles
Steam Extraction Turbine Unit ²	General Heavy Industrial	2,200	Square feet
Steam Extraction Piping ²	Linear Use	1,128 / 0.21	Feet / Miles

Notes:

¹ The injection and monitoring wells would not include any building structures and, as a result, were not modeled as a separate land use.

² Steam extraction uses are optional and included within the modeling to provide a conservative estimate of emissions. The land use sizes for the proposed land uses are based on the approximate sizes, locations, and satellite imagery of the site.



Construction of the Project is anticipated to require 24 to 30 months to complete. Construction emissions were modeled to occur over a 24-month period, which would condense total construction emissions resulting in a conservative assessment of emissions. The construction week would be Monday through Friday with 10-hour workdays. Initial activities are expected to start early 2027. A list of Project-specific construction equipment is provided in Appendix A.

During construction, the Project would require 33,000 cubic yards (CY) of cut and 13,000 CY of fill. Fill would be acquired from two borrow site locations on the oilfield, approximately 1 mile from the CCS location. Grading cut was assumed to be exported to the McKittrick Waste Landfill (approximately 11.2 miles from the site) or Taft Landfill (approximately 6.4 miles from the site). A weighted trip length was used within the modeling. The maximum number of construction workers and indirect personnel on-site is approximately 500 people. Additionally, the Project would generate approximately twelve one-way vendor trips per day (six round trip) for the delivery of mechanical and electrical equipment. Most trips are anticipated to travel from Bakersfield, approximately 34 miles from the Project site; other trips may originate from nearby communities, including Taft, California. The construction staging area would be located near the proposed CalCapture project site (within 0.5 miles) and also approximately 5.5 miles from the Project site. The construction staging areas closer to the proposed CalCapture site would be for near-term construction and installation operations. No additional grading would be required for the staging area. It was assumed that material, worker, and equipment movement from the staging area to the Project site would be accounted for in the operation of the off-road equipment including the use of off-highway trucks.

Deliveries of mechanical and electrical equipment, as well as prefabricated piping would be required; however, points of origin would not be determined until orders are awarded. It was assumed that up to one delivery truck per day would be required from the Port of Los Angeles, approximately 152 miles away.² Deliveries of concrete, as well as concrete pump trucks, would come from local batch plants and near the Project site. The number of trips would depend on concrete quantities, which would be determined during future design phases of the project. It was assumed up to 10,000 CY of concrete would be required with each concrete truck being up to carry up to 10 CY. The assumption for 10,000 CY of concrete was based on the assumption that roadways and the foundations for the substation, CCS facility, and steam extraction unit would be up to 0.5 feet deep. Based on the land use sizes in Table 7 and a roadway up to 30 feet wide, this would lead to approximately 357,000 square feet of concrete coverage. This would lead to a demand for 6,606 CY of concrete. However, to be conservative and to account for the possibility of thicker foundations in some areas or additional concrete pours, 10,000 CY was used for this analysis. Concrete was assumed to be imported from Bakersfield, approximately 34 miles from the Project site.

During construction, the Project would require approximately 1,198,000 gallons of water for civil grading, dust control via water tankers, and water needs for pipeline construction. Additionally, during construction, temporary offices and parking areas would be used by construction personnel. Temporary office and

² The Project is anticipated to generate 12 vendor truck trips per day. This would result in five round trips to Bakersfield and one round trip to the Port of Los Angeles. Therefore, the vendor trucks would travel an average of 55 miles per trip.



parking areas have been designated in previously disturbed areas to the south and northeast of the Project site. Two additional areas are located approximately 5.5 miles southeast of the Project site. There are no permanent new buildings proposed for the Project, and no grading would occur within the temporary office and parking areas. Total temporary staging and parking area would be approximately 30.74 acres.

CalEEMod output modeling files and modeling assumptions are provided in Appendix A.

4.2 Operational Assumptions

Operational emissions are generated from vehicle trips (fugitive dust and exhaust emissions), area sources, and electrical generation.

4.2.1 Vehicle Trips

During operation, the Project is anticipated to generate roughly 40 vehicle trips per day from deliveries and workers traveling to and from the site. All delivery and worker trips were assumed to travel from Bakersfield, approximately 34 miles from the site. Vehicles would result in the emissions of fugitive dust from driving on paved and unpaved roadways, brake wear, and tire wear, as well as exhaust emissions of ROG, NO_x, SO_x, CO, PM₁₀, and PM_{2.5}. Emissions from mobile sources were calculated using CalEEMod.

4.2.2 Area Sources

Area sources were calculated through CalEEMod. Area sources would be generated from site maintenance products, such as cleaning products and paints. Landscaping is not anticipated; therefore, no landscaping equipment was modeled. Area source inputs for cleaning products and paints are based on default assumptions. CalEEMod output files are provided in Appendix A.

4.2.3 Carbon Capture and Sequestration Equipment

4.2.3.1 Elk Hills Power Plant

On average, EHPP currently operates at approximately 475 megawatts (MW). Approximately 150 MW is generated by each of two gas turbine generators, and approximately 175 MW is generated from the hot gas turbine exhaust via heat recovery steam generators and a steam turbine generator. The CCS is anticipated to require approximately 35-40 MW of electric load during operation. The CCS will also use a portion of the steam currently sent to the steam turbine generator, reducing the steam turbine's electrical generation by approximately 35-50 MW. The electrical and steam load for CCS will come from typical historical EHPP operation levels, and total fuel consumption is not expected to increase. Therefore, there would not be an increase in on-site emissions from electricity production as compared to baseline conditions.



4.2.3.2 Supplemental Boiler

The operation of the CCU may require a supplemental boiler with a heat input of 160 MMBtu/hour. Emissions for the operation of the boiler were calculated within CalEEMod assuming the boiler would operate continuously.

4.3 Health Risk Assessment

To evaluate the potential health risks posed by construction and operation of the Project, TACs that may be emitted during construction and operation including fugitive dust, naturally occurring asbestos, and DPM are discussed qualitatively. As discussed previously, the sensitive receptors closest to the Project site include the residential communities of Tupman to the east, Dustin Acres and Valley Acres to the southeast and McKittrick and Derby Acres to the west. The closest residential receptor lies 4.97 miles from the Project site. The nearest school to the Project is Elk Hills Elementary School located approximately 6.7 miles east within the community of Tupman. According to CARB, DPM dissipates with distance, especially within 500 feet of the source (CARB 2005). As such, other air districts, including the Bay Area Air Quality Management District (BAAQMD), have determined that health risks should be evaluated 1,000 feet from the property boundary (BAAQMD 2022). Therefore, since the DPM concentration would be greater reduced with distance and since the nearest sensitive receptors lie approximately 4.97 miles (26,242 feet) from the Project site, a quantitative health risk assessment to evaluate the risks to residential or school receptors was not warranted. While there are existing workers at the EHPP, the risks posed to these workers during construction would be short-term and only occur over the construction period and when they are working. As such, construction may not occur during their shift or may only occur during portions of their shift resulting in a lower exposure to emissions. All workers on the site are adult receptors, which are less likely to be impacted than residential or school receptors where infants and children would be. Infants and children, due to higher breathing rates, have a greater risk of developing health risks than adults from DPM. As such, a quantitative health risk assessment to evaluate the risks to nearby workers was not warranted.

Air emissions of NO_x, CO, PM₁₀, and PM_{2.5} were compared to SJVAPCD localized significance thresholds to determine the Project's contribution to ambient air around the Project site. Per SJVAPCD guidance, the localized significance thresholds should be used for on-site emissions. However, total air emissions (on-site and off-site) were compared to these thresholds to provide a conservative analysis.

4.4 Decommissioning

If CRC decides to no longer use the EHPP properties as a carbon sequestering facility, CRC would be required to notify the Kern County, U.S. EPA, and appropriate state agencies such as CEC, and then either divest the Project or decommission the Project site facilities and wells in accordance with applicable law. Decommissioning activities would include injection well plugging and abandonment, post-injection site care, and site closure as required by U.S. EPA UIC Program Class VI regulations, 40 CFR Parts 146.92 and 146.93. Post-injection testing and monitoring requirements would also be followed to monitor the CO₂ plume after injection has ceased as required by 40 CFR 46.90. In lieu of removal, surface facilities potentially may be re-purposed for other site uses in accordance with applicable law. Any surface



facility removal activities would be limited to removal or demolition of existing equipment and performed in accordance with applicable law.

Decommissioning would likely involve the same activities as construction but would occur later in time when vehicle and off-road emissions are expected to decrease due to increasingly stringent state regulations. As a result, actual decommissioning criteria air pollutant and GHG emissions are expected to be less than construction. However, this analysis conservatively assumes that decommissioning would generate the same emissions as construction of the Project.

4.5 Thresholds

4.5.1 Air Quality

SJVAPCD's adopted thresholds of significance for criteria pollutants are presented in Table 8, and the adopted localized screening levels for ambient air quality are presented in Table 9. SJVAPCD thresholds have been recommended and adopted as the thresholds for this Project.

Table 8 SJVAPCD Thresholds of Significance for Criteria Pollutants

Pollutant	Significance Threshold (tons/year)	
	Construction Emissions	Operational Emissions
ROG	10	10
NO _x	10	10
CO	100	100
SO _x	27	27
PM ₁₀	15	15
PM _{2.5}	15	15

Source: SJVAPCD 2015

Table 9 SJVAPCD Ambient Air Quality Screening Levels

Pollutant	Screening Levels (lbs/day)	
	Construction Emissions	Operational Emissions
NO _x	100	100
CO	100	100
PM ₁₀	100	100
PM _{2.5}	100	100

Note: lbs/day = pounds per day

Source: SJVAPCD 2015

Additionally, SJVAPCD has adopted significance thresholds to evaluate the health risks posed to receptors from TACs, shown in Table 10.



Table 10 SJVAPCD Health Risk Thresholds

Health Risk	Significance Threshold
Carcinogens	Maximally exposed individual risk equals or exceeds 10 in one million
Non-carcinogens (acute)	Hazard index equals or exceeds 1 for the maximally exposed individual
Non-carcinogens (chronic)	Hazard index equals or exceeds 1 for the maximally exposed individual

Source: SJVAPCD 2015

According to SJVAPCD, air quality emissions are inherently cumulative. Therefore, if a project's emissions exceed the thresholds of significance for criteria air pollutants (see Table 8), then the project would be expected to result in a cumulatively considerable net increase of any criteria pollutant for which the SJVAB is in non-attainment. A Lead Agency can determine that a project's impact is not cumulatively considerable if the project would comply with the requirements in previously approved plans and would not worsen the air quality in an area already exceeding ambient thresholds. Therefore, compliance with applicable air plans and meeting all SJVAPCD thresholds are the cumulative thresholds of analysis used for this study.

4.5.2 Greenhouse Gases

SJVAPCD's guidance recommends a tiered approach to analyzing Project significance with respect to GHG emissions. (SJVAPCD 2015). Project GHG emissions are considered less than significant if they can meet any of the following conditions, evaluated in order:

- Projects complying with an approved GHG emission reduction plan or GHG mitigation program that avoids or substantially reduces GHG emissions within the geographic area in which the project is located would be determined to have a less than significant individual and cumulative impact for GHG emissions. Such plans or programs must be specified in law or approved by the Lead Agency with jurisdiction over the affected resource and supported by a CEQA compliant environmental review document adopted by the Lead Agency. Projects complying with an approved GHG emission reduction plan or GHG mitigation program would not be required to implement Best Performance Standards (BPS). CEC will be the CEQA Lead Agency for the Project and will coordinate with appropriate state agencies that regulate GHG emissions and will assess if the project requires an emissions reduction plan.
- Projects implementing BPS would not require quantification of project-specific GHG emissions. Consistent with CEQA Guideline, such projects would be determined to have a less than significant individual and cumulative impact for GHG emissions.
- Projects not implementing BPS would require quantification of Project specific GHG emissions and demonstration that project-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, consistent with GHG emission reduction targets established in ARB's AB 32 Scoping Plan. Projects achieving at least a 29 percent GHG emission reduction compared to



BAU would be determined to have a less than significant individual and cumulative impact for GHG.).

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 the CARB 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.

In lieu of an approved CAP, the Project would be required to comply with applicable state GHG reduction plans, including CARB's 2022 Scoping Plan. The CARB 2022 Scoping Plan includes approved GHG emission reduction plans and projects consistent with these plans would also comply with SB 32. Because SJVAPCD does not have a quantifiable emissions threshold, Project significance was determined based on compliance with applicable plans (2022 Scoping Plan and Kern County General Plan) to reduce GHG emissions in accordance with CEQA Guidelines 15064.4(b)(3).



5 Air Quality Impact Analysis

5.1 CEQA Guidelines

In accordance with the CEQA Guidelines Appendix G Environmental Checklist,³ the following questions are to be analyzed and evaluated to determine whether air quality impacts are significant. 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 proposed project:

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

5.2 Air Impact Analysis

Impact AIR-1	Conflict with or obstruct implementation of the applicable air quality plan?
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Less than Significant with Mitigation. Air Pollution Control Districts and Air Quality Management Districts have the primary responsibility for controlling emissions from sources other locomotives, motor vehicles and other specified statewide sources, which are the responsibility of CARB or U.S. EPA. Air districts adopt and enforce rules and regulations to ensure that emissions comply with national, state, and local emissions standards and to meet attainment of CAAQS and NAAQS. The Project lies within SJVAB, which is under the jurisdiction of SJVAPCD.

5.2.1 Consistency with Applicable Air Quality Plan

The CEQA Guidelines indicate that a significant impact would occur if the Project would conflict with or obstruct implementation of the applicable air quality plan. Air districts are required to prepare air quality plans to identify strategies to bring regional emissions into compliance with federal and state air quality standards. Air districts establish emissions thresholds for individual projects to demonstrate the point at which the project would be considered to increase the air quality violations. A project would conflict with the applicable air quality plan if they exceeded any emissions thresholds for which the region is in nonattainment.

³Appendix G Environmental Checklist Form, Guidelines for the Implementation of the California Environmental Quality Act, 2023



As noted previously, the SJVAB is designated as nonattainment for O₃, PM₁₀, and PM_{2.5}. Accordingly, SJVAPCD has prepared air quality plans, including the 2018 Plan for the 1997, 2006, and 2012 PM_{2.5} Standards and the 2022 Ozone Plan, to achieve attainment of the applicable O₃ and PM standards. According to SJVAPCD's Guidance for Assessing and Mitigating Air Quality Impacts (GAMAQI), individual projects that are below regional thresholds for criteria pollutants would not conflict with applicable air quality plans (SJVAPCD 2015). As described under Impact AIR-2, the Project would not exceed the thresholds established by SJVAPCD. Moreover, the air quality plans developed by SJVAPCD are based on the growth projections (housing, population, and employment) within Regional Transportation Plan and Sustainable Communities Strategy (RTP/SCS) prepared by Council of Governments (COGs) within the SJVAB region. The Project lies within Kern County; therefore, the applicable COG is Kern County COG (Kern COG). According to the 2018 RTP/SCS developed by Kern COG by 2042, the County will grow by 185,000 residential units, 584,000 people, and 162,000 jobs as compared to baseline (2015). The Project would not include any housing and would likely use existing workers at the EHPP facility. If additional workers are required, the number of new workers would be minute compared to the projected growth within the 2018 RTP/SCS. Therefore, the Project would not induce population growth. The Project is consistent with the growth projections within the RTP/SCS and, as a result, the Project would not conflict with or obstruct implementation of the applicable air quality plan.

5.2.2 Consistency with SJVAPCD Applicable Rules

Project activities would result in emissions from construction and on-road vehicular traffic from the construction and operations of the CCS facilities facility. The Project would be required to comply with all relevant provisions of the following rules:

- Rule 2010 (Permits Required)
- Rule 2020 (Exemptions)
- Rule 2201 (New and Modified Stationary Source Review File)
- Rule 2280 (Portable Equipment Registration)
- Rule 3135 (Dust Control Plan Fee)
- Rule 4101 (Visible Emissions)
- Rule 4102 (Nuisance)
- Rule 4201 (Particulate Matter Concentration)
- Rule 4202 (Particulate Matter Emission Rate)
- Rule 4651 (Soil Decompositions Operations)
- Rule 8011 (General Requirements)
- Regulation VIII (Fugitive PM₁₀ Prohibitions)



Rule 9510, Indirect Source Review, was adopted by SJVAPCD in 2005 to reduce NO_x and PM₁₀ emissions from new development projects. Rule 9510 exempts nonresidential projects with contiguous or adjacent property under common ownership of a single entity in whole or in part, which is designated and zoned for the same development density land use and has the capability to accommodate development projects emitting more than 2 tons per year of operational NO_x or PM₁₀. As shown under Impact AIR-2, the Project would emit more than 2 tons per year of PM₁₀. Therefore, the Project applicant would consult with SJVAPCD regarding Rule 9510 and submit an air impact analysis for indirect source review as required.

5.2.3 Consistency with Kern County General Plan

The Project would be required to comply with the policies and measures of the Kern County General Plan. Specific air quality policies and goals would be achieved through compliance with SJVAPCD rules and regulations. For example, General Plan Policy 20 and Policy 21 would be met through compliance with SJVAPCD Regulation VIII, which requires the implementation of fugitive dust control on the Project site. Consistent with the General Plan, the Project would reduce vehicle emissions through consistency with CARB and state regulations including CARB's 5-minute idling rule (CCR Title 13, Section 2449[d][2][A]) and would reduce construction emissions by complying with CARB's Portable Equipment Registration Program. Therefore, since the Project would fall below SJVAPCD thresholds and would be consistent with the SJVAPCD rules and regulations as well as the Kern County General Plan, the Project would be consistent with the applicable air quality plans.

Impact AIR-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?
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Less than Significant Impact. In developing thresholds of significance for air pollutants, SJVAPCD considered the emission levels for which the Project's individual emissions would be cumulatively considerable. If the Project exceeds the identified significance thresholds, its emissions would be cumulatively considerable, resulting in significant adverse air quality impacts to the region's existing air quality conditions. The Project's construction and operational emissions are evaluated separately.

5.2.4 Construction and Decommissioning Emissions

Construction would generate emissions from off-road construction equipment, vehicle trips to and from the Project site (including worker trips), and from material movement. Project construction emissions are presented in Table 11. As shown therein, emissions would fall below SJVAPCD thresholds, and the Project would not result in a cumulatively considerable net increase in emissions during construction.



Table 11 Project Construction Criteria Pollutant Emissions

Year	Emissions (tons/year)					
	ROG	NOx	CO	SOx	PM ₁₀	PM _{2.5}
2027	0.69	2.09	12.3	<0.005	5.46	1.01
2028	0.52	1.46	10.8	<0.005	3.36	0.78
SJVAPCD Thresholds of Significance	10	10	100	27	15	15
Exceeds Threshold?	No	No	No	No	No	No

Source: Appendix A

In addition, at the end of Project life, the Project would be decommissioned. Decommissioning would likely involve the same activities as construction but would occur later in time when vehicle and off-road emissions are expected to decrease due to CARB and state regulations. Since construction would not exceed SJVAPCD thresholds, decommissioning emissions also would fall below the SJVAPCD thresholds of significance.

5.2.5 Operation Emissions

Operational emissions associated with the Project would be generated from vehicle trips, area sources, and stationary sources. Project operational emissions are presented in Table 12. As shown in the table, emissions would fall below SJVAPCD thresholds, and the Project would not result in a cumulatively considerable net increase in emissions.

Table 12 Project Operational Criteria Pollutant Emissions

Source	Emissions (tons/year)					
	ROG	NOx	CO	SOx	PM ₁₀	PM _{2.5}
Mobile	0.03	0.09	0.51	<0.005	0.18	0.05
Area	0.63	0.00	0.00	0.00	0.00	0.00
Stationary	3.85	4.27	13.2	7.01	5.33	5.33
Total	4.52	4.37	13.7	7.01	5.50	5.37
SJVAPCD Thresholds of Significance	10	10	100	27	15	15
Exceeds Threshold?	No	No	No	No	No	No

Note: Energy emissions represent the net increase in emissions associated with the combustion of natural gas at the EHPP required to meet the energy demand from the Project. The additional energy may be produced from the additional steam generator; however, emissions associated with the production of that energy would be similar. Stationary sources include the supplemental boiler.

Sources: Appendix A

As shown in Table 11 and Table 12, the Project's construction and operational impacts would fall below SJVAPCD thresholds. Therefore, 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, and the impact would be less than significant.



Impact AIR-3 Expose sensitive receptors to substantial pollutant concentrations?

Less than Significant with Mitigation. This discussion addresses whether the Project would expose sensitive receptors to construction-generated fugitive dust (PM₁₀), naturally occurring asbestos (NOA), construction-generated DPM, operational related TACs, or operational CO hotspots. According to CARB, some land uses are considered more sensitive to air pollution than others due to the types of population groups or activities involved. Heightened sensitivity may be caused by health problems, proximity to the emissions source, or duration of exposure to air pollutants. Children, pregnant women, the elderly, and those with existing health problems are especially vulnerable to the effects of air pollution. Accordingly, land uses that are typically considered to be sensitive receptors include residences, schools, childcare centers, playgrounds, retirement homes, convalescent homes, hospitals, and medical clinics. The sensitive receptors closest to the Project site include the residential communities of Tupman to the east, Dustin Acres and Valley Acres to the southeast and McKittrick and Derby Acres to the west. The closest residential receptor lies 4.97 miles from the Project site. The nearest school to the Project is Elk Hills Elementary School located approximately 6.7 miles east within the community of Tupman.

5.2.6 Construction and Decommissioning

During construction associated with the Project and decommissioning at the end of Project life, the potential exists for emissions of fugitive dust, NOA, Valley Fever, and DPM to be released.

5.2.6.1 Fugitive Dust

Fugitive dust would be generated from site grading and other earth-moving activities. Most of this fugitive dust would remain localized and would be deposited near the Project site. Nevertheless, all projects within the jurisdiction of SJVAPCD are required to implement Regulation VIII to reduce fugitive PM₁₀ emissions, see mitigation measure (MM) AIR-1. Specifically, Rule 8021 requires that all construction, excavation, extraction, and other earthmoving activities use the following control measures:

A. Pre-Activity

1. Pre-water site sufficient to limit visible dust emissions (VDE) to 20% opacity; and
2. Phase work to reduce the amount of disturbed area at any one time.

B. During Active Operations

1. Apply water or chemical/organic stabilizers/suppressants sufficient to limit VDE to 20% opacity; or
2. Construction and maintain wind barriers sufficient to limit VDE to 20% opacity. If utilizing wind barriers, construct measure B1 should be implemented.

C. Temporary Stabilization During Periods of Inactivity

1. Restrict vehicular access to the area; and



2. Apply water or chemical/organic stabilizers/suppressants, sufficient to comply with the conditions of a stabilized surface. If an area having 0.5 acres or more of disturbed surface area remains unused for seven or more days, the area must comply with the conditions for a stabilized surface area as defined in Section 3.58 of Rule 8011.

Additionally, Rule 8021, Section 5.3 requires that an owner/operator limit the speed of vehicles travelling on unpaved access roads to 15 mph and include on-site signage every 500 feet.

Finally, Rule 8021, Section 6.3 also lays out the requirements to prepare a Dust Control Plan. Any construction site that would disturb 5 or more acres for non-residential development or would more than 2,500 CY of bulk materials on at least 3 days would be required to prepare a Dust Control Plan for SJVAPCD approval. The Dust Control Plan would describe all fugitive dust control measures to be implemented before, during, and after any dust generating activity. Based on the size of the Project, a Dust Control Plan would be required, see MM AQ-2.

Rule 8041 requires that owners and operators sufficiently prevent or cleanup dust trackout or carryout from the construction site to public roads by adhering to Sections 5.1 through 5.9:

- 5.1. Owners/operations shall remove all visible carryout and trackout at the end of each workday.
- 5.2. An owner/operator of any site with 150 or more vehicle trips per day, or 20 or more vehicles trips per day by vehicles with three or more axles shall take the actions for carryout and trackout as specified in Section 5.8.
- 5.3. An owner/operator subject to the requirements of a Dust Control Plan as specified in Rule 8021 (Construction, Demolition, Excavation, Extraction, and other Earthmoving Activities) shall take the actions for carryout and trackout as specified in Section 5.8.
- 5.4. Within urban areas, an owner/operator shall prevent carryout and trackout, or immediately remove carryout and trackout when it extends 50 feet or more from the nearest unpaved surface exit point of a site.
- 5.5. Within rural areas, construction projects 10 acres or more in size, an owner/operator shall prevent carryout and trackout, or immediately remove carryout and trackout when it extends 50 feet or more from the nearest unpaved surface exit point of a site.
- 5.6. For sites with paved interior roads, an owner/operator shall prevent and mitigate carryout and trackout as specified in Section 5.8.
- 5.7. Cleanup of carryout and trackout shall be accomplished by:
 - 5.7.1. Manually sweeping and picking-up; or
 - 5.7.2. Operating a rotary brush or broom accompanied or preceded by sufficient wetting to limit VDE to 20% opacity; or



- 5.7.3. Operating a PM10-efficient street sweeper that has a pick-up efficiency of at least 80% as defined in Rule 8011 (General Requirements).
 - 5.7.4. Flushing with water, if curbs or gutters are not present and where the use of water will not result as a source of trackout material or result in adverse impacts on storm water drainage systems or violate any National Pollutant Discharge Elimination System permit program.
- 5.8. Carryout and trackout shall be prevented and mitigated as specific in Sections 5.8.1 and 5.8.2:
- 5.8.1. Prevented by:
 - 5.8.1.1. Installing and maintaining a trackout control device meeting the specifications contained in Section 5.9 at all access point to paved public roads; or
 - 5.8.1.2. Utilizing a carryout and trackout prevention procedure which has been demonstrated to the satisfaction of the APCD and U.S. EPA as achieving an equivalent or greater level of control than specified in Section 5.8.1.1.
 - 5.8.2. Mitigated by:
 - 5.8.2.1. In the event that measures specific in Section 5.8.1 are insufficient to prevent carryout and trackout, removal of any carryout and trackout must be accomplished within one-half hour of the generation of such carryout and trackout.
- 5.9. Specification for Section 5.8.1 shall meet the following conditions or combination of conditions:
- 5.9.1. For use of grizzlies or other similar devices designed to remove dirt/mud from tires, the devices shall extend from the intersection with the public paved road surface for a distance of at least 25 feet, and cover the full width of the unpaved exit surface for at least 25 feet.
 - 5.9.2. For use of gravel pads, coverage with gravel shall be at least one inch or larger in diameter and at least 3 inches deep, shall extend from the intersection with the public paved road surface for a distance of at least 50 feet, and cover the full width of the unpaved exist surface for at least 50 feet. Any gravel deposited onto a public paved road travel lane or shoulder must be removed at the end of the workday or immediately following the last vehicle using the gravel pad, or at least once every 24 hours, whichever occurs first.
 - 5.9.3. For use of paving, paved surfaces shall extend from the intersection with the public paved road surface for a distance of at least 100 feet, and cover the full



width of the unpaved access road for that distance to allow mud and dirt to drop off of vehicles before exiting the site. Mud and dirt deposits accumulating on paved interior roads shall be removed with sufficient frequency, but not less frequently than once per workday, to prevent carryout and trackout onto paved public roads.

Rule 8061 limits fugitive dust on paved and unpaved roads. The Project would be subject to Section 5.2, Unpaved Road Segment, which states the following:

5.2. Unpaved Road Segment

5.2.1. On any unpaved road segment with 26 or more average annual daily trips (AADT), the owner/operator shall limit VDE to 20% opacity and comply with the requirements of a stabilized unpaved road by application and/or reapplication/maintenance of at least one of the following control measures, or shall implement an APCD-approved Fugitive PM₁₀ Management Plan as specific in Rule 8011 (General Requirements):

5.2.1.1. Watering;

5.2.1.2. Uniform layer of washed gravel;

5.2.1.3. Chemical/organic dust stabilizers/suppressants in accordance with the manufacturer's specifications;

5.2.1.4. Roadmix;

5.2.1.5. Paving;

5.2.1.6. Any other method that can be demonstrated to the satisfaction of the APCD that effectively limits VDE to 20% opacity and meets the conditions of a stabilized unpaved road.

The measures outlined in Regulation VIII, specifically rules 8021, 8041, and 8061, would reduce the Project's fugitive dust emissions during construction, see MM AIR-1. Additionally, based on the size of the site, consistent with Rule 8021 Section 6.3, the Project would be required to submit a Dust Control Plan to SJVAPCD prior to the start of any construction activities, see MM AIR-2. Implementation of Regulation VIII and a Dust Control Plan would minimize construction- and decommissioning-related fugitive dust emissions.

5.2.6.2 Naturally Occurring Asbestos

Construction in areas of rock formations that contain NOA could release asbestos into the air and pose a health hazard. SJVAPCD enforces CARB's air toxic control measures at sites that contain ultramafic rock. A review of the map with areas more likely to have rock formations containing NOA in California indicates



that there is no asbestos in the immediate Project area (USGS 2011). Therefore, construction and decommissioning of the Project would not expose workers or other receptors to NOA.

5.2.6.3 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 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. Project activities would generate fugitive dust that could contain *C. immitis* spores. However, the Project would be required to comply with SJVAPCD's Regulation VIII, specifically the dust control measures outlined in Rule 8021, 8041, and 8061, see MM AIR-1. These measures would reduce the generation of fugitive dust that may include *C. immitis* spores. For example, Rule 8021, Section 5.3 requires that an owner/operator limit the speed of vehicles travelling on unpaved access roads to 15 mph, which results in a 57 percent reduction in fugitive dust emissions generated from unpaved roadway travel (South Coast Air Quality Management District [SCAQMD] 2007). Rule 8021, Section 6.3 would also require the Project to implement a Dust Control Plan, which would require SJVAPCD review and approval to ensure the dust control measures for Project construction would effectively limit VDE to 20 percent opacity. Finally, the Project would be required to implement a Worker Environmental Awareness Program, see MM AIR-3. This would reduce fugitive dust emissions and the risk of spreading *C. immitis* spores in the soil and reduce impacts to less than significant.

5.2.6.4 Diesel Particulate Matter

Exposure to DPM from diesel vehicles and off-road heavy equipment can result in health risks to nearby sensitive receptors. The Project would involve the use of diesel fueled vehicles and off-road equipment during the construction period. The sensitive receptors closest to the Project site include the residential communities of Tupman to the east, Dustin Acres and Valley Acres to the southeast and McKittrick and Derby Acres to the west. The closest residential receptor lies 4.97 miles from the Project site. The nearest school to the Project is Elk Hills Elementary School located approximately 6.7 miles east within the community of Tupman.

CARB states that the concentration of DPM decreases rapidly with distance from the source and has been shown to drop approximately 70 percent within 500 feet of the source (CARB 2005). Due to the relationship between health risk and distance, CARB has released guidance on the recommended buffer distance between sources and sensitive receptors, summarized in Table 1-1 of their *Air Quality and Land Use Handbook: A Community Health Perspective* (CARB 2005). If a sensitive receptor is located within CARB's recommended buffer, then a quantitative health risk assessment should be performed (SJVAPCD 2015). The nearest sensitive receptors are well outside of the buffer areas for all land uses. Additionally, the Project would implement MM AIR-3 and MM AIR-4. MM AIR-4, which would require all diesel-powered construction equipment to be registered through CARB's Portable Equipment Registration Program (PERP) or meet Tier 3 equipment standards. MM AIR-5 would require the use of haul trucks from 2007 or later. Implementation of MM AIR-4 and AIR-5 would further reduce Project DPM emissions



and, therefore, the health impacts from DPM due to Project construction posed to a sensitive receptor would be less than significant with mitigation.

At the end of Project life, the Project would be decommissioned. Decommissioning would likely involve the same activities as construction but would occur later in time when vehicle and off-road emissions are expected to decrease due to increasingly stringent state regulations. Future sensitive receptors may be placed closer to the Project site by the time decommissioning occurs. However, these receptors would still be off-site of the EHOF, and it is expected that the distance between the Project site and any future receptors would continue to exceed CARB buffer distances. Therefore, the risks posed to sensitive receptors during decommissioning would be less than significant.

5.2.7 Operation

The primary source of TACs during long-term operations would be associated with DPM emissions from heavy-duty diesel truck use. The Project would generate approximately nine monthly truck trips to deliver new amine solvent, to off-haul spent solvent, and other maintenance activities. However, the DPM generated from the Project would be minimal given the limited number of trips, and as discussed above, the nearest sensitive receptors lie approximately 4.97 miles from the Project site. Therefore, Project operation would result in a less than significant health risk exposure from DPM.

Project operation would also require the use of several catalysts and chemicals, including, but not limited to, the following: CO₂ solvent, including the EFG+ amine solution blend, as well as ethylene glycol, sulfuric acid, corrosion inhibitor, scale inhibitor, silica dispersant, chlorine dioxide, and biodispersants. None of these chemicals are listed as TACs by U.S. EPA or CARB; therefore, the accidental release of these pollutants in the event of leak would not result in a health risk to any nearby receptors. Moreover, the Project would comply with applicable federal, state, and local regulations, including the FCAA, to reduce impacts from these chemicals. The Project would also be subject to SJVAPCD Regulation II, Permits as required under MM AIR-6. Therefore, Project operation would not result in a health risk exposure from other TACs.

5.2.7.1 Ambient Air Quality

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 if when combined with background emissions, they would result in exceedance of any health-based ambient air quality standard. In locations that already exceed standards for these pollutants, significance is based on a significant impact level (SIL) that represents the amount that is considered a cumulatively considerable contribution to an existing violation of an air quality standard. The pollutants of concern for localized impact in the SJVAB are NO₂, CO, and particulate matter (PM₁₀ and PM_{2.5}).

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



of an ambient air quality standard. These standards have been established for on-site emissions. On-site emissions for Project construction include all on-site equipment use and all vehicle trips within 0.25 miles of the site. Table 13 presents the modeled construction and operational localized emissions in comparison to the SJVAPCD screening level. As shown in the table, localized Project emissions would not exceed the SJVAPCD screening levels during construction but would exceed CO levels during operation.

Table 13 Construction and Operational Localized Emissions

Source	Pollutants (lbs/day)			
	NOx	CO	PM ₁₀	PM _{2.5}
Maximum Daily, On-Site Construction Emissions	8.22	19.7	1.92	0.45
SJVAPCD Screening Level	100	100	100	100
Exceeds Screening Level?	No	No	No	No
Maximum Daily, On-Site Operational Emissions	23.9	75.7	30.2	29.4
SJVAPCD Screening Level	100	100	100	100
Exceeds Screening Level?	No	No	No	No

Note: lbs/day = pounds per day
Sources: Appendix A

Therefore, the health risks associated with Project construction and operation were found to be less than significant with mitigation.

Impact AIR-4	Result in other emissions (such as those leading to odors) affecting a substantial number of people?
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Less than Significant Impact. While offensive odors rarely cause any physical harm, they can still be unpleasant, leading to 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. SJVAPCD has established screening distances to qualitatively assess a project's potential to adversely impact receptors during facility operation. According to SJVAPCD, if there are sensitive receptors within these screening distances for these facility types, a detailed analysis should be prepared. The screening distances for odor producing facilities are provided in Table 14.



Table 14 Screening Levels for Potential Odor Sources

Facility Type	Screening Distance
Wastewater Treatment Facilities	2 miles
Sanitary Landfill	1 mile
Transfer Station	1 mile
Composting Facility	1 mile
Petroleum Refinery	2 miles
Asphalt Batch Plant	1 mile
Chemical Manufacturing	1 mile
Fiberglass Manufacturing	1 mile
Painting/Coating Operations (e.g. autobody shops)	1 mile
Food Processing Facility	1 mile
Feed Lot/Dairy	1 mile
Rendering Plant	1 mile

Source: SJVAPCD 2015

As shown in Table 14, a carbon capture facility is not identified as an odor source by SJVAPCD. Moreover, the nearest sensitive receptors lies approximately 4.97 miles from the Project site, which exceeds the screening distance for odorous facility types. As such, a more detailed analysis is not required to evaluate odor potential during Project operation.

Construction activities associated with the Project could also result in short-term odorous emissions from diesel exhaust associated with diesel-fueled equipment. However, these emissions would be intermittent. Project construction would also be required to comply with all applicable SJVAPCD rules and regulations, particularly associated with permitting of air pollutant sources and nuisance. Compliance with the aforementioned regulations would help to minimize emissions, including emissions leading to odors.



6 Greenhouse Gas Impact Analysis

6.1 CEQA Guidelines

According to the CEQA Guidelines' Appendix G Environmental Checklist, the following questions are analyzed and evaluated to determine whether impacts related to GHGs are considered to be significant environmental effects.

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:

- 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.

6.2 GHG Impact Analysis

Impact GHG-1	Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?
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Less than Significant with Mitigation. The Project's GHG emissions were quantified using CalEEMod. With implementation of MM GHG-1 and MM GHG-2, impacts would be less than significant.

6.2.1 Construction Emission Inventory

Construction GHGs would be emitted by the off-road construction equipment and vehicle travel by workers and material deliveries to the Project site. The estimated construction GHG emissions are shown in Table 15. In accordance with industry standards, construction emissions are amortized over the assumed 26-year Project lifetime.

Table 15 Construction Greenhouse Gas Emissions

Construction Year	Emissions (MTCO₂e)
2027	3,286
2028	3,090
Total	6,376
<i>Amortized Construction Emissions¹</i>	<i>245.23</i>

¹ Project operational duration assumed to be 26 years.



Source: Appendix A

In addition, at the end of Project life, the Project would be decommissioned. Decommissioning would likely involve the same activities as construction but would occur later in time when vehicle and off-road emissions are expected to decrease due to increasingly stringent fuel efficiency regulations. Decommissioning emissions are conservatively assumed to be the same as construction for this analysis. Amortized construction and decommissioning emissions are added to the operational emissions inventory below.

6.2.2 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 energy generation sources. However, the Project is anticipated to capture and inject approximately 1,600,000 MTCO₂e per year. Operational GHG emissions are shown in Table 16.

Table 16 Operational Greenhouse Gas Emissions

Source	Emissions (MTCO ₂ e per year)
Amortized Construction Emissions	245.23
Amortized Decommissioning Emissions	245.23
Mobile	188.98
Area	-
Water	60.85
Waste	58.92
Refrigeration	6.55
Stationary	74,616
Compressor Startup and Shutdown and Piping Maintenance Venting ¹	270
<i>Subtotal</i>	<i>75,692</i>
CO ₂ Capture and Injection	-1,600,000.00
Total²	-1,524,308

Note:

¹ This is to capture a potential venting scenario that may occur during Project operation. The 270 MT CO₂e/year were provided by the Applicant and account for the CO₂ compressor start up, the discharge of CO₂ compressor piping vent during maintenance, and CO₂ compressor blowoff and emergency venting.

² Totals may not appear to sum due to rounding. Energy emissions represent the net increase in emissions associated with the combustion of natural gas at the EHPP required to meet the energy demand from the Project.

Sources: Appendix A



As shown above, the Project would result in a net reduction of GHG emissions of approximately 1.5 MMTpy of CO₂e. The total annual reduction may not reach this level in the event of an unanticipated leak or plant outage. The potential for leaks would be reduced through implementation of MM GHG-1 and GHG-2.

According to the Intergovernmental Panel on Climate Change (IPCC), which performed a literature review of the likelihood of permanent retention of CO₂ from carbon capture, natural gas storage systems can exceed 10,000 years and natural formation of CO₂ can be trapped for over a million years. Risk assessment studies conducted have shown that CO₂ release rate from abandoned wells in oil fields could range from 0.001% leakage per year to 0.00001% leakage per year (IPCC 2025). Therefore, the average release from the site would range from 15 MT CO₂e/year to 1,524 MT CO₂e/year. This would still result in a net decrease in GHG emissions per year.

Regardless, project significance is based on consistency with GHG reduction plans. As shown in Impact GHG-2, the Project would be consistent with CARB's 2022 Scoping Plan and the Kern County General Plan; therefore, impacts are less than significant with mitigation.

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

Less than Significant with Mitigation. The Project may impact GHG emissions and global climate change if it would substantially conflict with the provisions of Section 15064.4(b) of the CEQA Guidelines. Pursuant to Appendix G of the CEQA Guidelines, the Project could conflict with applicable GHG reduction plans, policies, or regulations. The Project would be subject to complying with SB 32 and AB 1279. The CARB's 2022 Scoping Plan sets a framework for California to meet the reduction targets of SB 32 and AB 1279 (CARB 2022). Additionally, the Project would be subject to the Kern County General Plan.

6.2.3 CARB 2022 Scoping Plan

CARB approved the 2022 Scoping Plan in December 2022. The 2022 Scoping Plan builds upon previous iterations of state scoping plans to achieve carbon neutrality and reduce anthropogenic GHG emissions below 85 percent below 1990 no later than 2045, as directed by AB 1279. Consistency with the goals of CARB's 2022 Scoping Plan are provided in Table 17.

Table 17 Project Consistency with CARB's 2022 Plan Goals

Goals	Consistency Determination
Deploy ZEVs and reduce driving demand	Not Applicable. The Project would not directly deploy zero emission vehicles or reduce driving demand. However, as electric vehicles become more commonplace, more workers and hauling trips to the Project site would be from electric vehicles. Moreover, the Project directly complies with the 2022 Scoping Plan by removing 1.6 MMTCO ₂ per year furthering the State's ability to meet carbon neutrality by 2045.



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Goals	Consistency Determination
Coordinate supply of liquid fossil fuels with declining CA fuel demand	Not Applicable. The Project would not interfere with this goal.
Generate clean electricity	Not Applicable. The Project would not generate clean electricity. However, the Project would capture carbon emitted from the existing EHPP resulting in a net reduction of GHG emissions as compared to existing conditions.
Decarbonize Buildings	Consistent. The Project would be a CCS facility capable of capturing up to 1.5 million MT CO ₂ e per year. All buildings constructed on the site will be consistent with the 2022 California Green Building Standards.
Decarbonize Industrial Energy Supply	Not Applicable. The Project would not result in any additional electricity to the grid that could be provided to the industrial energy supply. However, as a carbon capture facility, the Project would further the State's overall carbon neutrality goals.
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. Additionally, the Project would comply with MM GHG-3 and GHG-4 to further reduce the potential for methane emissions from associated gas.
Reduce non-combustion emissions (Hydrofluorocarbons [HFCs])	Consistent. The Project will comply with all SJVAPCD and state regulations governing 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. However, as a carbon capture facility, the Project would further the State's overall carbon neutrality goals.

Source: CARB 2022

As shown in Table 17, the Project would comply with the goals of CARB's 2022 Scoping Plan. Moreover, the 2022 Scoping Plan notes the important role that CCS projects will play to reduce State GHG emissions. All the scenarios evaluated to move the State to 2045 carbon neutrality included some reliance of CCS technology. CARB has even been directed to CARB to establish CO₂ removal and carbon capture targets of 20 MMTCO₂ and 100 MMTCO₂ by 2030 and 2045, respectively (CARB 2022). Ultimately, the Project furthers the overall goal of the 2022 Scoping Plan by increasing CCS capacity and the ability for California to meet the 2030 and 2045 GHG reduction targets.



6.2.4 Kern County General Plan

The Kern County General Plan includes goals and policies aimed at reducing air emissions and would in turn reduce GHG emissions. Consistency with these policies is evaluated in Table 18.

Table 18 Project Consistency with Kern County General Plan Policies and Implementation Measures

Policy/Implementation Measure	Consistency Determination
Policy 18: The air quality implications of new discretionary land use proposals shall be considered in approval of major developments. Special emphasis will be placed on minimizing air quality degradation in the desert to enable effective military operations and in the valley region to meet attainment goals.	Consistent: The Project would be a CCS facility capable of capturing up to 1.6 MMTCO₂e per year. Air emissions were found to be less than significant (see Section 5, Air Quality Impact Analysis). As such, the Project would reduce GHG emissions in the desert and would not result in air quality degradation.
Policy 19: In considering discretionary projects for which an Environmental Impact Report must be prepared pursuant to the California Environmental Quality Act, the appropriate decisions making body, as part of its deliberations, will ensure that: • All feasible mitigation to reduce significant adverse air quality impacts have been adopted; and • The benefits of the Project outweigh any unavoidable significant adverse effects on air quality found to exist after inclusion of all feasible mitigation. This finding shall be made in a statement of overriding considerations and shall be supported by factual evidence to the extent that such a statement is required to the California Environmental Quality Act.	Consistent. This analysis is being prepared pursuant to CEQA. MM AIR-1 through MM AIR-6 and GHG-1 through GHG-4 were proposed to reduce air quality and GHG emissions to less than significant levels.
Policy 20: The County shall include fugitive dust control measures as a requirement for discretionary projects and as required by the adopted rules and regulations of the SJVAPCD and the Kern County Air Pollution Control District on ministerial permits.	Consistent. The Project will comply with all dust control rules and regulations. Consistent with SJVAPCD Rule 8021, the Project will complete a Dust Control Plan to be reviewed and approved by SJVAPCD prior to construction, see MM AIR-1 and MM AIR-2.



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Policy/Implementation Measure	Consistency Determination
Policy 21: The County shall support air districts' efforts to reduce PM10 and PM2.5 emissions.	Consistent. The Project will comply with all dust control rules and regulations. Consistent with SJVAPCD Rule 8021, the Project will complete a Dust Control Plan to be reviewed and approved by SJVAPCD prior to construction, see MM AIR-1 and MM AIR-2.
Policy 22: Kern County shall continue to work with the SJVAPCD and the Kern County Air Pollution Control District toward air quality attainment with federal, State, and local standards.	Consistent. The Project would be less than SJVAPCD project and localized criteria air pollutant thresholds and therefore would not worsen ambient air quality.
Policy 23: The County shall continue to implement the local government control measures in coordination with the Kern Council of Governments and the SJVAPCD.	Not Applicable: This policy is aimed at the County. The Project would not interfere with implementation.
Policy 24: Kern County shall consult with transit providers to determine project effects and ensure that impacts are mitigated.	Not Applicable: This policy is aimed at the County. The Project would not interfere with implementation.
Implementation Measure F. All discretionary permits shall be referred to the appropriate air district for review and comment.	Consistent. SJVAPCD would be able to review this analysis as well as any stationary source permitting required for the Project.
Implementation Measure G. Discretionary development projects involving the use of tractor trailer rigs shall incorporate diesel exhaust reduction strategies including, but not limited to: • Minimizing idling time. • Electrical overnight plug-ins.	Consistent. The Project would comply with all rules and regulations pertaining to air quality, which would in turn reduce GHG emissions. As a CCS facility, tractor trailer rigs are not expected to be on-site overnight. The Project would include approximately 9 truck trips per month for chemical deliveries and waste haul off. Therefore, the electrical overnight plug-ins of tractor trailer rigs is not required. Moreover, all tractor trailer rigs that visit the site would be subject to MM AIR-5.
Implementation Measure H. Discretionary projects may use one or more of the following to reduce air quality effects: • Pave dirt roads within the development. • Pave outside storage areas. • Use of alternative fuel fleet vehicles or hybrid vehicles. • User of emission control devices on diesel equipment. • Other strategies that may be recommended by the local Air Pollution Control District.	Consistent. The Project will comply with all SJVAPCD rules and regulations, including Regulation VIII for dust control, see MM AIR-1 and MM AIR-2. Air quality emissions were found to fall below significance thresholds, and the CCS would capture up to 1.6 MMTCO ₂ e per year.



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As shown in Table 18, the Project would be consistent with the Kern County General Plan. While the policies and implementation measures are aimed at air quality, since GHG emissions are generated from the same sources the policies and implementation measures would in turn reduce GHG emissions.

By being consistent with SJVAPCD and CARB rules and regulations as well as state laws, the Project would be consistent with both general plans. For example, CARB has set a number of vehicle and fuel emissions standards that would reduce GHG emissions. Vehicles accessing the Project site would comply with CARB vehicle and fleet standards in effect at the time.

Therefore, the Project would not conflict with an applicable plan adopted for the purpose of reducing GHG emissions, and the impact would be less than significant with mitigation.



7 Cumulative Impacts

The geographic scope of cumulative air quality impacts is Kern County, and the geographic scope for GHGs is the State of California. Other past, present, and reasonably foreseeable future oil and gas development projects, including wells and abandonment activity and other CCS projects, would constitute a cumulative impact.

7.1 Air Quality

Air quality is a largely cumulative impact. The nonattainment status of regional pollutants is a result of past and present development within the area. Future attainment of air pollutants is a function of the successful implementation of SJVAPCD's attainment plans. As discussed above, SJVAB is in non-attainment for federal and state O₃ and PM_{2.5} and state PM₁₀. As discussed in Impact AIR-2, SJVAPCD developed thresholds of significance for air pollutants at levels for which the Project's individual emissions would be cumulatively considerable. If the Project exceeds the identified significance thresholds, its emissions would be cumulatively considerable, resulting in significant adverse air quality impacts to the region's existing air quality conditions. As shown in Table 11 and Table 12, the Project would not exceed SJVAPCD construction or operational emissions and would not result in a cumulative impact. Kern County Air Quality Assessment Guidelines further require that the cumulative air impact assessment consider the following:

- Consistency with Existing Air Quality Plans. Discuss the project in relation to Kern COG conformity and traffic analysis zones. Quantify emissions from similar projects and evaluate consistency with the applicable attainment plan.
- Localized Impacts. Assess the cumulative emissions impact associated with the proposed project, in conjunction with approved and proposed projects located within a 1- and 6-mile radius of the proposed project.
- Air Basin Emissions Analysis. Compare emissions from the proposed project to emissions within the SJVAB and the Kern County portion of the SJVAB.

7.1.1 Consistency with Existing Air Quality Plans

The Project's consistency with the existing air quality plan is discussed under Impact AIR-1 and impacts were found to be less than significant.

7.1.2 Localized Impacts

As discussed in Impact AIR-2, the Project would not exceed SJVAPCD project-level construction or operational emissions. Moreover, as discussed in Impact AIR-3, the Project would not exceed the ambient air thresholds of 100 lbs/day set by SJVAPCD. The Project would comply with all the SJVAPCD required regulations as well as MM AIR-1, MM AIR-2, and MM AIR-3.



7.1.3 Air Basin Emissions Analysis

To evaluate the contribution of the Project's total emissions relative to the cumulative air quality conditions in Kern County and SJVAB, the Project's specific emissions were compared to the 2020 projected emissions from the Kern County General Plan EIR for the SJVAB portion of the County, see Table 19.

Table 19 Project Emissions Compared to SJVAB Portion of Kern County (tons/year)

Scenario	ROG	NOx	CO	PM ₁₀
2020 Kern County Portion of SJVAB	32,952	38,610	65,769	35,613
Project Operational Emissions	0.66	0.09	0.51	0.18
Percent	0.002%	0.0002%	0.0008%	0.0005%

Source: Kern County 2004

As shown in Table 19, the Project's total operational emissions would be 0.002 percent or less of the SJVAB portion of Kern County's emissions. Additionally, the Project would not individually exceed SJVAPCD construction or operational emissions and therefore would not result in an increase in ambient air pollution as discussed in Impact AQ-2 or an increased health impact as discussed in Impact AQ-3. Therefore, the air quality cumulative impacts are considered less than significant.

7.2 Greenhouse Gas

GHG emissions are inherently cumulative. As discussed, Impact GHG-1, the Project's total construction emissions would be 6,376MT CO₂e. During operation, the Project would emit approximately 787 MT CO₂e/year. However, the Project would capture approximately 1.6 MMTCO₂e per year, resulting in a net reduction of 1,5899,213 MTCO₂e per year. The total annual reduction may not reach this level in the event of an unanticipated leak or equipment failure; however, the Project would be required to implement MM GHG-1 and MM GHG-2 to reduce impacts from potential leaks. Additionally, as discussed under Impact GHG-2, the Project would be consistent with CARB's 2022 Scoping Plan and the Kern County General Plan. Therefore, the GHG cumulative impacts are considered less than significant.



8 Mitigation Measures

The following mitigation measures (MMs) are proposed for the Project to reduce air quality and GHG impacts to less than significant.

MM AIR-1: Fugitive Dust Control. The owner/operator shall comply with San Joaquin Valley Air Pollution Control District (SJVAPCD) Regulation VIII, Fugitive PM₁₀ Prohibitions. Specific dust control measures are detailed in Rules 8021, Construction, Demolition Excavation, Extraction, and Other Earthmoving Activities; Rule 8041, Carryout and Trackout; and Rule 8061, Paved and Unpaved Roads.

MM AIR-2: Dust Control Plan. The owner/operator shall develop and implement a Fugitive Dust Control Plan in compliance with San Joaquin Valley Air Pollution Control District (SJVAPCD) Rule 8021, Section 6.3. The Fugitive Dust Plan shall include:

- a. Name(s), address(es), and phone number(s) of person(s) responsible for the preparation, submission, and implementation of the plan.
- b. Description and location of operation(s).
- c. Listing of all fugitive dust emissions sources included in the operation.
- d. The following dust control measures shall be implemented:
 1. All onsite unpaved roads shall be effectively stabilized using water or chemical soil stabilizers that can be determined to be as efficient as or more efficient for fugitive dust control than California Air Resources Board approved soil stabilizers, and that shall not increase any other environmental impacts including loss of vegetation.
 2. All material excavated or graded will be watered to prevent excessive dust. Watering will occur as needed with complete coverage of disturbed areas. The excavated soil piles will be watered as needed to limit dust emissions to less than 20% opacity or covered with temporary coverings.
 3. Construction activities that occur on unpaved surfaces will be discontinued during windy conditions when winds exceed 25 miles per hour and those activities cause visible dust plumes that exceed the SJVAPCD 20% opacity standard.
 4. Track-out debris onto public paved roads shall not extend 50 feet or more from an active operation and track-out shall be removed or isolated such as behind a locked gate at the conclusion of each workday, except on agricultural fields where speeds are limited to 15 mph.
 5. All hauling materials should be moist while being loaded into dump trucks.
 6. All haul trucks hauling soil, sand, and other loose materials on public roads shall be covered (e.g., with tarps or other enclosures that would reduce fugitive dust emissions).
 7. Soil loads should be kept below 6 inches or the freeboard of the truck.
 8. Drop heights when loaders dump soil into trucks shall not exceed 5 feet above the truck.



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9. Gate seals should be tight on dump trucks.
10. Traffic speeds on unpaved roads shall be limited to 15 miles per hour.
11. All grading activities shall be suspended when visible dust emissions exceed 20%.
12. Other fugitive dust control measures as necessary to comply with San Joaquin Valley Air Pollution Control District Rules and Regulations.
13. Disturbed areas shall not exceed those shown on the Site Plan.
14. Disturbed areas should be re-vegetated as soon as possible after disturbance if area is no longer needed for oil and gas activities.

MM AIR-3: Worker Environmental Awareness Program. The following measures shall be implemented to address Valley Fever and pandemics:

1. Project shall include in the Worker Environmental Awareness Program information on how to recognize the symptoms of Valley Fever and to promptly report suspected symptoms of work-related Valley Fever to a supervisor. A Valley Fever informational handout shall be provided to all onsite construction personnel. The handout shall, at a minimum, provide information regarding the symptoms, health effects, preventative measures, and treatment. Additional information and handouts can be obtained by contacting the Kern County Public Health Services Department. Onsite personnel shall be trained on the proper use of personal protective equipment, including respiratory equipment. National Institute for Occupational Safety and Health (NIOSH)-approved respirators shall be provided to onsite personnel, upon request as part of the Worker Environmental Awareness Training Program.
2. Owner/operators shall implement all orders related to the COVID-19 pandemic or any other pandemic mandated by Kern County Public Health at construction sites and related to worker safety.

MM AIR-4: Off-Road Construction Equipment. All off-road construction diesel engines not registered under California Air Resources Board's Statewide Portable Equipment Registration Program, which have a rating of 50 horsepower or more, shall meet, at a minimum, the Tier 3 California Emission Standards for Off-road Compression-Ignition Engines as specified in California Code of Regulations, Title 13, Section 2423(b)(1) unless that such engine is not available for a particular item of equipment. In the event a Tier 3 engine is not available for any off-road engine larger than 100 horsepower, that engine shall be equipped with retrofit controls that would provide nitrogen oxides and particulate matter emissions that are equivalent to Tier 3 engines. Additionally, all off-road equipment shall comply with the following:

1. All equipment shall be turned off when not in use. Engine idling of all equipment shall be limited to five minutes, except under exemptions specified in California Code of Regulations Title 13 Section 2449(d)(2)(A) unless required for use during heat illness prevention.
2. All equipment engines shall be maintained in good operating condition and in proper tune per manufacturers' specifications.

MM AIR-5: Haul Trucks. To further reduce emissions of oxides of nitrogen from on-road heavy-duty diesel haul vehicles: 2007 engines or pre-2007 engines shall comply with California Air Resources Board retrofit requirements set forth in California Code of Regulations Title 13 Section 2025.



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1. All on-road construction vehicles, except those meeting the 2007/California Air Resources Board-certified Level 3 diesel emissions controls, shall meet all applicable California on-road emission standards and shall be licensed in the State of California. This does not apply to worker personal vehicles.
2. All on-road construction vehicles shall be properly tuned and maintained in accordance with the manufacturers' specifications.

MM AIR-6: District Permitting. Consistent with the requirements of the San Joaquin Valley Air Pollution Control District Regulation II, Permits, the owner/operator shall obtain an Authority to Construct permit and a Permit to Operate for any facility or equipment requiring a permit from the San Joaquin Valley Air Pollution Control District (SJVAPCD), such as stationary sources required to obtain permits pursuant to SJVAPCD Rule 2010. All emissions increases from permitted equipment shall comply with SJVAPCD Rule 2201.

MM GHG-1: CO₂ Monitoring Plan. Prior to any injection of CO₂, the owner/operator shall submit an updated CO₂ monitoring plan (previously approved for CTV I) to U.S. EPA that complies with all requirements of the U.S. EPA UIC permit issued for the CTV I project to demonstrate the retention of CO₂ in the injection/hydrocarbon reservoir zone. A copy of the updated approved plan from the U.S. EPA shall be provided to CEC and Kern County.

MM GHG-2: CO₂ Quarterly Injection Report. The owner/operator shall submit to CEC and Kern County a quarterly report on the amount of CO₂ injected into the CCS project, and the source of the CO₂. The reports shall be filed no later than the following dates of each year:

1. First quarter – March 31
2. Second Quarter – June 30
3. Third Quarter – September 30
4. Fourth Quarter – December 18 (early deadline)



9 Conclusions

In conclusion, the Project would not exceed SJVAPCD regional construction or operational thresholds of significance for criteria air pollutant emissions. The Project is anticipated to store 1,600,000 MTCO₂e per year once operational, resulting in a net decrease in GHG emissions. Additionally, CCS projects are aligned with the state's overall GHG reduction goals as described in AB 1279 and CARB's 2022 Scoping Plan.



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1.1. Basic Project Information

Data Field	Value
Project Name	CalCapture - Onsite Construction
Construction Start Date	1/1/2027
Lead Agency	—
Land Use Scale	Project/site
Analysis Level for Defaults	County
Windspeed (m/s)	2.70
Precipitation (days)	16.2
Location	35.283978094419524, -119.52073407655658
County	Kern-San Joaquin
City	Unincorporated
Air District	San Joaquin Valley APCD
Air Basin	San Joaquin Valley
TAZ	2947
EDFZ	5
Electric Utility	Pacific Gas & Electric Company
Gas Utility	Southern California Gas
App Version	2022.1.1.30

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
General Heavy Industry	100	1000sqft	5.74	100,000	0.00	0.00	—	—

General Heavy Industry	50.0	1000sqft	1.50	50,000	0.00	0.00	—	—
User Defined Linear	3.00	Mile	3.71	0.00	0.00	—	—	—
Road Construction	0.29	Mile	0.37	0.00	0.00	—	—	—
General Heavy Industry	2.20	1000sqft	0.05	2,200	0.00	0.00	—	—

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.	4.38	4.15	8.06	16.7	0.02	0.28	1.64	1.92	0.26	0.19	0.45	—	2,450	2,450	0.24	0.10	0.63	2,487
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	3.97	3.71	8.22	19.7	0.02	0.28	1.64	1.92	0.26	0.19	0.45	—	2,435	2,435	0.29	0.12	0.02	2,479
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	2.86	2.68	5.80	12.7	0.01	0.20	1.13	1.33	0.18	0.13	0.31	—	1,741	1,741	0.19	0.07	0.19	1,767
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.52	0.49	1.06	2.32	< 0.005	0.04	0.21	0.24	0.03	0.02	0.06	—	288	288	0.03	0.01	0.03	293

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)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	4.38	4.15	8.06	16.7	0.02	0.28	1.64	1.92	0.26	0.19	0.45	—	2,450	2,450	0.24	0.10	0.63	2,487
2028	3.74	3.59	3.93	10.9	0.01	0.13	0.18	0.31	0.12	0.04	0.16	—	1,488	1,488	0.18	0.08	0.53	1,518
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	3.97	3.71	8.22	19.7	0.02	0.28	1.64	1.92	0.26	0.19	0.45	—	2,435	2,435	0.29	0.12	0.02	2,479
2028	3.76	3.51	7.88	18.9	0.02	0.27	1.64	1.91	0.25	0.19	0.44	—	2,426	2,426	0.29	0.12	0.01	2,469
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	2.86	2.68	5.80	12.7	0.01	0.20	1.13	1.33	0.18	0.13	0.31	—	1,741	1,741	0.19	0.07	0.19	1,767
2028	2.42	2.29	3.04	8.77	0.01	0.10	0.20	0.30	0.09	0.04	0.13	—	1,101	1,101	0.15	0.06	0.16	1,123
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	0.52	0.49	1.06	2.32	< 0.005	0.04	0.21	0.24	0.03	0.02	0.06	—	288	288	0.03	0.01	0.03	293
2028	0.44	0.42	0.56	1.60	< 0.005	0.02	0.04	0.05	0.02	0.01	0.02	—	182	182	0.02	0.01	0.03	186

3. Construction Emissions Details

3.1. P1 - Initial Site Prep, Foundations, and Underground Work (2027) - Unmitigated

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

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

Off-Road Equipment	0.43	0.36	3.56	4.97	0.01	0.14	—	0.14	0.13	—	0.13	—	902	902	0.04	0.01	—	905
Dust From Material Movement	—	—	—	—	—	—	0.02	0.02	—	< 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
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.43	0.36	3.56	4.97	0.01	0.14	—	0.14	0.13	—	0.13	—	902	902	0.04	0.01	—	905
Dust From Material Movement	—	—	—	—	—	—	0.02	0.02	—	< 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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.31	0.26	2.54	3.55	0.01	0.10	—	0.10	0.09	—	0.09	—	644	644	0.03	0.01	—	646
Dust From Material Movement	—	—	—	—	—	—	0.02	0.02	—	< 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	0.06	0.05	0.46	0.65	< 0.005	0.02	—	0.02	0.02	—	0.02	—	107	107	< 0.005	< 0.005	—	107

Dust From Material Movement	—	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.02	0.02	0.33	0.24	< 0.005	< 0.005	1.44	1.44	< 0.005	0.14	0.14	—	52.6	52.6	< 0.005	0.01	0.04	55.2
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.02	0.02	0.35	0.25	< 0.005	< 0.005	1.44	1.44	< 0.005	0.14	0.14	—	53.6	53.6	< 0.005	0.01	< 0.005	56.2
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.02	0.01	0.24	0.17	< 0.005	< 0.005	0.98	0.98	< 0.005	0.10	0.10	—	37.9	37.9	< 0.005	0.01	0.01	39.7
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	< 0.005	0.04	0.03	< 0.005	< 0.005	0.18	0.18	< 0.005	0.02	0.02	—	6.27	6.27	< 0.005	< 0.005	< 0.005	6.58

3.3. P1 - Initial Site Prep, Foundations, and Underground Work (2028) - 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	0.42	0.36	3.46	4.98	0.01	0.14	—	0.14	0.13	—	0.13	—	901	901	0.04	0.01	—	905
Dust From Material Movement	—	—	—	—	—	—	0.02	0.02	—	< 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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.02	0.18	0.26	< 0.005	0.01	—	0.01	0.01	—	0.01	—	47.6	47.6	< 0.005	< 0.005	—	47.8
Dust From Material Movement	—	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.03	0.05	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	7.89	7.89	< 0.005	< 0.005	—	7.91

Dust From Material Movement	—	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.02	0.01	0.35	0.25	< 0.005	< 0.005	1.44	1.44	< 0.005	0.14	0.14	—	52.5	52.5	< 0.005	0.01	< 0.005	55.1
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	< 0.005	0.02	0.01	< 0.005	< 0.005	0.07	0.07	< 0.005	0.01	0.01	—	2.74	2.74	< 0.005	< 0.005	< 0.005	2.88
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	0.45	0.45	< 0.005	< 0.005	< 0.005	0.48

3.5. P2 - Equipment Installation (2027) - 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	0.51	0.43	3.33	3.48	0.01	0.14	—	0.14	0.13	—	0.13	—	1,116	1,116	0.05	0.01	—	1,120
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	0.51	0.43	3.33	3.48	0.01	0.14	—	0.14	0.13	—	0.13	—	1,116	1,116	0.05	0.01	—	1,120
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 Equipm ent	0.36	0.30	2.38	2.48	0.01	0.10	—	0.10	0.09	—	0.09	—	797	797	0.03	0.01	—	800
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	0.07	0.06	0.43	0.45	< 0.005	0.02	—	0.02	0.02	—	0.02	—	132	132	0.01	< 0.005	—	132
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	3.41	3.34	0.68	7.90	0.00	0.00	0.18	0.18	0.00	0.04	0.04	—	353	353	0.15	0.07	0.56	378
Vendor	0.01	0.01	0.13	0.09	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	21.7	21.7	< 0.005	< 0.005	0.02	22.8
Hauling	< 0.005	< 0.005	0.03	0.02	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	5.12	5.12	< 0.005	< 0.005	< 0.005	5.38
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	3.01	2.90	0.80	10.8	0.00	0.00	0.18	0.18	0.00	0.04	0.04	—	336	336	0.20	0.09	0.01	369
Vendor	0.01	0.01	0.14	0.09	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	22.1	22.1	< 0.005	< 0.005	< 0.005	23.1
Hauling	< 0.005	< 0.005	0.03	0.02	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	5.22	5.22	< 0.005	< 0.005	< 0.005	5.47
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	2.17	2.10	0.52	6.41	0.00	0.00	0.12	0.12	0.00	0.03	0.03	—	242	242	0.13	0.05	0.17	260
Vendor	0.01	< 0.005	0.10	0.06	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	15.6	15.6	< 0.005	< 0.005	0.01	16.4
Hauling	< 0.005	< 0.005	0.02	0.02	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	3.69	3.69	< 0.005	< 0.005	< 0.005	3.87
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.40	0.38	0.09	1.17	0.00	0.00	0.02	0.02	0.00	0.01	0.01	—	40.0	40.0	0.02	0.01	0.03	43.1
Vendor	< 0.005	< 0.005	0.02	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	2.58	2.58	< 0.005	< 0.005	< 0.005	2.71
Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.61	0.61	< 0.005	< 0.005	< 0.005	0.64

3.7. P2 - Equipment Installation (2028) - Unmitigated

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

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.50	0.42	3.15	3.47	0.01	0.13	—	0.13	0.12	—	0.12	—	1,116	1,116	0.05	0.01	—	1,120

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	0.50	0.42	3.15	3.47	0.01	0.13	—	0.13	0.12	—	0.12	—	1,116	1,116	0.05	0.01	—	1,120
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 Equipm ent	0.35	0.30	2.24	2.47	0.01	0.09	—	0.09	0.08	—	0.08	—	795	795	0.03	0.01	—	798
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	0.06	0.05	0.41	0.45	< 0.005	0.02	—	0.02	0.02	—	0.02	—	132	132	0.01	< 0.005	—	132
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	3.23	3.16	0.63	7.36	0.00	0.00	0.18	0.18	0.00	0.04	0.04	—	345	345	0.13	0.07	0.50	371
Vendor	0.01	0.01	0.13	0.09	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	21.3	21.3	< 0.005	< 0.005	0.02	22.3
Hauling	< 0.005	< 0.005	0.03	0.02	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	5.01	5.01	< 0.005	< 0.005	< 0.005	5.25
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Worker	2.81	2.72	0.75	10.1	0.00	0.00	0.18	0.18	0.00	0.04	0.04	—	329	329	0.20	0.09	0.01	362
Vendor	0.01	0.01	0.14	0.09	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	21.6	21.6	< 0.005	< 0.005	< 0.005	22.6
Hauling	< 0.005	< 0.005	0.03	0.02	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	5.11	5.11	< 0.005	< 0.005	< 0.005	5.36
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	2.03	1.97	0.48	5.95	0.00	0.00	0.12	0.12	0.00	0.03	0.03	—	236	236	0.11	0.05	0.15	254
Vendor	0.01	< 0.005	0.09	0.06	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	15.2	15.2	< 0.005	< 0.005	0.01	16.0
Hauling	< 0.005	< 0.005	0.02	0.02	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	3.60	3.60	< 0.005	< 0.005	< 0.005	3.78
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.37	0.36	0.09	1.09	0.00	0.00	0.02	0.02	0.00	0.01	0.01	—	39.1	39.1	0.02	0.01	0.03	42.1
Vendor	< 0.005	< 0.005	0.02	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	2.52	2.52	< 0.005	< 0.005	< 0.005	2.65
Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.60	0.60	< 0.005	< 0.005	< 0.005	0.63

3.9. Linear, Grading & Excavation (2027) - 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)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Dust From Material Movement	—	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Dust From Material Movement	—	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Dust From Material Movement	—	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

4. Operations Emissions Details

4.10. Soil Carbon Accumulation By Vegetation Type

4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

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

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

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

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

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

Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
-------	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

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

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

Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

5. Activity Data

5.1. Construction Schedule

Phase Name	Phase Type	Start Date	End Date	Days Per Week	Work Days per Phase	Phase Description
P1 - Initial Site Prep, Foundations, and Underground Work	Site Preparation	1/1/2027	1/27/2028	5.00	280	—
P2 - Equipment Installation	Building Construction	1/1/2027	12/29/2028	5.00	521	—
Linear, Grading & Excavation	Linear, Grading & Excavation	1/1/2027	1/1/2027	5.00	1.00	—

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
P1 - Initial Site Prep, Foundations, and Underground Work	Off-Highway Trucks	Diesel	Average	1.00	0.20	500	0.38
P1 - Initial Site Prep, Foundations, and Underground Work	Tractors/Loaders/Back hoes	Diesel	Average	1.00	1.10	120	0.37

P1 - Initial Site Prep, Foundations, and Underground Work	Skid Steer Loaders	Diesel	Average	1.00	2.10	120	0.37
P1 - Initial Site Prep, Foundations, and Underground Work	Bore/Drill Rigs	Diesel	Average	1.00	1.50	50.0	0.50
P1 - Initial Site Prep, Foundations, and Underground Work	Off-Highway Trucks	Diesel	Average	1.00	0.20	500	0.38
P1 - Initial Site Prep, Foundations, and Underground Work	Cranes	Diesel	Average	2.00	0.40	750	0.29
P1 - Initial Site Prep, Foundations, and Underground Work	Graders	Diesel	Average	1.00	0.70	120	0.41
P1 - Initial Site Prep, Foundations, and Underground Work	Rollers	Diesel	Average	1.00	1.00	120	0.38
P1 - Initial Site Prep, Foundations, and Underground Work	Skid Steer Loaders	Diesel	Average	1.00	0.80	120	0.37
P1 - Initial Site Prep, Foundations, and Underground Work	Excavators	Diesel	Average	1.00	0.20	250	0.38
P1 - Initial Site Prep, Foundations, and Underground Work	Tractors/Loaders/Back hoes	Diesel	Average	2.00	2.30	120	0.37
P1 - Initial Site Prep, Foundations, and Underground Work	Welders	Diesel	Average	1.00	0.30	50.0	0.45
P2 - Equipment Installation	Aerial Lifts	Diesel	Average	1.00	0.90	75.0	0.31
P2 - Equipment Installation	Off-Highway Trucks	Diesel	Average	1.00	1.90	250	0.38
P2 - Equipment Installation	Cranes	Diesel	Average	1.00	2.20	120	0.29

P2 - Equipment Installation	Cranes	Diesel	Average	1.00	2.60	175	0.29
P2 - Equipment Installation	Cranes	Diesel	Average	1.00	0.80	250	0.29
P2 - Equipment Installation	Cranes	Diesel	Average	1.00	0.70	250	0.29
P2 - Equipment Installation	Cranes	Diesel	Average	1.00	0.60	500	0.29
P2 - Equipment Installation	Forklifts	Diesel	Average	1.00	1.10	175	0.20
P2 - Equipment Installation	Forklifts	Diesel	Average	1.00	1.10	120	0.20
P2 - Equipment Installation	Aerial Lifts	Diesel	Average	1.00	2.00	50.0	0.31
P2 - Equipment Installation	Off-Highway Trucks	Diesel	Average	1.00	2.10	220	0.38
P2 - Equipment Installation	Off-Highway Trucks	Diesel	Average	1.00	1.00	220	0.38

5.3. Construction Vehicles

5.3.1. Unmitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
P1 - Initial Site Prep, Foundations, and Underground Work	—	—	—	—
P1 - Initial Site Prep, Foundations, and Underground Work	Worker	0.00	0.25	LDA,LDT1,LDT2
P1 - Initial Site Prep, Foundations, and Underground Work	Vendor	0.00	0.25	HHDT,MHDT
P1 - Initial Site Prep, Foundations, and Underground Work	Hauling	20.5	0.25	HHDT
P1 - Initial Site Prep, Foundations, and Underground Work	Onsite truck	—	—	HHDT

Linear, Grading & Excavation	—	—	—	—
Linear, Grading & Excavation	Worker	0.00	17.3	LDA,LDT1,LDT2
Linear, Grading & Excavation	Vendor	0.00	10.6	HHDT,MHDT
Linear, Grading & Excavation	Hauling	0.00	20.0	HHDT
Linear, Grading & Excavation	Onsite truck	—	—	HHDT
P2 - Equipment Installation	—	—	—	—
P2 - Equipment Installation	Worker	1,000	0.25	LDA,LDT1,LDT2
P2 - Equipment Installation	Vendor	12.0	0.25	HHDT,MHDT
P2 - Equipment Installation	Hauling	2.00	0.25	HHDT
P2 - Equipment Installation	Onsite truck	—	—	HHDT

5.4. Vehicles

5.4.1. Construction Vehicle Control Strategies

Control Strategies Applied	PM10 Reduction	PM2.5 Reduction
Water unpaved roads twice daily	55%	55%
Limit vehicle speeds on unpaved roads to 25 mph	44%	44%
Sweep paved roads once per month	9%	9%

5.5. Architectural Coatings

Phase Name	Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)
------------	--	--	--	--	-----------------------------

5.6. Dust Mitigation

5.6.1. Construction Earthmoving Activities

Phase Name	Material Imported (Cubic Yards)	Material Exported (Cubic Yards)	Acres Graded (acres)	Material Demolished (sq. ft.)	Acres Paved (acres)
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P1 - Initial Site Prep, Foundations, and Underground Work	13,000	33,000	12.3	0.00	—
Linear, Grading & Excavation	—	—	4.08	0.00	—

5.6.2. Construction Earthmoving Control Strategies

Control Strategies Applied	Frequency (per day)	PM10 Reduction	PM2.5 Reduction
Water Exposed Area	2	61%	61%

5.7. Construction Paving

Land Use	Area Paved (acres)	% Asphalt
General Heavy Industry	0.00	0%
General Heavy Industry	0.00	0%
User Defined Linear	3.71	100%
Road Construction	0.37	100%
General Heavy Industry	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
2027	0.00	204	0.03	< 0.005
2028	0.00	204	0.03	< 0.005

5.18. Vegetation

5.18.1. Land Use Change

5.18.1.1. Unmitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres
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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	22.5	annual days of extreme heat
Extreme Precipitation	0.00	annual days with precipitation above 20 mm
Sea Level Rise	—	meters of inundation depth
Wildfire	21.8	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	75.4
AQ-PM	57.3
AQ-DPM	8.76
Drinking Water	92.6
Lead Risk Housing	56.5
Pesticides	88.1
Toxic Releases	91.4
Traffic	2.73
Effect Indicators	—
CleanUp Sites	85.8
Groundwater	94.8
Haz Waste Facilities/Generators	97.3
Impaired Water Bodies	0.00
Solid Waste	99.5
Sensitive Population	—
Asthma	17.7

Cardio-vascular	58.1
Low Birth Weights	61.9
Socioeconomic Factor Indicators	—
Education	76.0
Housing	16.9
Linguistic	57.8
Poverty	70.3
Unemployment	87.7

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	—
Employed	—
Median HI	—
Education	—
Bachelor's or higher	—
High school enrollment	—
Preschool enrollment	—
Transportation	—
Auto Access	—
Active commuting	—
Social	—
2-parent households	—
Voting	—
Neighborhood	—
Alcohol availability	—

Park access	—
Retail density	—
Supermarket access	—
Tree canopy	—
Housing	—
Homeownership	—
Housing habitability	—
Low-inc homeowner severe housing cost burden	—
Low-inc renter severe housing cost burden	—
Uncrowded housing	—
Health Outcomes	—
Insured adults	—
Arthritis	0.0
Asthma ER Admissions	85.0
High Blood Pressure	0.0
Cancer (excluding skin)	0.0
Asthma	0.0
Coronary Heart Disease	0.0
Chronic Obstructive Pulmonary Disease	0.0
Diagnosed Diabetes	0.0
Life Expectancy at Birth	0.0
Cognitively Disabled	35.0
Physically Disabled	11.3
Heart Attack ER Admissions	61.3
Mental Health Not Good	0.0
Chronic Kidney Disease	0.0
Obesity	0.0
Pedestrian Injuries	0.0

Physical Health Not Good	0.0
Stroke	0.0
Health Risk Behaviors	—
Binge Drinking	0.0
Current Smoker	0.0
No Leisure Time for Physical Activity	0.0
Climate Change Exposures	—
Wildfire Risk	0.0
SLR Inundation Area	0.0
Children	90.9
Elderly	76.6
English Speaking	0.0
Foreign-born	0.0
Outdoor Workers	4.6
Climate Change Adaptive Capacity	—
Impervious Surface Cover	95.8
Traffic Density	0.0
Traffic Access	0.0
Other Indices	—
Hardship	0.0
Other Decision Support	—
2016 Voting	0.0

7.3. Overall Health & Equity Scores

Metric	Result for Project Census Tract
CalEnviroScreen 4.0 Score for Project Location (a)	81.0
Healthy Places Index Score for Project Location (b)	—
Project Located in a Designated Disadvantaged Community (Senate Bill 535)	Yes

Project Located in a Low-Income Community (Assembly Bill 1550)	No
Project Located in a Community Air Protection Program Community (Assembly Bill 617)	No

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

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

7.4. Health & Equity Measures

No Health & Equity Measures selected.

7.5. Evaluation Scorecard

Health & Equity Evaluation Scorecard not completed.

7.6. Health & Equity Custom Measures

No Health & Equity Custom Measures created.

8. User Changes to Default Data

Screen	Justification
Land Use	Linear land use type accounts for all proposed utility lines and roadways
Construction: Construction Phases	construction anticipated to take approximately 2 years
Construction: Off-Road Equipment	linear phase to use the same equipment. P2 off-highway trucks both modeled as diesel as CalEEMod does not include default gasoline emission factors for off-highway trucks.
Construction: Trips and VMT	All trips within 0.25 miles are assumed to be onsite. linear construction anticipated to use the same workers. Hauling trips during P1 includes graded material. Hauling trips during P2 includes concrete trips.
Operations: Vehicle Data	Per project-specific traffic report, approximately 40 trips per day on average.
Construction: On-Road Fugitive Dust	fill borrow sites on the Elk Hill oilfield, see attached calculations for % unpaved
Operations: Energy Use	3.84 MW additional energy required; assume 24/7 operation. Emissions calculated off-model.
Construction: Off-Road Equipment EF	—
Operations: Landscape Equipment	No landscaping required.
Operations: Boilers EF	CO and NOx

CalCapture v3 Detailed Report

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1. Basic Project Information

1.1. Basic Project Information

Data Field	Value
Project Name	CalCapture v3
Construction Start Date	1/1/2027
Operational Year	2029
Lead Agency	—
Land Use Scale	Project/site
Analysis Level for Defaults	County
Windspeed (m/s)	2.70
Precipitation (days)	16.2
Location	35.283978094419524, -119.52073407655658
County	Kern-San Joaquin
City	Unincorporated
Air District	San Joaquin Valley APCD
Air Basin	San Joaquin Valley
TAZ	2947
EDFZ	5
Electric Utility	Pacific Gas & Electric Company
Gas Utility	Southern California Gas
App Version	2022.1.1.30

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
General Heavy Industry	100	1000sqft	5.74	100,000	0.00	0.00	—	—

General Heavy Industry	50.0	1000sqft	1.50	50,000	0.00	0.00	—	—
User Defined Linear	3.00	Mile	3.71	0.00	0.00	—	—	—
Road Construction	0.29	Mile	0.37	0.00	0.00	—	—	—
General Heavy Industry	2.20	1000sqft	0.05	2,200	0.00	0.00	—	—

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.	5.92	5.67	15.2	128	0.04	0.32	42.6	42.9	0.30	7.60	7.90	—	29,639	29,639	0.26	1.18	82.4	30,081
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	5.51	5.23	16.9	84.6	0.04	0.32	42.6	42.9	0.30	7.60	7.90	—	26,523	26,523	0.30	1.21	2.14	26,892
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	3.96	3.77	11.5	67.6	0.03	0.23	29.7	29.9	0.21	5.33	5.54	—	19,564	19,564	0.20	0.85	25.4	19,846
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.72	0.69	2.09	12.3	< 0.005	0.04	5.42	5.46	0.04	0.97	1.01	—	3,239	3,239	0.03	0.14	4.20	3,286

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)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	5.92	5.67	15.2	128	0.04	0.32	42.6	42.9	0.30	7.60	7.90	—	29,639	29,639	0.26	1.18	82.4	30,081
2028	5.27	5.09	10.0	115	0.03	0.16	24.6	24.8	0.15	5.80	5.95	—	27,948	27,948	0.20	1.14	73.1	28,365
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	5.51	5.23	16.9	84.6	0.04	0.32	42.6	42.9	0.30	7.60	7.90	—	26,523	26,523	0.30	1.21	2.14	26,892
2028	5.30	4.27	15.8	79.4	0.04	0.31	42.6	42.9	0.28	7.60	7.89	—	26,038	26,038	0.30	1.20	1.91	26,406
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	3.96	3.77	11.5	67.6	0.03	0.23	29.7	29.9	0.21	5.33	5.54	—	19,564	19,564	0.20	0.85	25.4	19,846
2028	3.51	2.83	7.99	59.3	0.02	0.12	18.3	18.4	0.12	4.18	4.29	—	18,401	18,401	0.16	0.81	22.5	18,669
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	0.72	0.69	2.09	12.3	< 0.005	0.04	5.42	5.46	0.04	0.97	1.01	—	3,239	3,239	0.03	0.14	4.20	3,286
2028	0.64	0.52	1.46	10.8	< 0.005	0.02	3.34	3.36	0.02	0.76	0.78	—	3,046	3,046	0.03	0.13	3.72	3,091

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.	24.8	24.8	23.9	75.7	38.4	29.2	0.97	30.2	29.2	0.25	29.4	169	450,129	450,298	25.6	5.64	42.7	452,661
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Unmit.	24.8	24.8	23.9	74.7	38.4	29.2	0.97	30.2	29.2	0.25	29.4	169	450,030	450,199	25.6	5.64	39.7	452,560
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	24.8	24.8	23.9	74.9	38.4	29.2	0.96	30.2	29.2	0.24	29.4	169	450,057	450,226	25.6	5.64	40.9	452,588
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	4.52	4.52	4.37	13.7	7.01	5.33	0.17	5.50	5.33	0.04	5.37	28.0	74,512	74,540	4.23	0.93	6.78	74,931

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	0.23	0.20	0.46	3.57	0.01	0.01	0.97	0.98	0.01	0.25	0.25	—	1,193	1,193	0.03	0.06	3.04	1,214
Area	3.45	3.45	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Energy	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Water	—	—	—	—	—	—	—	—	—	—	—	67.4	77.5	145	6.93	0.17	—	368
Waste	—	—	—	—	—	—	—	—	—	—	—	102	0.00	102	10.2	0.00	—	356
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	39.6	39.6
Stationary	21.1	21.1	23.4	72.1	38.4	29.2	0.00	29.2	29.2	0.00	29.2	0.00	448,858	448,858	8.45	5.42	0.00	450,683
Total	24.8	24.8	23.9	75.7	38.4	29.2	0.97	30.2	29.2	0.25	29.4	169	450,129	450,298	25.6	5.64	42.7	452,661
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.22	0.18	0.52	2.59	0.01	0.01	0.97	0.98	0.01	0.25	0.25	—	1,095	1,095	0.03	0.06	0.08	1,113
Area	3.45	3.45	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Energy	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Water	—	—	—	—	—	—	—	—	—	—	—	67.4	77.5	145	6.93	0.17	—	368

Waste	—	—	—	—	—	—	—	—	—	—	—	102	0.00	102	10.2	0.00	—	356
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	39.6	39.6
Stationary	21.1	21.1	23.4	72.1	38.4	29.2	0.00	29.2	29.2	0.00	29.2	0.00	448,858	448,858	8.45	5.42	0.00	450,683
Total	24.8	24.8	23.9	74.7	38.4	29.2	0.97	30.2	29.2	0.25	29.4	169	450,030	450,199	25.6	5.64	39.7	452,560
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.22	0.19	0.50	2.79	0.01	0.01	0.96	0.97	0.01	0.24	0.25	—	1,122	1,122	0.03	0.06	1.31	1,141
Area	3.45	3.45	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Energy	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Water	—	—	—	—	—	—	—	—	—	—	—	67.4	77.5	145	6.93	0.17	—	368
Waste	—	—	—	—	—	—	—	—	—	—	—	102	0.00	102	10.2	0.00	—	356
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	39.6	39.6
Stationary	21.1	21.1	23.4	72.1	38.4	29.2	0.00	29.2	29.2	0.00	29.2	0.00	448,858	448,858	8.45	5.42	0.00	450,683
Total	24.8	24.8	23.9	74.9	38.4	29.2	0.96	30.2	29.2	0.24	29.4	169	450,057	450,226	25.6	5.64	40.9	452,588
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.04	0.03	0.09	0.51	< 0.005	< 0.005	0.17	0.18	< 0.005	0.04	0.05	—	186	186	< 0.005	0.01	0.22	189
Area	0.63	0.63	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Energy	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Water	—	—	—	—	—	—	—	—	—	—	—	11.2	12.8	24.0	1.15	0.03	—	60.9
Waste	—	—	—	—	—	—	—	—	—	—	—	16.8	0.00	16.8	1.68	0.00	—	58.9
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	6.56	6.56
Stationary	3.85	3.85	4.27	13.2	7.01	5.33	0.00	5.33	5.33	0.00	5.33	0.00	74,313	74,313	1.40	0.90	0.00	74,616
Total	4.52	4.52	4.37	13.7	7.01	5.33	0.17	5.50	5.33	0.04	5.37	28.0	74,512	74,540	4.23	0.93	6.78	74,931

3. Construction Emissions Details

3.1. P1 - Initial Site Prep, Foundations, and Underground Work (2027) - Unmitigated

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

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.43	0.36	3.56	4.97	0.01	0.14	—	0.14	0.13	—	0.13	—	902	902	0.04	0.01	—	905
Dust From Material Movement	—	—	—	—	—	—	0.02	0.02	—	< 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
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.43	0.36	3.56	4.97	0.01	0.14	—	0.14	0.13	—	0.13	—	902	902	0.04	0.01	—	905
Dust From Material Movement	—	—	—	—	—	—	0.02	0.02	—	< 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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.31	0.26	2.54	3.55	0.01	0.10	—	0.10	0.09	—	0.09	—	644	644	0.03	0.01	—	646

Dust From Material Movement	—	—	—	—	—	—	0.02	0.02	—	< 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	0.06	0.05	0.46	0.65	< 0.005	0.02	—	0.02	0.02	—	0.02	—	107	107	< 0.005	< 0.005	—	107
Dust From Material Movement	—	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.03	0.02	0.51	0.25	< 0.005	< 0.005	17.9	17.9	< 0.005	1.80	1.80	—	242	242	< 0.005	0.04	0.48	254
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.02	0.02	0.54	0.26	< 0.005	< 0.005	17.9	17.9	< 0.005	1.80	1.80	—	243	243	< 0.005	0.04	0.01	254
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Hauling	0.02	0.01	0.38	0.18	< 0.005	< 0.005	12.2	12.2	< 0.005	1.23	1.23	—	173	173	< 0.005	0.03	0.15	181
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	< 0.005	0.07	0.03	< 0.005	< 0.005	2.23	2.24	< 0.005	0.22	0.22	—	28.7	28.7	< 0.005	< 0.005	0.02	30.0

3.3. P1 - Initial Site Prep, Foundations, and Underground Work (2028) - 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	0.42	0.36	3.46	4.98	0.01	0.14	—	0.14	0.13	—	0.13	—	901	901	0.04	0.01	—	905
Dust From Material Movement	—	—	—	—	—	—	0.02	0.02	—	< 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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.02	0.18	0.26	< 0.005	0.01	—	0.01	0.01	—	0.01	—	47.6	47.6	< 0.005	< 0.005	—	47.8

Dust From Material Movement	—	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.03	0.05	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	7.89	7.89	< 0.005	< 0.005	—	7.91
Dust From Material Movement	—	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.02	0.02	0.54	0.26	< 0.005	< 0.005	17.9	17.9	< 0.005	1.80	1.80	—	237	237	< 0.005	0.04	0.01	248
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	< 0.005	0.03	0.01	< 0.005	< 0.005	0.91	0.91	< 0.005	0.09	0.09	—	12.5	12.5	< 0.005	< 0.005	0.01	13.1
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	0.17	0.17	< 0.005	0.02	0.02	—	2.07	2.07	< 0.005	< 0.005	< 0.005	2.17

3.5. P2 - Equipment Installation (2027) - Unmitigated

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

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.51	0.43	3.33	3.48	0.01	0.14	—	0.14	0.13	—	0.13	—	1,116	1,116	0.05	0.01	—	1,120
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	0.51	0.43	3.33	3.48	0.01	0.14	—	0.14	0.13	—	0.13	—	1,116	1,116	0.05	0.01	—	1,120
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	0.36	0.30	2.38	2.48	0.01	0.10	—	0.10	0.09	—	0.09	—	797	797	0.03	0.01	—	800
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	0.07	0.06	0.43	0.45	< 0.005	0.02	—	0.02	0.02	—	0.02	—	132	132	0.01	< 0.005	—	132
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	4.89	4.83	5.89	119	0.00	0.00	24.0	24.0	0.00	5.63	5.63	—	25,253	25,253	0.15	0.82	76.7	25,577
Vendor	0.05	0.04	1.64	0.32	0.01	0.03	0.55	0.58	0.03	0.15	0.18	—	1,903	1,903	0.02	0.28	4.66	1,991
Hauling	0.01	< 0.005	0.24	0.04	< 0.005	< 0.005	0.06	0.07	< 0.005	0.02	0.02	—	222	222	< 0.005	0.04	0.51	233
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	4.50	4.39	7.50	75.6	0.00	0.00	24.0	24.0	0.00	5.63	5.63	—	22,136	22,136	0.20	0.84	1.99	22,393
Vendor	0.05	0.03	1.75	0.32	0.01	0.03	0.55	0.58	0.03	0.15	0.18	—	1,903	1,903	0.02	0.28	0.12	1,987
Hauling	0.01	< 0.005	0.26	0.04	< 0.005	< 0.005	0.06	0.07	< 0.005	0.02	0.02	—	222	222	< 0.005	0.04	0.01	233
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	3.23	3.17	4.77	61.1	0.00	0.00	17.0	17.0	0.00	3.98	3.98	—	16,431	16,431	0.13	0.58	23.7	16,631
Vendor	0.04	0.03	1.22	0.23	0.01	0.02	0.39	0.41	0.02	0.11	0.13	—	1,359	1,359	0.01	0.20	1.44	1,420
Hauling	< 0.005	< 0.005	0.18	0.03	< 0.005	< 0.005	0.04	0.05	< 0.005	0.01	0.02	—	159	159	< 0.005	0.03	0.16	167
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.59	0.58	0.87	11.2	0.00	0.00	3.10	3.10	0.00	0.73	0.73	—	2,720	2,720	0.02	0.10	3.92	2,754
Vendor	0.01	< 0.005	0.22	0.04	< 0.005	< 0.005	0.07	0.08	< 0.005	0.02	0.02	—	225	225	< 0.005	0.03	0.24	235
Hauling	< 0.005	< 0.005	0.03	0.01	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	26.3	26.3	< 0.005	< 0.005	0.03	27.6

3.7. P2 - Equipment Installation (2028) - 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	0.50	0.42	3.15	3.47	0.01	0.13	—	0.13	0.12	—	0.12	—	1,116	1,116	0.05	0.01	—	1,120
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	0.50	0.42	3.15	3.47	0.01	0.13	—	0.13	0.12	—	0.12	—	1,116	1,116	0.05	0.01	—	1,120
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 Equipm ent	0.35	0.30	2.24	2.47	0.01	0.09	—	0.09	0.08	—	0.08	—	795	795	0.03	0.01	—	798
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	0.06	0.05	0.41	0.45	< 0.005	0.02	—	0.02	0.02	—	0.02	—	132	132	0.01	< 0.005	—	132
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	4.72	4.65	5.09	111	0.00	0.00	24.0	24.0	0.00	5.63	5.63	—	24,762	24,762	0.13	0.82	68.5	25,077
Vendor	0.05	0.02	1.55	0.29	0.01	0.03	0.55	0.58	0.03	0.15	0.18	—	1,853	1,853	0.02	0.28	4.14	1,940
Hauling	0.01	< 0.005	0.23	0.04	< 0.005	< 0.005	0.06	0.07	< 0.005	0.02	0.02	—	217	217	< 0.005	0.03	0.47	227
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	4.30	3.46	6.70	70.4	0.00	0.00	24.0	24.0	0.00	5.63	5.63	—	21,713	21,713	0.20	0.84	1.78	21,969
Vendor	0.05	0.02	1.67	0.29	0.01	0.03	0.55	0.58	0.03	0.15	0.18	—	1,853	1,853	0.02	0.28	0.11	1,937
Hauling	< 0.005	< 0.005	0.25	0.04	< 0.005	< 0.005	0.06	0.07	< 0.005	0.02	0.02	—	217	217	< 0.005	0.03	0.01	227
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	3.09	2.50	4.19	56.3	0.00	0.00	16.9	16.9	0.00	3.97	3.97	—	16,071	16,071	0.11	0.58	21.1	16,268
Vendor	0.04	0.01	1.17	0.21	0.01	0.02	0.39	0.41	0.02	0.11	0.13	—	1,320	1,320	0.01	0.20	1.27	1,381
Hauling	< 0.005	< 0.005	0.17	0.03	< 0.005	< 0.005	0.04	0.05	< 0.005	0.01	0.02	—	154	154	< 0.005	0.02	0.14	162
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.56	0.46	0.77	10.3	0.00	0.00	3.09	3.09	0.00	0.72	0.72	—	2,661	2,661	0.02	0.10	3.49	2,693
Vendor	0.01	< 0.005	0.21	0.04	< 0.005	< 0.005	0.07	0.08	< 0.005	0.02	0.02	—	219	219	< 0.005	0.03	0.21	229
Hauling	< 0.005	< 0.005	0.03	0.01	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	25.6	25.6	< 0.005	< 0.005	0.02	26.8

3.9. Linear, Grading & Excavation (2027) - 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)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Dust From Material Movement	—	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Dust From Material Movement	—	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Dust From Material Movement	—	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	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 Heavy Industry	0.23	0.20	0.46	3.57	0.01	0.01	0.97	0.98	0.01	0.25	0.25	—	1,193	1,193	0.03	0.06	3.04	1,214
Total	0.23	0.20	0.46	3.57	0.01	0.01	0.97	0.98	0.01	0.25	0.25	—	1,193	1,193	0.03	0.06	3.04	1,214
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
General Heavy Industry	0.22	0.18	0.52	2.59	0.01	0.01	0.97	0.98	0.01	0.25	0.25	—	1,095	1,095	0.03	0.06	0.08	1,113
Total	0.22	0.18	0.52	2.59	0.01	0.01	0.97	0.98	0.01	0.25	0.25	—	1,095	1,095	0.03	0.06	0.08	1,113
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
General Heavy Industry	0.04	0.03	0.09	0.51	< 0.005	< 0.005	0.17	0.18	< 0.005	0.04	0.05	—	186	186	< 0.005	0.01	0.22	189

Total	0.04	0.03	0.09	0.51	< 0.005	< 0.005	0.17	0.18	< 0.005	0.04	0.05	—	186	186	< 0.005	0.01	0.22	189
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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 Heavy Industry	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
General Heavy Industry	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
General Heavy Industry	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00

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
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Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
General Heavy Industry	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Total	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
General Heavy Industry	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Total	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
General Heavy Industry	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Total	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00

4.3. Area Emissions by Source

4.3.1. Unmitigated

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

Source	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	3.26	3.26	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Architectural Coatings	0.19	0.19	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	3.45	3.45	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	3.26	3.26	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.19	0.19	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	3.45	3.45	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	0.59	0.59	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.04	0.04	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	0.63	0.63	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

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
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Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
General Heavy Industry	—	—	—	—	—	—	—	—	—	—	—	67.4	77.5	145	6.93	0.17	—	368
Total	—	—	—	—	—	—	—	—	—	—	—	67.4	77.5	145	6.93	0.17	—	368
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
General Heavy Industry	—	—	—	—	—	—	—	—	—	—	—	67.4	77.5	145	6.93	0.17	—	368
Total	—	—	—	—	—	—	—	—	—	—	—	67.4	77.5	145	6.93	0.17	—	368
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
General Heavy Industry	—	—	—	—	—	—	—	—	—	—	—	11.2	12.8	24.0	1.15	0.03	—	60.9
Total	—	—	—	—	—	—	—	—	—	—	—	11.2	12.8	24.0	1.15	0.03	—	60.9

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 Heavy Industry	—	—	—	—	—	—	—	—	—	—	—	102	0.00	102	10.2	0.00	—	356
Total	—	—	—	—	—	—	—	—	—	—	—	102	0.00	102	10.2	0.00	—	356

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
General Heavy Industry	—	—	—	—	—	—	—	—	—	—	—	102	0.00	102	10.2	0.00	—	356
Total	—	—	—	—	—	—	—	—	—	—	—	102	0.00	102	10.2	0.00	—	356
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
General Heavy Industry	—	—	—	—	—	—	—	—	—	—	—	16.8	0.00	16.8	1.68	0.00	—	58.9
Total	—	—	—	—	—	—	—	—	—	—	—	16.8	0.00	16.8	1.68	0.00	—	58.9

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 Heavy Industry	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	39.6	39.6
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	39.6	39.6
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
General Heavy Industry	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	39.6	39.6
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	39.6	39.6
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

General Heavy Industry	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	6.56	6.56
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	6.56	6.56

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

4.8. Stationary Emissions By Equipment Type

4.8.1. Unmitigated

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

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)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Process Boiler	21.1	21.1	23.4	72.1	38.4	29.2	0.00	29.2	29.2	0.00	29.2	0.00	448,858	448,858	8.45	5.42	0.00	450,683
Total	21.1	21.1	23.4	72.1	38.4	29.2	0.00	29.2	29.2	0.00	29.2	0.00	448,858	448,858	8.45	5.42	0.00	450,683
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Process Boiler	21.1	21.1	23.4	72.1	38.4	29.2	0.00	29.2	29.2	0.00	29.2	0.00	448,858	448,858	8.45	5.42	0.00	450,683
Total	21.1	21.1	23.4	72.1	38.4	29.2	0.00	29.2	29.2	0.00	29.2	0.00	448,858	448,858	8.45	5.42	0.00	450,683
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Process Boiler	3.85	3.85	4.27	13.2	7.01	5.33	0.00	5.33	5.33	0.00	5.33	0.00	74,313	74,313	1.40	0.90	0.00	74,616
Total	3.85	3.85	4.27	13.2	7.01	5.33	0.00	5.33	5.33	0.00	5.33	0.00	74,313	74,313	1.40	0.90	0.00	74,616

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)

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

4.10. Soil Carbon Accumulation By Vegetation Type

4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

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

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

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

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

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

4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

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

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

Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

5. Activity Data

5.1. Construction Schedule

Phase Name	Phase Type	Start Date	End Date	Days Per Week	Work Days per Phase	Phase Description
P1 - Initial Site Prep, Foundations, and Underground Work	Site Preparation	1/1/2027	1/27/2028	5.00	280	—
P2 - Equipment Installation	Building Construction	1/1/2027	12/29/2028	5.00	521	—
Linear, Grading & Excavation	Linear, Grading & Excavation	1/1/2027	1/1/2027	5.00	1.00	—

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
P1 - Initial Site Prep, Foundations, and Underground Work	Off-Highway Trucks	Diesel	Average	1.00	0.20	500	0.38
P1 - Initial Site Prep, Foundations, and Underground Work	Tractors/Loaders/Back hoes	Diesel	Average	1.00	1.10	120	0.37

P1 - Initial Site Prep, Foundations, and Underground Work	Skid Steer Loaders	Diesel	Average	1.00	2.10	120	0.37
P1 - Initial Site Prep, Foundations, and Underground Work	Bore/Drill Rigs	Diesel	Average	1.00	1.50	50.0	0.50
P1 - Initial Site Prep, Foundations, and Underground Work	Off-Highway Trucks	Diesel	Average	1.00	0.20	500	0.38
P1 - Initial Site Prep, Foundations, and Underground Work	Cranes	Diesel	Average	2.00	0.40	750	0.29
P1 - Initial Site Prep, Foundations, and Underground Work	Graders	Diesel	Average	1.00	0.70	120	0.41
P1 - Initial Site Prep, Foundations, and Underground Work	Rollers	Diesel	Average	1.00	1.00	120	0.38
P1 - Initial Site Prep, Foundations, and Underground Work	Skid Steer Loaders	Diesel	Average	1.00	0.80	120	0.37
P1 - Initial Site Prep, Foundations, and Underground Work	Excavators	Diesel	Average	1.00	0.20	250	0.38
P1 - Initial Site Prep, Foundations, and Underground Work	Tractors/Loaders/Back hoes	Diesel	Average	2.00	2.30	120	0.37
P1 - Initial Site Prep, Foundations, and Underground Work	Welders	Diesel	Average	1.00	0.30	50.0	0.45
P2 - Equipment Installation	Aerial Lifts	Diesel	Average	1.00	0.90	75.0	0.31
P2 - Equipment Installation	Off-Highway Trucks	Diesel	Average	1.00	1.90	250	0.38
P2 - Equipment Installation	Cranes	Diesel	Average	1.00	2.20	120	0.29

P2 - Equipment Installation	Cranes	Diesel	Average	1.00	2.60	175	0.29
P2 - Equipment Installation	Cranes	Diesel	Average	1.00	0.80	250	0.29
P2 - Equipment Installation	Cranes	Diesel	Average	1.00	0.70	250	0.29
P2 - Equipment Installation	Cranes	Diesel	Average	1.00	0.60	500	0.29
P2 - Equipment Installation	Forklifts	Diesel	Average	1.00	1.10	175	0.20
P2 - Equipment Installation	Forklifts	Diesel	Average	1.00	1.10	120	0.20
P2 - Equipment Installation	Aerial Lifts	Diesel	Average	1.00	2.00	50.0	0.31
P2 - Equipment Installation	Off-Highway Trucks	Diesel	Average	1.00	2.10	220	0.38
P2 - Equipment Installation	Off-Highway Trucks	Diesel	Average	1.00	1.00	220	0.38

5.3. Construction Vehicles

5.3.1. Unmitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
P1 - Initial Site Prep, Foundations, and Underground Work	—	—	—	—
P1 - Initial Site Prep, Foundations, and Underground Work	Worker	0.00	34.0	LDA,LDT1,LDT2
P1 - Initial Site Prep, Foundations, and Underground Work	Vendor	0.00	43.0	HHDT,MHDT
P1 - Initial Site Prep, Foundations, and Underground Work	Hauling	20.5	3.11	HHDT
P1 - Initial Site Prep, Foundations, and Underground Work	Onsite truck	—	—	HHDT

Linear, Grading & Excavation	—	—	—	—
Linear, Grading & Excavation	Worker	0.00	17.3	LDA,LDT1,LDT2
Linear, Grading & Excavation	Vendor	0.00	10.6	HHDT,MHDT
Linear, Grading & Excavation	Hauling	0.00	20.0	HHDT
Linear, Grading & Excavation	Onsite truck	—	—	HHDT
P2 - Equipment Installation	—	—	—	—
P2 - Equipment Installation	Worker	1,000	34.0	LDA,LDT1,LDT2
P2 - Equipment Installation	Vendor	12.0	55.0	HHDT,MHDT
P2 - Equipment Installation	Hauling	2.00	34.0	HHDT
P2 - Equipment Installation	Onsite truck	—	—	HHDT

5.4. Vehicles

5.4.1. Construction Vehicle Control Strategies

Control Strategies Applied	PM10 Reduction	PM2.5 Reduction
Water unpaved roads twice daily	55%	55%
Limit vehicle speeds on unpaved roads to 25 mph	44%	44%
Sweep paved roads once per month	9%	9%

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 (Cubic Yards)	Material Exported (Cubic Yards)	Acres Graded (acres)	Material Demolished (sq. ft.)	Acres Paved (acres)
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P1 - Initial Site Prep, Foundations, and Underground Work	13,000	33,000	12.3	0.00	—
Linear, Grading & Excavation	—	—	4.08	0.00	—

5.6.2. Construction Earthmoving Control Strategies

Control Strategies Applied	Frequency (per day)	PM10 Reduction	PM2.5 Reduction
Water Exposed Area	2	61%	61%

5.7. Construction Paving

Land Use	Area Paved (acres)	% Asphalt
General Heavy Industry	0.00	0%
General Heavy Industry	0.00	0%
User Defined Linear	3.71	100%
Road Construction	0.37	100%
General Heavy Industry	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
2027	0.00	204	0.03	< 0.005
2028	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
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General Heavy Industry	40.0	40.0	40.0	14,600	1,360	1,360	1,360	496,400
General Heavy Industry	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
General Heavy Industry	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	228,300	76,100	—

5.10.3. Landscape Equipment

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

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 Heavy Industry	0.00	204	0.0330	0.0040	0.00
General Heavy Industry	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 Heavy Industry	23,125,000	0.00
General Heavy Industry	11,562,500	0.00
General Heavy Industry	508,750	0.00

5.13. Operational Waste Generation

5.13.1. Unmitigated

Land Use	Waste (ton/year)	Cogeneration (kWh/year)
General Heavy Industry	124	—
General Heavy Industry	62.0	—
General Heavy Industry	2.73	—

5.14. Operational Refrigeration and Air Conditioning Equipment

5.14.1. Unmitigated

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

Equipment Type	Fuel Type	Number	Boiler Rating (MMBtu/hr)	Daily Heat Input (MMBtu/day)	Annual Heat Input (MMBtu/yr)
Boiler - CNG (5–75 MMBTU)	CNG	1.00	160	3,840	1,401,600

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	22.5	annual days of extreme heat
Extreme Precipitation	0.00	annual days with precipitation above 20 mm
Sea Level Rise	—	meters of inundation depth
Wildfire	21.8	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 $\frac{3}{4}$ 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	75.4
AQ-PM	57.3
AQ-DPM	8.76
Drinking Water	92.6
Lead Risk Housing	56.5
Pesticides	88.1
Toxic Releases	91.4
Traffic	2.73
Effect Indicators	—
CleanUp Sites	85.8
Groundwater	94.8
Haz Waste Facilities/Generators	97.3
Impaired Water Bodies	0.00
Solid Waste	99.5
Sensitive Population	—
Asthma	17.7
Cardio-vascular	58.1
Low Birth Weights	61.9
Socioeconomic Factor Indicators	—
Education	76.0
Housing	16.9
Linguistic	57.8
Poverty	70.3
Unemployment	87.7

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	—
Employed	—
Median HI	—
Education	—
Bachelor's or higher	—
High school enrollment	—
Preschool enrollment	—
Transportation	—
Auto Access	—
Active commuting	—
Social	—
2-parent households	—
Voting	—
Neighborhood	—
Alcohol availability	—
Park access	—
Retail density	—
Supermarket access	—
Tree canopy	—
Housing	—
Homeownership	—
Housing habitability	—
Low-inc homeowner severe housing cost burden	—
Low-inc renter severe housing cost burden	—

Uncrowded housing	—
Health Outcomes	—
Insured adults	—
Arthritis	0.0
Asthma ER Admissions	85.0
High Blood Pressure	0.0
Cancer (excluding skin)	0.0
Asthma	0.0
Coronary Heart Disease	0.0
Chronic Obstructive Pulmonary Disease	0.0
Diagnosed Diabetes	0.0
Life Expectancy at Birth	0.0
Cognitively Disabled	35.0
Physically Disabled	11.3
Heart Attack ER Admissions	61.3
Mental Health Not Good	0.0
Chronic Kidney Disease	0.0
Obesity	0.0
Pedestrian Injuries	0.0
Physical Health Not Good	0.0
Stroke	0.0
Health Risk Behaviors	—
Binge Drinking	0.0
Current Smoker	0.0
No Leisure Time for Physical Activity	0.0
Climate Change Exposures	—
Wildfire Risk	0.0
SLR Inundation Area	0.0

Children	90.9
Elderly	76.6
English Speaking	0.0
Foreign-born	0.0
Outdoor Workers	4.6
Climate Change Adaptive Capacity	—
Impervious Surface Cover	95.8
Traffic Density	0.0
Traffic Access	0.0
Other Indices	—
Hardship	0.0
Other Decision Support	—
2016 Voting	0.0

7.3. Overall Health & Equity Scores

Metric	Result for Project Census Tract
CalEnviroScreen 4.0 Score for Project Location (a)	81.0
Healthy Places Index Score for Project Location (b)	—
Project Located in a Designated Disadvantaged Community (Senate Bill 535)	Yes
Project Located in a Low-Income Community (Assembly Bill 1550)	No
Project Located in a Community Air Protection Program Community (Assembly Bill 617)	No

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

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

7.4. Health & Equity Measures

No Health & Equity Measures selected.

7.5. Evaluation Scorecard

Health & Equity Evaluation Scorecard not completed.

7.6. Health & Equity Custom Measures

No Health & Equity Custom Measures created.

8. User Changes to Default Data

Screen	Justification
Land Use	Linear land use type accounts for all proposed utility lines and roadways
Construction: Construction Phases	construction anticipated to take approximately 2 years
Construction: Off-Road Equipment	linear phase to use the same equipment. P2 off-highway trucks both modeled as diesel as CalEEMod does not include default gasoline emission factors for off-highway trucks.
Construction: Trips and VMT	Trip estimates based on project-specific traffic report. Weighted hauling average is approximately 3.11 miles per trip. Weighted vendor average is approximately 55 miles per trip. linear construction anticipated to use the same workers. Hauling trips during P1 includes graded material. Hauling trips during P2 includes concrete trips.
Operations: Vehicle Data	Per project-specific traffic report, approximately 40 trips per day on average.
Construction: On-Road Fugitive Dust	fill borrow sites on the Elk Hill oilfield, see attached calculations for % unpaved
Operations: Energy Use	3.84 MW additional energy required; assume 24/7 operation. Emissions calculated off-model.
Construction: Off-Road Equipment EF	—
Operations: Landscape Equipment	No landscaping required.
Operations: Boilers EF	consistent with emission factors utilized with AQIA for CarbonFrontier Projects

CalCapture Hauling Truck Trip Assumptions

Grading

Hauling Trip Miles (Grading)

	CY	Hauling Truck Size (CY/bed)	# of Truck Trips	Site 1	Distance to Site (mi)	Site 2	Distance to Site (mi)	Average distance (mi)	Weighted Hauling Distance (mi)
Import	13,000	16	1,625	377H-26R	0.75	375X-35R	1	0.875	3.114674
Export (to fill area)	20,000	16	2,500	377H-26R	0.75	375X-35R	1	0.875	
Export (off-site)	13000	16	1,625	McKittrick Waste	11.2	Taft Landfill	6.4	8.8	
TOTAL (import and export)	46,000	-	5,750						

Fill Off-Road

*assumes half of distance for fill material would be on unpaved roadways.

	Average Distance Total (mi)	Paved Distance per trip	Unpaved distance per trip (mi)	Weighted Distance Paved (mi)	Weighted Distance Unpaved (mi)	% Unpaved
Import	0.875	0.4375	0.4375	2.610597826	0.504076	0.193088
Export	8.8	8.8	0			

Concrete

Amount (CY)	Truck Size (CY/bed)	Total Trucks (one-way)	Total Days	One-Way Trips per Day
10,000	10	1000	521	1.92

Phase Timing based on RFI schedule	Phase Duration (total hours)	Timeline	start	end	days
P1 - Initial Site Preparation, Foundations, underground work		2880 months 1-16 (16 months)	oct 1 2026	jan 31 2028	
P2 - Equipment installation		5040 months 3-30 (28 months)	dec 1 2026	march 31 2028	

Phase Timing scaled to occur in 24 months, per PD	Phase Duration (total hours)	Timeline	start	end	days
P1 - Initial Site Preparation, Foundations, underground work	2800		12.8	1-Jan-27	280
P2 - Equipment installation	4800		22.4		480

Phase	Equipment	Modeled Equipment	Fuel	HP	# Equipment * months of use	hours of use (assume 10 hpd, 20 working days per month)	modeled hpd for this phase
P1	36 line self propelled transporter	Off-Highway Trucks	diesel	500	3	600	0.2
P1	Backhoe 580 Case	Tractors/Loaders/Backhoes	diesel	120	15	3000	1.1
P1	Bobcat skip loader	Skid Steer Loaders	diesel	120	30	6000	2.1
P1	Bore/Drill Rigs	Bore/Drill Rigs	diesel	50	21	4200	1.5
P1	Concrete Boom Pump	Off-Highway Trucks	diesel	500	2.4	480	0.2
P1	crane, deisel 1600 ton	cranes	diesel	750	6	1200	0.4
P1	diesel grader	graders	diesel	120	10	2000	0.7
P1	Roller vibrator, diesel	Rollers	diesel	120	14	2800	1.0
P1	Skid Steer Loaders	Skid Steer Loaders	diesel	120	11	2200	0.8
P1	Track Excavator	excavators	diesel	250	3	600	0.2
P1	Tractors/Leaders/Backhoes	Tractors/Loaders/Backhoes	diesel	120	32	6400	2.3
P1	Welder	welders	diesel	50	4	800	0.3
P2	Boom Lifts (80')	Aerial Lift	diesel	75	22	4400	0.9
P2	concrete mixer, transit	Off-Highway Trucks	diesel	250	45.5	9100	1.9
P2	crane, diesel 20 ton warehouse	cranes	diesel	120	52	10400	2.2
P2	crane, diesel 35 ton warehouse	cranes	diesel	175	62	12400	2.6
P2	crane, diesel 65 ton	cranes	diesel	250	18	3600	0.8
P2	crane, diesel 150 ton	cranes	diesel	250	16	3200	0.7
P2	crane, diesel 400 ton	cranes	diesel	500	15	3000	0.6
P2	Forklift 15 ton warehouse	forklift	diesel	175	26	5200	1.1
P2	forklift, diesel	forklift	diesel	120	26	5200	1.1
P2	manlift, telescoping, propane	Aerial Lift	diesel	50	48	9600	2.0
P2	highway trucks warehouse	Off-Highway Trucks	diesel	220	50	10000	2.1
P2	Flatbed Trucks 1-ton Warehouse	Off-Highway Trucks	gasoline	220	25	5000	1.0



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