



ATTACHMENT D

MITIGATED NEGATIVE DECLARATION

APPENDIX A - AIR QUALITY, GREENHOUSE GAS EMISSIONS, AND ENERGY TECHNICAL REPORT

Appendix A

Air Quality, Greenhouse Gas Emissions, and Energy Technical Report

San Marcos Costco Business Center Fuel Facility Project

Air Quality, Greenhouse Gas Emissions,
and Energy Technical Report

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Acronyms and Abbreviations

$\mu\text{g}/\text{m}^3$	micrograms per cubic meter
AAM	annual arithmetic mean
AAQS	Ambient Air Quality Standards
AB	Assembly Bill
ADMRT	Air Dispersion Modeling and Risk Tool
ADT	average daily trips
AERMAP	USEPA terrain preprocessing program
AERMOD	USEPA gaussian air dispersion model
APS	alternative planning strategy
AR	United Nations Intergovernmental Panel on Climate Change Assessment Report
Attainment Plan	Ozone Attainment Plan for San Diego County
BAAQMD	Bay Area Air Quality Management District
BPiP	Building Profile Input Program
C_2F_6	hexafluoroethane
CA-78	California Highway 78
CAA	Clean Air Act
CAAQS	California Ambient Air Quality Standards
CAFE	Corporate Average Fuel Economy
CalEEMod	California Emission Estimator Model
CalEPA	California Environmental Protection Agency
CALGreen	California Green Building Standards Code
CAP	climate action plan
CAPCOA	California Air Pollution Control Officers Association
CARB	California Air Resources Board
CBSC	California Building Standards Commission
CCR	California Code of Regulations
CDC	Centers for Disease Control and Prevention
CEC	California Energy Commission
CEQA	California Environmental Quality Act
CF_4	tetrafluoromethane
CFCs	chlorofluorocarbons
CFR	Code of Federal Regulations
CH_4	methane
City	City of San Marcos
CNS	central nervous system
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalent
County	County of San Diego
CPUC	California Public Utilities Commission

Acronyms and Abbreviations (cont.)

DEM	Digital Elevation Model
DIURN	vehicle diurnal evaporative emissions
DMV	California Department of Motor Vehicles
DPM	diesel particulate matter
DOE	U.S. Department of Energy
E6	gasoline formulation with 6 percent methanol
E10	gasoline formulation with 10 percent methanol
EISA	Energy Independence and Security Act
EO	Executive Order
EPCA	Energy Policy and Conservation Act
EVR	enhanced vapor recovery
°F	degrees Fahrenheit
g/l	grams per liter
GHG	greenhouse gas
GGE	gross gasoline equivalent
GWh	gigawatt-hours
GWP	Global Warming Potential
HAP	hazardous air pollutant
HARP	Hotspots Analysis and Reporting Program
HFCs	hydrofluorocarbons
HI	Hazard Index
HOTSOAK	vehicle evaporative emissions after stopping
HRA	health risk assessment
IARC	International Agency on Research for Cancer
IEPR	Integrated Energy Policy Report
EMFAC	CARB mobile source emissions inventory
IPCC	United Nations Intergovernmental Panel on Climate Change
ISD	in-station diagnostic
ISTEA	Intermodal Surface Transportation Efficiency Act
K	Kelvin
km	kilometer
kWh	kilowatt-hour
LCFS	Low Carbon Fuel Standard
LDA	light duty automobiles vehicle class
LDT1	light duty truck 1 vehicle class
LDT2	light duty truck 2 vehicle class

Acronyms and Abbreviations (cont.)

MDV	medium duty vehicle class
MEIR	Maximally Exposed Individual Resident
MEIW	Maximally Exposed Individual Worker
MMT	million metric tons
MPD	multiple product dispenser
MPO	Metropolitan Planning Organization
NAAQS	National Ambient Air Quality Standards
NASA	National Aeronautics and Space Administration
N ₂ O	nitrous oxide
NHTSA	National Highway Traffic Safety Administration
NO ₂	nitrogen dioxide
NOAA	National Oceanic and Atmospheric Administration
NO _x	oxides of nitrogen
O ₃	Ozone
ORVR	onboard refueling vapor recovery
PAH	Polycyclic Aromatic Hydrocarbons
PBL	PBL Netherlands Environmental Assessment Agency
PEV	plug in-vehicle
PFCs	perfluorocarbons
PM	particulate matter
PM ₁₀	particulate matter 10 microns or less in diameter
PM _{2.5}	particulate matter 2.5 microns or less in diameter
PMBW	break wear particulate matter emissions
PMTW	tire wear particulate matter emissions
ppm	parts per million
PRC	Public Resources Code
RAQS	Regional Air Quality Strategy
REL	Reference Exposure Limit
ROG	reactive organic gas
ROW	right-of-way
RTP	regional transportation plan
RUNEX	running exhaust vehicle emissions
RUNLOSS	vehicle evaporative emissions while running

Acronyms and Abbreviations (cont.)

SANDAG	San Diego Association of Governments
SB	Senate Bill
SCAMQD	South Coast Air Quality Management District
SCS	Sustainable Communities Strategy
SDAB	San Diego Air Basin
SDAPCD	San Diego County Air Pollution Control District
SDG&E	San Diego Gas & Electric company
SF	square feet
SF ₆	hexafluoride
SIPs	State Implementation Plans
SO ₂	sulfur dioxide
SO _x	oxides of sulfur
STREX	starting exhaust vehicle emissions
TAC	toxic air contaminant
T-BACT	Toxics Best Available Control Technology
TEA-21	Transportation Equity Act for the 21st Century
TOG	total organic gas
UNFCCC	United Nations Framework Convention on Climate Change
USDOT	U.S. Department of Transportation
USEPA	U.S. Environmental Protection Agency
USGS	U.S. Geological Survey
UST	underground storage tank
UTM	Universal Transverse Mercator
VMT	vehicle miles traveled
VOC	volatile organic compound

EXECUTIVE SUMMARY

This report presents an assessment of potential air quality and greenhouse gas (GHG) emissions impacts resulting from construction and operation of the San Marcos Costco Business Center Fuel Facility Project (project). The project site located at 150 South Bent Avenue in the central portion of the City of San Marcos (City) between West San Marcos Boulevard and California Highway 78, in San Diego County (County). The project would construct a new retail fuel dispensing facility within the boundaries of the existing San Marcos Costco Business Center.

The current General Plan land use designation and zone for the project site is Commercial. The project would not require a change of land use designation or zone. As such, the project's growth would be accounted for in the applicable air quality plans—San Diego County Air Pollution Control District's (SDAPCD's) 2020 *Plan for Attaining the National Ambient Air Quality Standards for Ozone in San Diego County* (Attainment Plan) and the 2022 Regional Air Quality Strategy (RAQS). Therefore, the project would not conflict with or obstruct implementation of the applicable air quality plan, and the impact would be less than significant.

The project would result in emissions of criteria air pollutants during construction and operation. Project emissions of criteria pollutants during construction or operation would not exceed the screening level project construction or operational thresholds developed from the SDAPCD Air Quality Impact Analysis (AQIA) trigger levels. Therefore, the project's construction and operational emissions would not contribute to the San Diego Air Basin's (SDAB's) nonattainment status of ozone, PM₁₀, and PM_{2.5}. Construction and operation of the project would not violate an air quality standard or contribute to an existing or projected air quality violation and the impact would be less than significant.

Construction of the project would not result in exposure of off-site sensitive receptors to significant quantities of toxic air contaminants (TACs). Impacts related to exposure of off-site sensitive receptors to substantial pollutant concentrations, including construction period diesel particulate matter (DPM) and operational carbon monoxide (CO) hotspots, would be less than significant. A health risk assessment (HRA) was conducted to assess impacts to sensitive receptors from exposure to TACs from operation of the proposed gas station, including TACs from gasoline vapor, vehicles in the gas station queue and gas pump area, and fuel delivery truck operating on the project site. Community health risks from exposure to TACs from operation of the project would not exceed the County's thresholds and would be less than significant.

Implementation of the project would not result in other emissions (such as those leading to odors) adversely affecting a substantial number of people and impacts related to odors would be less than significant.

The project would result in a reduction in regional VMT for project customers and employees and, as a result, would be consistent with the City's Climate Action Plan (CAP) through screening (determined using the City's CAP Consistency Review Checklist). The City's CAP is a qualified GHG reduction plan consistent with CEQA guidelines Section 15183.5. Projects that would be consistent with a qualified GHG reduction plan would have less than cumulatively considerable GHG emissions. The City's CAP was developed to ensure community-wide GHG emissions in San Marcos would meet the state's 2020 and 2030 GHG reduction goals and demonstrate progress towards achieving the state's post-2030 GHG reduction goals, including the 2045 net zero GHG emissions goal. The project would not conflict with GHG reduction plans including the City's CAP, the San Diego Association of Governments' (SANDAG's)

Regional Plan, or the California Air Resource Board's (CARB's) 2022 Scoping Plan. GHG impacts would be less than significant.

The project would be required to comply with state regulations for construction waste recycling and construction equipment idling. Project construction would involve techniques and equipment typical for the construction of industrial buildings in the region. Because the project would result in a reduction in regional VMT for project customers and employees, the project would result in a reduction in the consumption of gasoline in the region. The project would result in negligible increases in statewide and regional diesel and electricity use. The project would not result in wasteful, inefficient, or unnecessary consumption of energy resources or conflict with or obstruct a state or local plan for renewable energy or energy efficiency. Energy impacts would be less than significant.

1.0 INTRODUCTION

This report presents an assessment of potential air quality, greenhouse gas (GHG) emissions, and energy impacts during the construction and operation of the San Marcos Costco Business Center Fuel Facility Project (project). This report has been prepared to support environmental review in accordance with the California Environmental Quality Act (CEQA; California Public Resources Code [PRC] §21000 et seq.); State CEQA Guidelines (California Code of Regulations [CCR], Title 14, §15000 et seq.). This report also contains a health risk assessment (HRA; part of the air quality impact analysis) to evaluate potential community health risk impacts resulting from the operation of the proposed retail fueling facility.

1.1 PROJECT LOCATION

The approximately 14.3-acre site (Assessor's Parcel Number 219-331-43-00) located at 150 South Bent Avenue in the central portion of the City of San Marcos (City), between West San Marcos Boulevard and California Highway 78 (CA-78; Ronald Richard Parkway) in San Diego County (County), California (see Figure 1, *Regional Location*, and Figure 2, *Aerial Photograph*).

1.2 PROJECT DESCRIPTION

The project would construct a new retail fuel dispensing facility within the property of the existing San Marcos Costco Business Center. The project would remove approximately 97,600 square feet (SF) of asphalt and concrete, and approximately 8,200 SF of landscaping in the northern portion of the project site. The concrete and landscaping to be removed would include portions of the existing sidewalks, driveway aprons, and landscaping within the right-of-way (ROW) of Linda Vista Drive, Grand Avenue, and South Bent Avenue along the project frontage. The total disturbed area would be approximately 2.4 acres.

The proposed retail fuel dispensing facility would include 18 multiple product dispensers (MPDs) with 36 fueling positions, an approximately 16,090-SF (173.7 feet by 92.7 feet) fueling canopy, four underground storage tanks (USTs), and a 271-SF mechanical room/storage area. The project would remove 211 of the 794 existing parking stalls from the project site for a proposed new total of 583 parking stalls (including the 36 proposed fueling positions). The project would relocate the existing northern project driveway on South Bent Avenue approximately 150 feet to the south. An additional driveway would be added to allow fuel delivery trucks to exit the project on Linda Vista Drive—only delivery trucks would be allowed to use the new Linda Vista Drive driveway. Additional project improvements would include two underground stormwater detention facilities with storm drain pumps, new parking lot median islands with landscaping, new sidewalks along the Linda Vista Drive, Grand Avenue, and South Bent Avenue project frontages, and new parking lot striping (see Figure 3, *Site Plan*). Per the project engineer, after installing new landscaping, the project would result in a net increase of 4,590 SF of landscaping on the project site (Barghausen Consulting Engineers 2023).

1.3 CONSTRUCTION ACTIVITIES AND PHASING

Construction of the project is anticipated to be completed in one phase commencing as early as January 2025 and completing in April 2025. Project construction activities would include demolition, grading, underground utilities (including excavation for UTSs), building construction (including installing fueling positions and canopy), architectural coating (e.g., painting), and paving. Detailed construction activity

and equipment assumptions are summarized in Section 4.1, *Methodology*, and provided in Appendix A, *CalEEMod Output*. Staging of construction equipment would occur within the project site.

2.0 REGULATORY SETTING

2.1 AIR QUALITY

The project site is located within the San Diego Air Basin (SDAB) which comprises the entirety of San Diego County. Air quality in the SDAB is regulated by the U.S. Environmental Protection Agency (USEPA) at the federal level, by the California Air Resources Board (CARB) at the state level, and by the San Diego County Air Pollution Control District (SDAPCD) at the regional level.

2.1.1 Air Pollutants of Concern

2.1.1.1 Criteria Pollutants

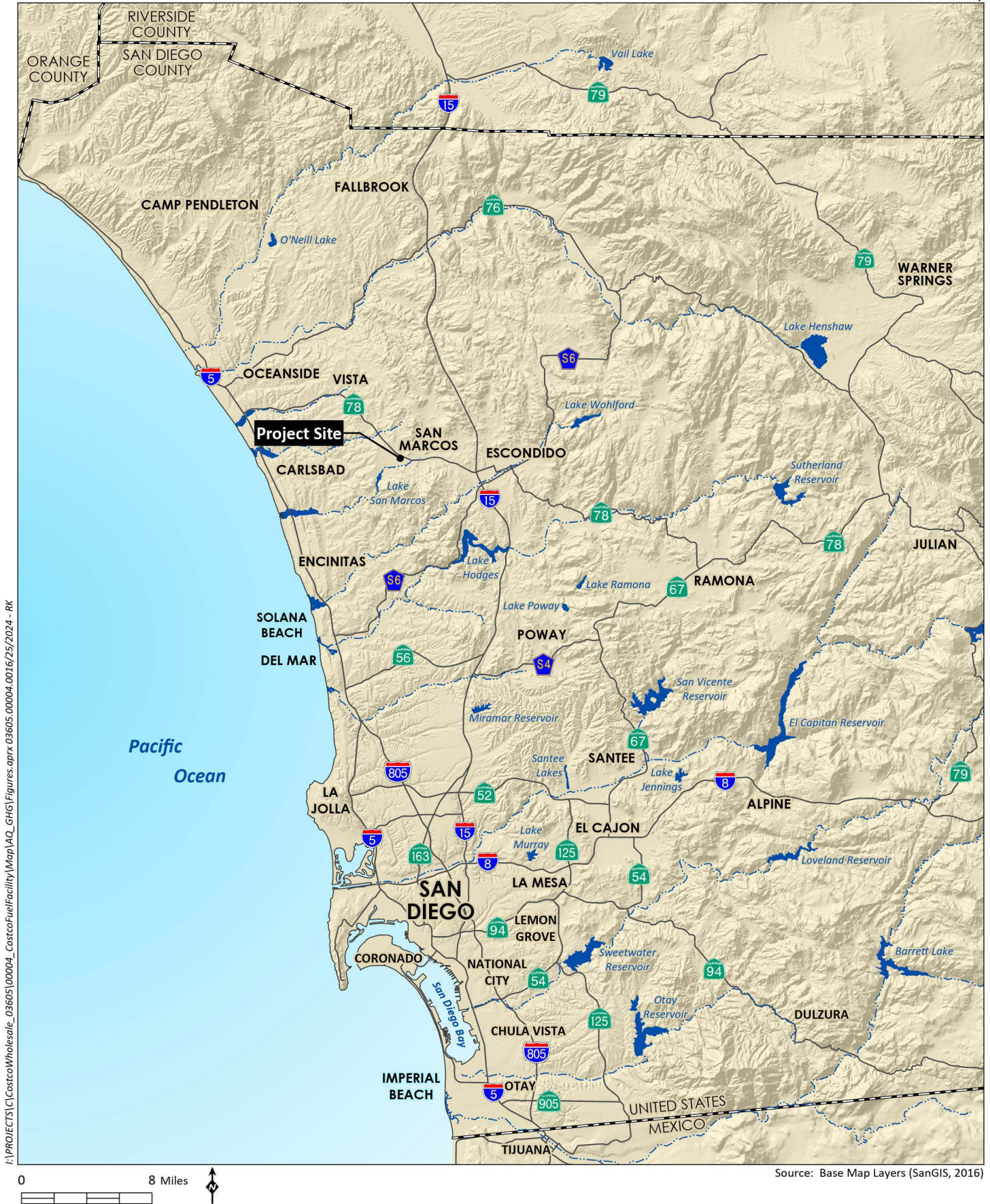
Criteria pollutants are defined by state and federal law as a risk to the health and welfare of the public. In general, criteria air pollutants include the following compounds:

- Ozone (O₃)
- Carbon monoxide (CO)
- Nitrogen dioxide (NO₂)
- Particulate matter (PM), which is further subdivided:
 - Coarse PM, 10 microns or less in diameter (PM₁₀)
 - Fine PM, 2.5 microns or less in diameter (PM_{2.5})
- Sulfur dioxide (SO₂)
- Lead (Pb)

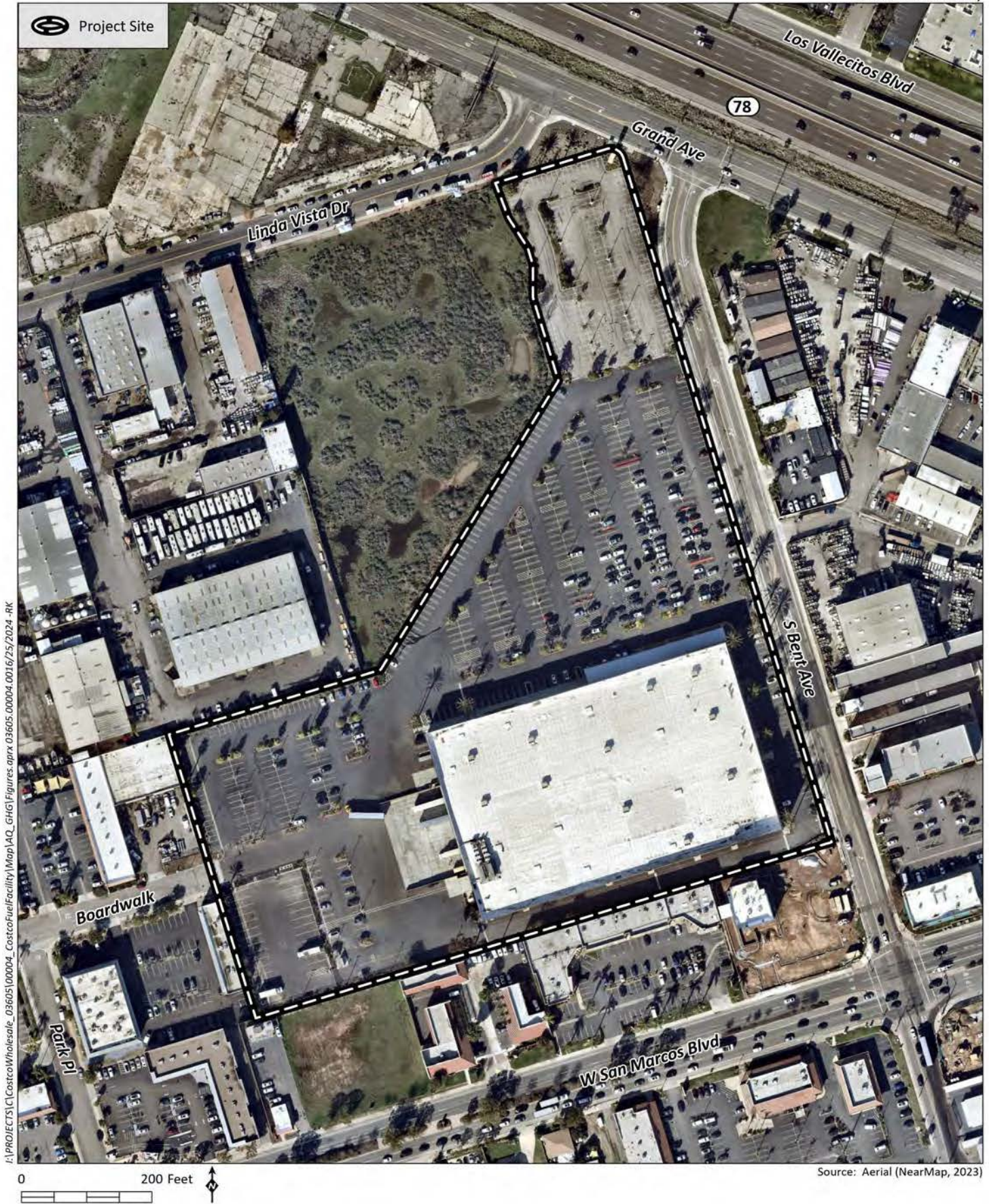
Criteria pollutants can be emitted directly from sources (primary pollutants; e.g., CO, SO₂, PM₁₀, PM_{2.5}, and lead), or they may be formed through chemical and photochemical reactions of precursor pollutants in the atmosphere (secondary pollutants; e.g., ozone, NO₂, PM₁₀, and PM_{2.5}). PM₁₀ and PM_{2.5} can be both primary and secondary pollutants. The principal precursor pollutants of concern are reactive organic gases ([ROGs] also known as volatile organic compounds [VOCs])¹ and nitrogen oxides (NO_x).

The descriptions of sources and general health effects for each of the criteria air pollutants are shown in Table 1, *Common Sources and Human Health Effects of Criteria Air Pollutants*. Specific adverse health effects on individuals or population groups induced by criteria pollutant emissions are highly dependent on a multitude of interconnected variables such as cumulative concentrations, local meteorology, and atmospheric conditions, and the number and characteristics of exposed individuals (e.g., age, gender). Criteria pollutant precursors (ROG and NO_x) affect air quality on a regional scale, typically after significant delay and distance from the pollutant source emissions. Therefore, health effects related to ozone and NO₂ are the product of emissions generated by numerous sources throughout a region.

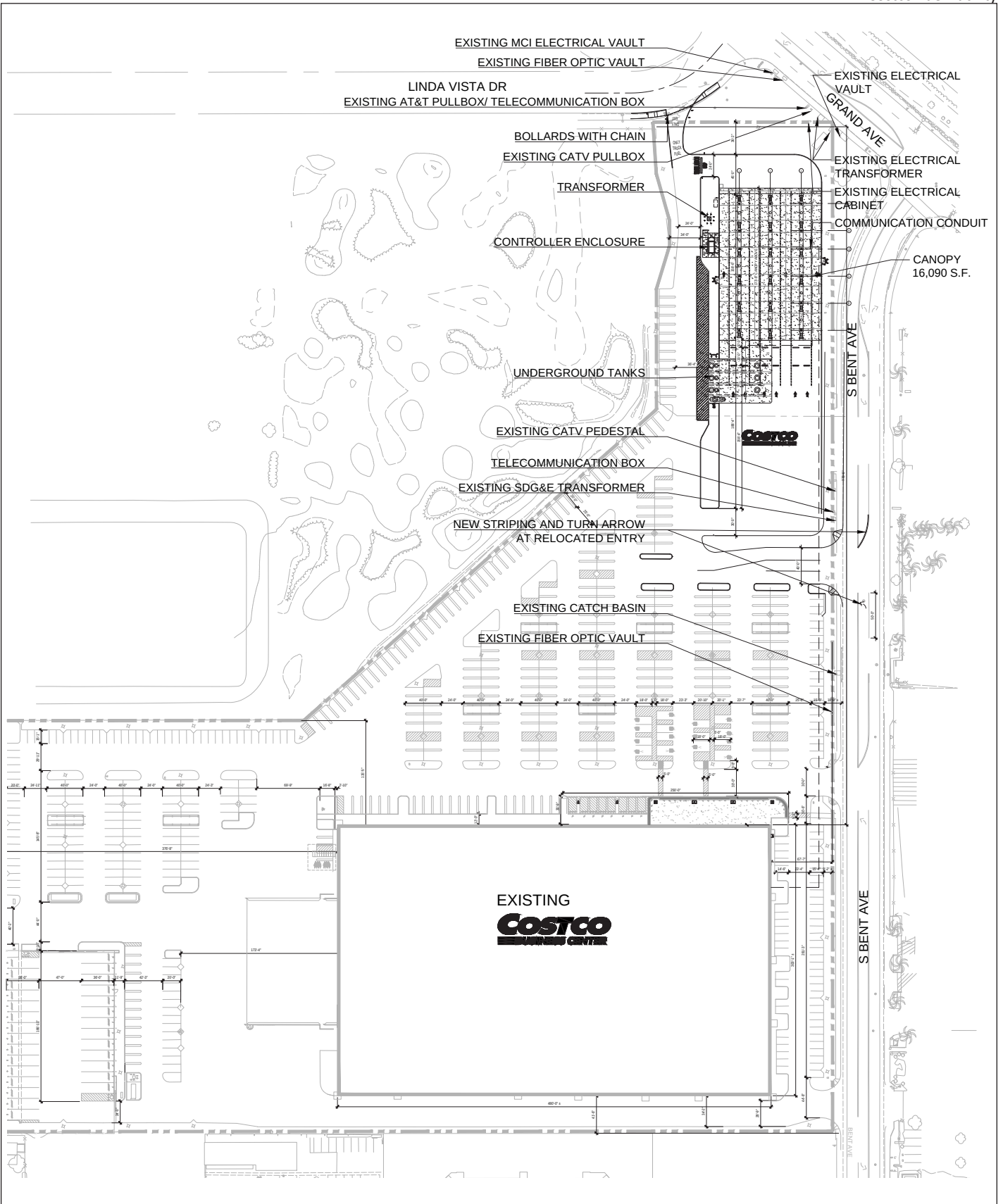
¹ CARB defines and uses the term ROGs while the USEPA defines and uses the term VOCs. The compounds included in the lists of ROGs and VOCs and the methods of calculation are slightly different. However, for the purposes of estimating criteria pollutant precursor emissions, the two terms are often used interchangeably.



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Source: MG2 2024

Emissions of criteria pollutants from vehicles traveling to or from the project site (mobile emissions) are distributed nonuniformly in location and time throughout the region, wherever the vehicles may travel. As such, specific health effects from these criteria pollutant emissions cannot be meaningfully correlated to the incremental contribution from the project.

Table 1
COMMON SOURCES AND HUMAN HEALTH EFFECTS OF CRITERIA AIR POLLUTANTS

Pollutant	Major Man-Made Sources	Human Health Effects
Carbon Monoxide (CO)	An odorless, colorless gas formed when carbon in fuel is not burned completely; a component of motor vehicle exhaust.	Reduces the ability of blood to deliver oxygen to vital tissues, affecting the cardiovascular and nervous system. Impairs vision, causes dizziness, and can lead to unconsciousness or death.
Nitrogen Dioxide (NO ₂)	A reddish-brown gas formed during fuel combustion for motor vehicles and industrial sources. Sources include motor vehicles, electric utilities, and other sources that burn fuel.	Respiratory irritant; aggravates lung and heart problems. Precursor to ozone and acid rain. Contributes to climate change and nutrient overloading, which deteriorates water quality. Causes brown discoloration of the atmosphere.
Ozone (O ₃)	Formed by a chemical reaction between reactive organic gases (ROGs) and nitrogen oxides (NO _x) in the presence of sunlight. Common sources of these precursor pollutants include motor vehicle exhaust, industrial emissions, gasoline storage and transport, solvents, paints, and landfills.	Irritates and causes inflammation of the mucous membranes and lung airways; causes wheezing, coughing, and pain when inhaling deeply; decreases lung capacity; aggravates lung and heart problems. Damages plants; reduces crop yield. Damages rubber, some textiles, and dyes.
Particulate Matter (PM ₁₀ and PM _{2.5})	Produced by power plants, steel mills, chemical plants, unpaved roads and parking lots, wood-burning stoves and fireplaces, automobiles, and other sources.	Increased respiratory symptoms, such as irritation of the airways, coughing, or difficulty breathing; aggravated asthma; development of chronic bronchitis; irregular heartbeat; nonfatal heart attacks; and premature death in people with heart or lung disease. Impairs visibility (haze).
Sulfur Dioxide (SO ₂)	A colorless, nonflammable gas formed when fuel containing sulfur is burned, when gasoline is extracted from oil, or when metal is extracted from ore. Examples are petroleum refineries, cement manufacturing, metal processing facilities, locomotives, and ships.	Respiratory irritant. Aggravates lung and heart problems. In the presence of moisture and oxygen, sulfur dioxide converts to sulfuric acid, which can damage marble, iron, and steel. Damages crops and natural vegetation. Impairs visibility. Precursor to acid rain.
Lead	Metallic element emitted from metal refineries, smelters, battery manufacturers, iron and steel producers, use of leaded fuels by racing and aircraft industries.	Anemia, high blood pressure, brain and kidney damage, neurological disorders, cancer, lowered IQ. Affects animals, plants, and aquatic ecosystems.

Source: CARB 2024a; USEPA 2024a

2.1.1.2 Toxic Air Contaminants

The Health and Safety Code (§39655, subd. (a).) defines a toxic air contaminant (TAC) as “an air pollutant which may cause or contribute to an increase in mortality or in serious illness, or which may pose a present or potential hazard to human health.” A substance that is listed as a hazardous air pollutant (HAP) pursuant to subsection (b) of Section 112 of the Federal Clean Air Act (CAA) (42 United States Code Section 7412[b]) is a TAC. Under State law, the California Environmental Protection Agency (CalEPA), acting through CARB, is authorized to identify a substance as a TAC if it determines the substance is an air pollutant that may cause or contribute to an increase in mortality or an increase in serious illness, or that may pose a present or potential hazard to human health.

Diesel Particulate Matter

Diesel engines emit a complex mixture of air pollutants, including both gaseous and solid material. The solid material in diesel exhaust is referred to as diesel particulate matter (DPM). Almost all DPM is 10 microns or less in diameter, and 90 percent of DPM is 2.5 microns or less in diameter (CARB 2024b). Because of their extremely small size, these particles can be inhaled and eventually trapped in the bronchial and alveolar regions of the lung. In 1998, CARB identified DPM as a TAC based on published evidence of a relationship between diesel exhaust exposure and lung cancer and other adverse health effects. DPM has a notable effect on California’s population—it is estimated that about 70 percent of total known cancer risk related to air toxins in California is attributable to DPM (CARB 2024b).

Gasoline Dispensing Facilities

Activities at gasoline dispensing facilities can release gasoline vapor into the air. Gasoline vapor consists of a mixture of organic gases, including seven gases classified as TACs with quantifiable health risk factors: benzene, ethyl benzene, n-hexane, naphthalene, propylene (or propene), xylenes and toluene (CARB 2022a). Note that, although the proposed gas station may include diesel dispensing, TACs associated with diesel vapor are not released in quantities sufficient enough to require analysis or reporting. For example, gasoline in the U.S. contains 0.6 to 1.3 percent benzene by volume, diesel fuel contains less than 0.02 percent benzene (International Agency on Research for Cancer [IARC] 1989).

Benzene – Benzene is a potent carcinogen and one of the highest-risk air pollutants regulated by CARB. Acute inhalation exposure of humans to benzene may cause drowsiness, dizziness, headaches, as well as eye, skin, and respiratory tract irritation, and, at high levels, unconsciousness. Chronic inhalation exposure to benzene has caused various disorders in the blood. Benzene is classified as a known human carcinogen for all routes of exposure (USEPA 2012a). Benzene contributes approximately 78 percent of the cancer risk and nearly 100 percent of the non-cancer chronic health impacts resulting from gasoline vapor emissions at retail gas stations in California (CARB 2022a).

Ethyl benzene – Acute exposure to ethylbenzene in humans results in respiratory effects, such as throat irritation and chest constriction, irritation of the eyes, and neurological effects such as dizziness (USEPA 2000a).

N-hexane – Chronic exposure to hexane in air is associated with polyneuropathy in humans, with numbness in the extremities, muscular weakness, blurred vision, headache, and fatigue observed. Neurotoxic effects have also been exhibited in rats (USEPA 2000b).

Naphthalene – Acute exposure of humans to naphthalene by inhalation, ingestion, and dermal contact is associated with hemolytic anemia, damage to the liver, and neurological damage. Chronic exposure of workers and rodents to naphthalene has been reported to cause cataracts and damage to the retina. Classified as a possible human carcinogen (USEPA 2000c).

Xylenes – Acute inhalation exposure to mixed xylenes in humans results in irritation of the eyes, nose, and throat, gastrointestinal effects, and neurological effects. Chronic inhalation exposure of humans to mixed xylenes results primarily in central nervous system (CNS) effects, such as headache, dizziness, fatigue, tremors, and incoordination; respiratory, cardiovascular, and kidney effects have also been reported (USEPA 2000d).

Toluene – The CNS is the primary target organ for toluene toxicity in both humans and animals for acute and chronic exposures. CNS dysfunction and narcosis have been frequently observed in humans acutely exposed to elevated airborne levels of toluene; symptoms include fatigue, sleepiness, headaches, and nausea. Chronic inhalation exposure of humans to toluene also causes irritation of the upper respiratory tract and eyes, sore throat, dizziness, and headache (USEPA 2012b).

Gas Station Toxics Best Available Control Technology

The Toxics Best Available Control Technology (T-BACT) for gas stations are vapor recovery systems installed to collect gasoline vapors that would otherwise escape into the atmosphere. Gasoline vapor emissions at gas stations are controlled in two phases. Phase I vapor recovery collects vapors displaced from USTs when a cargo tank truck delivers gasoline to a gas station. Phase II vapor recovery collects vapors displaced during the transfer of gasoline from a dispensing nozzle to a vehicle, fuel container, or gasoline-powered equipment; and vapors related to the storage of gasoline at a gas station. CARB regulations establish standards for the level of emissions control vapor recovery systems must achieve during the transfer and storage of gasoline.

Vapor recovery system performance standards for gas stations have become more stringent over the years. Since 2001, CARB has adopted a number of significant advancements as part of the enhanced vapor recovery (EVR) program. Phase I EVR, in accordance with California Executive Order VR-102, requires more durable and leak-tight components, along with an increased collection efficiency of 98 percent. Phase II EVR, in accordance with California Executive Order VR-204, includes three major advancements: (1) dispensing nozzles with less spillage and required compatibility with onboard refueling vapor recovery (ORVR) vehicles, (2) a processor to control the static pressure of the ullage, or vapor space, in the underground storage tank, and (3) an in-station diagnostic (ISD) system that provides warning alarms to alert a gas station operator of potential vapor recovery system malfunctions. Phase I EVR was fully implemented in 2005. Phase II EVR was fully implemented between 2009 and 2011 (CARB 2013a). The project would be required to implement Phase I EVR and Phase II EVR systems (with an ISD system) meeting the latest CARB performance standards.

ORVR systems were phased in beginning with 1998 model year passenger vehicles, and are now installed on all passenger, light-duty, and medium-duty vehicles manufactured since the 2006 model year. When an ORVR vehicle is fueled, almost all the gasoline vapor displaced from the fuel tank is routed to a carbon canister in the vehicle fuel system. At the start of dispensing, a small portion of the vapor in the vehicle fuel tank may escape through the fill-pipe before the onboard system is fully engaged. Uncontrolled fill-pipe emissions from ORVR vehicles are approximately two orders of

magnitude lower than the same emissions from vehicles without ORVR and are easily captured by Phase II vapor recovery systems (CARB 2013a).

Vehicle Idling

The exhaust from vehicles idling as well as hydrocarbon evaporative emissions from vehicles in the gas station queue and gas pump area contains TACs. In addition to the six TACs in gasoline vapor described above, vehicle emissions could include the following TACs.

1,3-Butadiene – Acute exposure to 1,3-butadiene by inhalation in humans results in irritation of the eyes, nasal passages, throat, and lungs. Epidemiological studies have reported a possible association between 1,3-butadiene exposure and cardiovascular diseases. Epidemiological studies of workers in rubber plants have shown an association between 1,3-butadiene exposure and increased incidence of leukemia. The USEPA has classified 1,3-butadiene as carcinogenic to humans by inhalation (USEPA 2009a).

Acetaldehyde – Acute exposure to acetaldehyde results in effects including irritation of the eyes, skin, and respiratory tract. Symptoms of chronic intoxication of acetaldehyde resemble those of alcoholism. Acetaldehyde is considered a probable human carcinogen based on inadequate human cancer studies and on animal studies (USEPA 2000e).

Acrolein – Acute inhalation exposure to acrolein may result in upper respiratory tract irritation and congestion. No information is available on its reproductive, developmental, or carcinogenic effects in humans, and the existing animal cancer data are considered inadequate to make a determination that acrolein is carcinogenic to humans (USEPA 2009b).

Formaldehyde – Acute and chronic inhalation exposure to formaldehyde in humans can result in respiratory symptoms, and eye, nose, and throat irritation. Limited human studies have reported an association between formaldehyde exposure and lung and nasopharyngeal cancer. Animal inhalation studies have reported an increased incidence of nasal squamous cell cancer. The USEPA considers formaldehyde a probable human carcinogen (USEPA 2000f).

Methanol – Acute or chronic exposure of humans to methanol by inhalation or ingestion may result in blurred vision, headache, dizziness, and nausea. No information is available on the reproductive, developmental, or carcinogenic effects of methanol in humans (USEPA 2000g).

Methyl Ethyl Ketone – Acute inhalation exposure to methyl ethyl ketone in humans results in irritation to the eyes, nose, and throat. Limited information is available on the chronic effects of methyl ethyl ketone in humans. Chronic inhalation studies in animals have reported slight neurological, liver, kidney, and respiratory effects. No information is available on the developmental, reproductive, or carcinogenic effects of methyl ethyl ketone in humans (USEPA 2000h).

Methyl Tert-Butyl Ether – Methyl tert-butyl ether is used as a gasoline additive. Exposure may occur by breathing air contaminated with auto exhaust or gasoline fumes while refueling autos. Respiratory irritation, dizziness, and disorientation have been reported by some motorists and occupationally exposed workers. Acute exposure of humans to methyl tert-butyl ether also has occurred during its use as a medical treatment to dissolve cholesterol gallstones. Chronic inhalation exposure to methyl tert-butyl ether has resulted in CNS effects (USEPA 2000i).

Styrene – Acute exposure to styrene in humans results in mucous membrane and eye irritation, and gastrointestinal effects. Chronic exposure to styrene in humans results in effects on the CNS, such as headache, fatigue, weakness, depression, CSN dysfunction, hearing loss, and peripheral neuropathy. Human studies are inconclusive on the reproductive and developmental effects of styrene (USEPA 2000j).

Polycyclic Aromatic Hydrocarbons (PAHs) – PAHs are a class of chemicals that occur naturally in coal, crude oil, and gasoline. They also are produced when coal, oil, gasoline, wood, garbage, and tobacco are burned. Human health effects from environmental exposure to low levels of PAHs are unknown. Several of the PAHs and some specific mixtures of PAHs are considered to be cancer-causing chemicals (Centers for Disease Control and Prevention [CDC] 2009).

2.1.2 Federal Air Quality Regulations

2.1.2.1 Federal Clean Air Act

Air quality is defined by ambient air concentrations of specific pollutants identified by the USEPA to be of concern with respect to the health and welfare of the public. The USEPA is responsible for enforcing the CAA of 1970 and its 1977 and 1990 Amendments. The CAA required the USEPA to establish National Ambient Air Quality Standards (NAAQS), which identify concentrations of pollutants in the ambient air below which no adverse effects on public health and welfare are anticipated. In response, the USEPA established both primary and secondary standards for several criteria pollutants. On February 7, 2024, the USEPA announced a final rule to lower the annual arithmetic mean (AAM) primary NAAQS for PM_{2.5} from 12 µg/m³ to 9 µg/m³. The new final rule retains the existing 24-hour primary NAAQS for PM_{2.5} of 35 µg/m³ and the existing AAM secondary NAAQS for PM_{2.5} of 15.0 µg/m³ (USEPA 2024b). Table 2, *Ambient Air Quality Standards*, shows the federal and state ambient air quality standards for criteria pollutants.

Table 2
AMBIENT AIR QUALITY STANDARDS

Pollutant	Averaging Time	California Standards	Federal Standards Primary ^{1,2}	Federal Standards Secondary ³
O ₃	1 Hour	0.09 ppm (180 µg/m ³)	–	–
	8 Hour	0.070 ppm (137 µg/m ³)	0.070 ppm (137 µg/m ³)	Same as Primary
PM ₁₀	24 Hour	50 µg/m ³	150 µg/m ³	Same as Primary
	AAM	20 µg/m ³	–	Same as Primary
PM _{2.5}	24 Hour	–	35 µg/m ³	Same as Primary
	AAM	12 µg/m ³	9 µg/m ³	15.0 µg/m ³
CO	1 Hour	20 ppm (23 mg/m ³)	35 ppm (40 mg/m ³)	–
	8 Hour	9.0 ppm (10 mg/m ³)	9 ppm (10 mg/m ³)	–
	8 Hour (Lake Tahoe)	6 ppm (7 mg/m ³)	–	–
NO ₂	1 Hour	0.18 ppm (339 µg/m ³)	0.100 ppm (188 µg/m ³)	–
	AAM	0.030 ppm (57 µg/m ³)	0.053 ppm (100 µg/m ³)	Same as Primary
SO ₂	1 Hour	0.25 ppm (655 µg/m ³)	0.075 ppm (196 µg/m ³)	–
	3 Hour	–	–	0.5 ppm (1,300 µg/m ³)
	24 Hour	0.04 ppm (105 µg/m ³)	–	–

Pollutant	Averaging Time	California Standards	Federal Standards Primary ^{1,2}	Federal Standards Secondary ³
Lead	30-day Avg.	1.5 µg/m ³	–	–
	Calendar Quarter	–	1.5 µg/m ³	Same as Primary
	Rolling 3-month Avg.	–	0.15 µg/m ³	Same as Primary
Visibility Reducing Particles	8 Hour	Extinction coefficient of 0.23 per km – visibility ≥ 10 miles (0.07 per km – ≥30 miles for Lake Tahoe)	No Federal Standards	No Federal Standards
Sulfates	24 Hour	25 µg/m ³	No Federal Standards	No Federal Standards
Hydrogen Sulfide	1 Hour	0.03 ppm (42 µg/m ³)	No Federal Standards	No Federal Standards
Vinyl Chloride	24 Hour	0.01 ppm (26 µg/m ³)	No Federal Standards	No Federal Standards

Source: CARB 2016; USEPA 2024b

¹ National Primary Standards: The levels of air quality necessary, within an adequate margin of safety, to protect public health.

² The AAM primary NAAQS for PM_{2.5} was reduced from 12 µg/m³ to 9 µg/m³ by a USEPA final rule issued on February 7, 2024.

³ National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.

O₃ = ozone; ppm: parts per million; µg/m³ = micrograms per cubic meter; PM₁₀ = particulate matter with an aerodynamic diameter of 10 microns or less; AAM = Annual Arithmetic Mean; PM_{2.5} = fine particulate matter; CO = carbon monoxide; mg/m³ = milligrams per cubic meter; NO₂ = nitrogen dioxide; SO₂ = sulfur dioxide; km = kilometer; – = No Standard

The USEPA has classified air basins (or portions thereof) as being in “attainment,” “nonattainment,” “maintenance,” or “unclassified” for each criteria air pollutant, based on whether the NAAQS have been achieved. Upon attainment of a standard for which an area was previously designated nonattainment, the area will be classified as a maintenance area. If an area is designated unclassified, it is because inadequate air quality data were available as a basis for a nonattainment or attainment designation. The project site is located within the SDAB and, as such, is in an area designated as a nonattainment area for certain pollutants that are regulated under the CAA. Table 3, *San Diego Air Basin Attainment Status*, lists the federal and state attainment status of the SDAB for the criteria pollutants. Effective July 2, 2021, the SDAB was classified as a severe 15 nonattainment area for the 8-hour NAAQS for ozone (USEPA 2024b). The SDAB is an attainment area, or unclassifiable, for the NAAQS for all other criteria pollutants (USEPA 2024c).

Table 3
SAN DIEGO AIR BASIN ATTAINMENT STATUS

Criteria Pollutant	Federal Designation	State Designation
Ozone (1-hour)	Attainment ¹	Nonattainment
Ozone (8-hour)	Nonattainment	Nonattainment
CO	Attainment	Attainment
PM ₁₀	Unclassifiable ²	Nonattainment
PM _{2.5}	Attainment ³	Nonattainment
NO ₂	Attainment	Attainment
SO ₂	Attainment	Attainment
Lead	Attainment	Attainment
Sulfates	(No federal standard)	Attainment
Hydrogen Sulfide	(No federal standard)	Unclassified
Visibility	(No federal standard)	Unclassified

Source: SDAPCD 2024a; USEPA 2024b; USEPA 2024c

¹ The federal 1-hour standard of 12 ppm was in effect from 1979 through June 15, 2005. The revoked standard is referenced here because it was employed for such a long period and because this benchmark is addressed in State Implementation Plans.

² At the time of designation, if the available data does not support a designation of attainment or nonattainment, the area is designated as unclassifiable.

³ The Federal attainment designation for the PM_{2.5} NAAQS reflects the designation for the 2012 NAAQS. As of this analysis, attainment classification for the 2024 primary AAM PM_{2.5} NAAQS had not been completed.

CO = carbon monoxide; PM₁₀ = particulate matter 10 microns or less in diameter; PM_{2.5} = particulate matter 2.5 microns or less in diameter; NO₂ = nitrogen dioxide; SO₂ = sulfur dioxide

2.1.3 California Air Quality Regulations

2.1.3.1 California Clean Air Act

The federal CAA allows states to adopt ambient air quality standards and other regulations provided they are at least as stringent as federal standards. CARB, a part of the CalEPA, is responsible for the coordination and administration of both federal and state air pollution control programs within California, including setting the California Ambient Air Quality Standards (CAAQS). CARB also conducts research, compiles emission inventories, develops suggested control measures, and provides oversight of local programs. CARB establishes emissions standards for motor vehicles sold in California, consumer products (such as hairspray, aerosol paints, and barbecue lighter fluid), and various types of commercial equipment. It also sets fuel specifications to further reduce vehicular emissions.

In addition to primary and secondary AAQS, the state has established a set of episode criteria for ozone, CO, NO₂, SO₂, and PM. These criteria refer to episode levels representing periods of short-term exposure to air pollutants that threaten public health. Table 3, above, lists the state attainment status of the SDAB for the criteria pollutants. Under state designation, the SDAB is currently in attainment for CO, NO₂, SO₂, lead, and sulfates; unclassified for hydrogen sulfide and visibility-reducing particles; and in nonattainment for ozone (1-hour and 8-hour), PM₁₀, and PM_{2.5} (SDAPCD 2024a).

2.1.3.2 State Implementation Plan

The CAA requires areas with unhealthy levels of ozone, inhalable particulate matter, carbon monoxide, nitrogen dioxide, and sulfur dioxide to develop plans, known as State Implementation Plans (SIPs). SIPs are comprehensive plans that describe how an area will attain the NAAQS. The 1990 amendments to the CAA set deadlines for attainment based on the severity of an area's air pollution problem.

SIPs are not single documents—they are a compilation of new and previously submitted plans, programs (e.g., monitoring, modeling, permitting), district rules, state regulations, and federal controls. Many of California's SIPs rely on a core set of control strategies, including emission standards for cars and heavy trucks, fuel regulations, and limits on emissions from consumer products. State law makes CARB the lead agency for all purposes related to the SIP. Local air districts and other agencies prepare SIP elements and submit them to CARB for review and approval. CARB forwards the SIP revisions to the USEPA for approval and publication in the Federal Register. The Code of Federal Regulations (CFR) Title 40, Chapter I, Part 52, Subpart F, Section 52.220 lists all of the items that are included in the California SIP (CARB 2024c). At any one time, several California submittals are pending USEPA approval.

2.1.3.3 California Energy Code

California Code of Regulations (CCR) Title 24 Part 6, California's Energy Efficiency Standards for Residential and Nonresidential Buildings, were first established in 1978 in response to a legislative mandate to reduce California's energy consumption. Energy-efficient buildings require less electricity, natural gas, and other fuels. Electricity production from fossil fuels and on-site fuel combustion (typically for space and water heating) results primarily in GHG emissions. The California Energy Code is discussed in further detail in Section 2.2.4, below.

2.1.4 Local Regulations

2.1.4.1 Air Quality Plans

The SDAPCD and San Diego Association of Governments (SANDAG) are responsible for developing and implementing plans for the attainment and maintenance of the ambient air quality standards in the SDAB. These air quality plans provide an overview of the region's air quality and identify the pollution-control measures needed to attain and maintain air quality standards. The applicable plans for the SDAB, described below, accommodate emissions from all sources, including natural sources, through the implementation of control measures, where feasible, on stationary sources to attain the standards. Mobile sources are regulated by the USEPA and CARB, and the emissions and reduction strategies related to mobile sources are considered in the regional air quality plans and the SIP.

Attainment Plan

The regional air quality plan addressing the NAAQS for ozone in the SDAB is SDAPCD's *2020 Plan for Attaining the National Ambient Air Quality Standards for Ozone in San Diego County* (Attainment Plan). The Attainment Plan outlines SDAPCD's strategies and control measures designed to attain the NAAQS for ozone in the SDAB. Approved by the SDAPCD Board on October 14, 2020, and by CARB on November 19, 2020, the attainment plan was submitted to the USEPA on January 8, 2021, for consideration as a revision to the California SIP for attaining the ozone standards (SDAPCD 2020).

Regional Air Quality Strategy

To comply with State law, the SDAPCD must prepare an updated State Ozone Attainment Plan to identify possible new actions to further reduce emissions. Initially adopted in 1992, the Regional Air Quality Strategy (RAQS) identifies measures to reduce emissions from sources regulated by the SDAPCD, primarily stationary sources such as industrial operations and manufacturing facilities. The RAQS is periodically updated to reflect updated information on air quality, emission trends, and new feasible control measures, and was last updated in 2022 and adopted in 2023 (SDAPCD 2023).

2.1.4.2 San Diego County Air Pollution Control District Rules and Regulations

Future development pursuant to the project would be required to comply with SDAPCD Rules and Regulations which require the incorporation of best management practices during construction to reduce emissions of fugitive dust.

Rule 50 (Visible Emissions)

Particulate matter pollution impacts the environment by decreasing visibility (haze). These particles vary greatly in shape, size, and chemical composition, and come from a variety of natural and manufactured sources. Some haze-causing particles are directly emitted to the air such as windblown dust and soot. Others are formed in the air from the chemical transformation of gaseous pollutants (e.g., sulfates, nitrates, organic carbon particles) which are the major constituents of PM_{2.5}. These fine particles, caused largely by combustion of fuel, can travel hundreds of miles causing visibility impairment.

Visibility reduction is probably the most apparent symptom of air pollution. Visibility degradation is caused by the absorption and scattering of light by particles and gases in the atmosphere before it reaches the observer. As the number of fine particles increases, more light is absorbed and scattered, resulting in less clarity, color, and visual range. Light absorption by gases and particles is sometimes the cause of discolorations in the atmosphere but usually does not contribute very significantly to visibility degradation. Scattering by particulates impairs visibility much more readily. SDAPCD Rule 50 (Visible Emissions) sets emission limits based on the apparent density or opacity of the emissions using the Ringelmann scale (SDAPCD 1997).

Rule 51 (Nuisance)

SDAPCD Rule 51 (Nuisance) states that a person shall not discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or the public or which endanger the comfort, repose, health or safety of any such persons or the public or which cause or have a natural tendency to cause injury or damage to business or property. The provisions of the rule do not apply to odors emanating from agricultural operations in the growing of crops or raising of fowls or animals (SDAPCD 1976).

Rule 55 (Fugitive Dust Control)

SDAPCD Rule 55 (Fugitive Dust Control) requires action to be taken to limit dust from construction and demolition activities from leaving the property line. Similar to Rule 50 (Visible Emissions), Rule 55 (Fugitive Dust Control) places limits on the amount of visible dust emissions in the atmosphere beyond the property line. It further stipulates that visible dust on roadways as a result of track-out/carry-out

shall be minimized through implementation of control measures and removed at the conclusion of each workday using street sweepers (SDAPCD 2009).

Rule 61.3.1 (Transfer of Gasoline into USTs)

Limits emissions resulting from the transfer of gasoline into USTs by requiring implementation of CARB certified Phase I vapor recovery systems, proper operation of Phase I vapor recovery systems during fuel transfer, and inspection and maintenance of USTs and Phase I vapor recovery systems (SDAPCD 2006).

Rule 61.4.1 (Transfer of Gasoline into Vehicle Fuel Tanks)

Limits emissions resulting from the transfer of gasoline into vehicle fuel tanks by requiring implementation of CARB certified Phase II vapor recovery systems, proper operation of Phase II vapor recovery, and inspection and maintenance of USTs and Phase II vapor recovery systems (SDAPCD 2008).

Rule 67.0.1 (Architectural Coatings)

Project construction would be required to comply with the SDAPCD Rule 67.0.1 (Architectural Coatings). Effective January 1, 2022, Rule 67.0.1 requires general flat and non-flat coatings (e.g., paint) to have a VOC content of 50 grams per liter (g/L) or less and traffic marking coatings to have a VOC content of 100 g/L or less (SDAPCD 2021a).

2.2 GREENHOUSE GASES

2.2.1 Climate Change Overview

Global climate change refers to changes in average climatic conditions on Earth including temperature, wind patterns, precipitation, and storms. Global temperatures are moderated by atmospheric gases. These gases are commonly referred to as GHGs because they function like a greenhouse by letting sunlight in but preventing heat from escaping, thus warming the Earth's atmosphere.

GHGs are emitted by natural processes and human (anthropogenic) activities. Anthropogenic GHG emissions are primarily associated with: (1) the burning of fossil fuels during motorized transport, electricity generation, natural gas consumption, industrial activity, manufacturing, and other activities; (2) deforestation; (3) agricultural activity; and (4) solid waste decomposition.

The temperature record shows a decades-long trend of warming, with earth's average surface temperature in 2023 confirmed the warmest on record. Per scientists at the National Aeronautics and Space Administration's [NASA's] Goddard Institute for Space Studies, global temperatures in 2023 were around 2.1 degrees Fahrenheit (°F; 1.2 degrees Celsius) above NASA's 1951-1980 baseline period average (NASA 2024). GHG emissions from human activities are the most significant driver of observed climate change since the mid-20th century (United Nations Intergovernmental Panel on Climate Change [IPCC] 2013). The IPCC constructed several emission trajectories of GHGs needed to stabilize global temperatures and climate change impacts. The statistical models show a "high confidence" that temperature increase caused by anthropogenic GHG emissions could be kept to less than two degrees Celsius relative to pre-industrial levels if atmospheric concentrations are stabilized at about 450 parts per million (ppm) carbon dioxide equivalent (CO₂e) by the year 2100 (IPCC 2014).

2.2.2 Types of Greenhouse Gases

The GHGs defined under California's Assembly Bill (AB) 32 include carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF₆).

Carbon Dioxide. CO₂ is the most important and common anthropogenic GHG. CO₂ is an odorless, colorless GHG. Natural sources include the decomposition of dead organic matter; respiration of bacteria, plants, animals, and fungi; evaporation from oceans; and volcanic outgassing. Anthropogenic sources of CO₂ include burning fuels, such as coal, oil, natural gas, and wood. Data from ice cores indicate that CO₂ concentrations remained steady prior to the current period for approximately 10,000 years. Per data collected by the National Oceanic and Atmospheric Administration (NOAA) at the Mauna Loa Observatory in Hawaii, the average atmospheric CO₂ concentration in 2010 was 390 ppm, 39 percent above the concentration at the start of the Industrial Revolution (about 280 ppm in 1750). In 2023, the average atmospheric CO₂ concentration was 421 ppm, the highest annual average measured at the Mauna Loa Observatory since data collection began in 1959. As of May 2024, the CO₂ concentration exceeded 426 ppm, a 52 percent increase since 1750 (NOAA 2024).

Methane. CH₄ is the main component of natural gas used in homes. A natural source of methane is from the decay of organic matter. Geological deposits known as natural gas fields contain methane, which is extracted for fuel. Other sources are from decay of organic material in landfills, fermentation of manure, and cattle digestion.

Nitrous Oxide. N₂O is produced by both natural and human-related sources. N₂O is emitted during agricultural and industrial activities, as well as during the combustion of fossil fuels and solid waste. Primary human-related sources of N₂O are agricultural soil management, animal manure management, sewage treatment, mobile and stationary combustion of fossil fuel, adipic (fatty) acid production, and nitric acid production.

Hydrofluorocarbons. Fluorocarbons are gases formed synthetically by replacing all hydrogen atoms in methane or ethane with chlorine and/or fluorine atoms. Chlorofluorocarbons (CFCs) are nontoxic, nonflammable, insoluble, and chemically nonreactive in the troposphere (the level of air at Earth's surface). CFCs were first synthesized in 1928 for use as refrigerants, aerosol propellants, and cleaning solvents. They destroy stratospheric ozone; therefore, their production was stopped as required by the 1989 Montreal Protocol.

Sulfur Hexafluoride. SF₆ is an inorganic, odorless, colorless, nontoxic, nonflammable gas. SF₆ is used for insulation in electric power transmission and distribution equipment, in the magnesium industry, in semi-conductor manufacturing, and as a tracer gas for leak detection.

GHGs have long atmospheric lifetimes that range from one year to several thousand years. Long atmospheric lifetimes allow for GHG emissions to disperse around the globe. Because GHG emissions vary widely in the power of their climatic effects, climate scientists have established a unit called global warming potential (GWP). The GWP of a gas is a measure of both potency and lifespan in the atmosphere as compared to CO₂. For example, a gas with a GWP of 10 is 10 times more potent than CO₂ over 100 years. CO₂e is a quantity that enables all GHG emissions to be considered as a group despite their varying GWP. The GWP of each GHG is multiplied by the prevalence of that gas to produce CO₂e.

Historically, GHG emission inventories have been calculated using the GWPs from the IPCC’s Second Assessment Report (AR2). In 2007, IPCC updated the GWP values based on the latest science at the time in its Fourth Assessment Report (AR4). The updated GWPs in the IPCC AR4 have begun to be used in recent GHG emissions inventories. In 2013, IPCC again updated the GWP values based on the latest science in its Fifth Assessment Report (AR5) (IPCC 2013). However, the United Nations Framework Convention on Climate Change (UNFCCC) reporting guidelines for national inventories require the use of GWP values from the AR4. To comply with international reporting standards under the UNFCCC, official emission estimates for California and the U.S. are reported using AR4 GWP values, and statewide and national GHG inventories have not yet updated their GWP values to the AR5 values. GHG emissions in this analysis are reported using the AR4 GWP values.

By applying the GWP ratios, CO₂e emissions can be tabulated in metric tons per year. Typically, the GWP ratio corresponding to the warming potential of CO₂ over a 100-year period is used as a baseline. The atmospheric lifetime and GWP of selected GHGs are summarized in Table 4, *Global Warming Potentials and Atmospheric Lifetimes*.

Table 4
GLOBAL WARMING POTENTIALS AND ATMOSPHERIC LIFETIMES

Greenhouse Gas	Atmospheric Lifetime (years)	IPCC SAR GWP	IPCC AR4 GWP	IPCC AR5 GWP
Carbon Dioxide (CO ₂)	50-200	1	1	1
Methane (CH ₄)	12	21	25	28
Nitrous Oxide (N ₂ O)	114	310	298	265
HFC-134a	14	1,300	1,430	1,300
PFC: Tetrafluoromethane (CF ₄)	50,000	6,500	7,390	6,630
PFC: Hexafluoroethane (C ₂ F ₆)	10,000	9,200	12,200	11,100
Sulfur Hexafluoride (SF ₆)	3,200	23,900	22,800	23,500

Source: IPCC 2007

IPCC = Intergovernmental Panel on Climate Change; GWP = global warming potential; HFC = hydrofluorocarbon; PFC = perfluorocarbon

2.2.3 Federal Greenhouse Gas Regulations

2.2.3.1 Federal Clean Air Act

The U.S. Supreme Court ruled on April 2, 2007, in *Massachusetts v. U.S. Environmental Protection Agency* that CO₂ is an air pollutant, as defined under the CAA, and that the USEPA has the authority to regulate emissions of GHGs. The USEPA announced that GHGs (including CO₂, CH₄, N₂O, HFC, PFC, and SF₆) threaten the public health and welfare of the American people (USEPA 2024d). This action was a prerequisite to finalizing the USEPA’s GHG emissions standards for light-duty vehicles, which were jointly proposed by the USEPA and the United States Department of Transportation’s National Highway Traffic Safety Administration (NHTSA).

2.2.3.2 Light-Duty Vehicle Greenhouse Gas Emissions Standards and Corporate Average Fuel Economy Standards

The USEPA and the NHTSA worked together on developing a national program of regulations to reduce GHG emissions and improve the fuel economy of light-duty vehicles. The USEPA established the first-

ever national GHG emissions standards under the CAA, and the NHTSA established Corporate Average Fuel Economy (CAFE) standards under the Energy Policy and Conservation Act. On April 1, 2010, the USEPA and NHTSA announced a joint Final Rulemaking that established standards for 2012 through 2016 model year vehicles. This was followed up on October 15, 2012, when the agencies issued a Final Rulemaking with standards for model years 2017 through 2025.

2.2.4 California Greenhouse Gas Regulations

2.2.4.1 California Code of Regulations, Title 24, Part 6

CCR Title 24 Part 6: California's Energy Efficiency Standards for Residential and Nonresidential Buildings were first established in 1978 in response to a legislative mandate to reduce California's energy consumption. Energy-efficient buildings require less electricity, natural gas, and other fuels. Electricity production from fossil fuels and on-site fuel combustion (typically for space or water heating) results in GHG emissions. The Title 24 standards are updated approximately every three years to allow consideration and possible incorporation of new energy efficiency technologies and methods. The 2022 Title 24 standards became effective on January 1, 2023. The 2022 update to the Building Energy Efficiency Standards focuses on several key areas to improve the energy efficiency of newly constructed buildings and additions and alterations to existing buildings. New for the 2022 Title 24 standards are non-residential on-site PV (solar panels) electricity generation requirements (California Energy Commission [CEC] 2022a).

The standards are divided into three basic sets. First, there is a basic set of mandatory requirements that apply to all buildings. Second, there is a set of performance standards—the energy budgets—that vary by climate zone (of which there are 16 in California) and building type; thus, the standards are tailored to local conditions. Finally, the third set constitutes an alternative to the performance standards, which is a set of prescriptive packages that are basically a recipe or a checklist compliance approach.

2.2.4.2 California Green Building Standards Code

The California Green Building Standards Code (CALGreen; CCR Title 24, Part 11) is a code with mandatory requirements for all nonresidential buildings (including industrial buildings) and residential buildings for which no other state agency has the authority to adopt green building standards. CALGreen also contains voluntary measures (i.e., Tier 1, Tier 2) which exceed minimum regulatory requirements. The 2022 Standards for new construction of, and additions and alterations to, residential and nonresidential buildings became effective on January 1, 2023 (California Building Standards Commission [CBSC] 2022).

The development of CALGreen is intended to (1) cause a reduction in GHG emissions from buildings; (2) promote environmentally responsible, cost-effective, healthier places to live and work; (3) reduce energy and water consumption; and (4) respond to the directives by the Governor. In short, the code is established to reduce construction waste; make buildings more efficient in the use of materials and energy; and reduce environmental impact during and after construction.

CALGreen contains requirements for storm water control during construction; construction waste reduction; indoor water use reduction; material selection; natural resource conservation; site irrigation conservation; and more. The code provides for design options allowing the designer to determine how best to achieve compliance for a given site or building condition. The code also requires building commissioning, which is a process for the verification that all building systems, like heating and cooling equipment and lighting systems, are functioning at their maximum efficiency.

2.2.4.3 Executive Order S-3-05

On June 1, 2005, Executive Order (EO) S-3-05 proclaimed that California is vulnerable to climate change impacts. It declared that increased temperatures could reduce snowpack in the Sierra Nevada, further exacerbate California's air quality problems, and potentially cause a rise in sea levels. To avoid or reduce climate change impacts, EO S-3-05 calls for a reduction in GHG emissions to the year 2000 level by 2010, to year 1990 levels by 2020, and to 80 percent below 1990 levels by 2050.

2.2.4.4 Assembly Bill 32 – Global Warming Solution Act of 2006

The California Global Warming Solutions Act of 2006, widely known as AB 32, requires that CARB develop and enforce regulations for the reporting and verification of statewide GHG emissions. CARB is directed by AB 32 to set a GHG emission limit, based on 1990 levels, to be achieved by 2020. The bill requires CARB to adopt rules and regulations in an open public process to achieve the maximum technologically feasible and cost-effective GHG emission reductions.

2.2.4.5 Executive Order B-30-15

On April 29, 2015, EO B-30-15 established a California GHG emission reduction target of 40 percent below 1990 levels by 2030. The EO aligns California's GHG emission reduction targets with those of leading international governments, including the 28 nation European Union. California is on track to meet or exceed the target of reducing GHGs emissions to 1990 levels by 2020, as established in AB 32. California's new emission reduction target of 40 percent below 1990 levels by 2030 will make it possible to reach the goal established by EO S-3-05 of reducing emissions 80 percent under 1990 levels by 2050.

2.2.4.6 Senate Bill 32

Senate Bill (SB) 32 (Amendments to the California Global Warming Solutions Action of 2006) extends California's GHG reduction programs beyond 2020. SB 32 amended the Health and Safety Code to include Section 38566, which contains language to authorize CARB to achieve a statewide GHG emission reduction of at least 40 percent below 1990 levels by no later than December 31, 2030. SB 32 codified the targets established by EO B-30-15 for 2030, which set the next interim step in the State's continuing efforts to pursue the long-term target expressed in EO B-30-15 of 80 percent below 1990 emissions levels by 2050.

2.2.4.7 Assembly Bill 197

A condition of approval for SB 32 was the passage of AB 197. AB 197 requires that CARB consider the social costs of GHG emissions and prioritize direct reductions in GHG emissions at mobile sources and large stationary sources. AB 197 also gives the California legislature more oversight over CARB through the addition of two legislatively appointed members to the CARB Board and the establishment a legislative committee to make recommendations about CARB programs to the legislature.

2.2.4.8 Assembly Bill 1493 – Vehicular Emissions of Greenhouse Gases

AB 1493 (Pavley) requires that CARB develop and adopt regulations that achieve "the maximum feasible reduction of GHGs emitted by passenger vehicles and light-duty truck and other vehicles determined by CARB to be vehicles whose primary use is noncommercial personal transportation in the State." On September 24, 2009, CARB adopted amendments to the Pavley regulations that intend to reduce GHG

emissions in new passenger vehicles from 2009 through 2016. The amendments bind California's enforcement of AB 1493 (starting in 2009), while providing vehicle manufacturers with new compliance flexibility. In January 2012, CARB approved a new emissions-control program for model years 2017 through 2025. The program combines the control of smog, soot, and global warming gases and requirements for greater numbers of zero-emission vehicles into a single packet of standards called Advanced Clean Cars (CARB 2024d).

2.2.4.9 Assembly Bill 341

The state legislature enacted AB 341 (PRC Section 42649.2), increasing the diversion target to 75 percent statewide. AB 341 requires all businesses and public entities that generate 4 cubic yards or more of waste per week to have a recycling program in place. The final regulation was approved by the Office of Administrative Law on May 7, 2012, and went into effect on July 1, 2012.

2.2.4.10 Executive Order S-01-07

This EO, signed by Governor Schwarzenegger on January 18, 2007, directs that a statewide goal be established to reduce the carbon intensity of California's transportation fuels by at least 10 percent by the year 2020. It orders that a Low Carbon Fuel Standard (LCFS) for transportation fuels be established for California and directs CARB to determine whether a LCFS can be adopted as a discrete early action measure pursuant to AB 32. CARB approved the LCFS as a discrete early action item with a regulation adopted and implemented in April 2010. Although challenged in 2011, the Ninth Circuit reversed the District Court's opinion and rejected arguments that implementing LCFS violates the interstate commerce clause in September 2013. CARB is therefore continuing to implement the LCFS statewide.

2.2.4.11 Senate Bill 350

Approved by Governor Brown on October 7, 2015, SB 350 increases California's renewable electricity procurement goal from 33 percent by 2020 to 50 percent by 2030. This will increase the use of Renewables Portfolio Standard eligible resources, including solar, wind, biomass, and geothermal. In addition, large utilities are required to develop and submit Integrated Resource Plans to detail how each entity will meet their customers' resource needs, reduce GHG emissions, and increase the use of clean energy.

2.2.4.12 Senate Bill 375

SB 375, the Sustainable Communities and Climate Protection Act of 2008, supports the State's climate action goals to reduce GHG emissions through coordinated transportation and land use planning with the goal of more sustainable communities. Under the Sustainable Communities Act, CARB sets regional targets for GHG emissions reductions from passenger vehicle use. In 2010, CARB established these targets for 2020 and 2035 for each region covered by one of the State's metropolitan planning organizations (MPOs). CARB periodically reviews and updates the targets, as needed.

Each of California's MPOs must prepare a Sustainable Communities Strategy (SCS) as an integral part of its regional transportation plan (RTP). The SCS contains land use, housing, and transportation strategies that, if implemented, would allow the region to meet its GHG emission reduction targets. Once adopted by the MPO, the RTP/SCS guides the transportation policies and investments for the region. CARB must review the adopted SCS to confirm and accept the MPO's determination that the SCS, if implemented, would meet the regional GHG targets. If the combination of measures in the SCS would not meet the

regional targets, the MPO must prepare a separate alternative planning strategy (APS) to meet the targets. The APS is not a part of the RTP. Qualified projects consistent with an approved SCS or Alternative Planning Strategy categorized as “transit priority projects” would receive incentives to streamline CEQA processing.

2.2.4.13 Senate Bill 100

Approved by Governor Brown on September 10, 2018, SB 100 extends the renewable electricity procurement goals and requirements of SB 350 to 44 percent by the end of 2024, 52 percent by the end of 2027, and 60 percent by 2030. SB 100 also requires that all retail sales of electricity to California end-use customers be procured from 100 percent eligible renewable energy resources and zero-carbon resources by the end of 2045.

2.2.4.14 Executive Order N-79-20

EO N-79-20, signed by Governor Newsom on September 23, 2020, establishes three goals for the implementation of zero emissions vehicles in California: first, 100 percent of in-state sales of new passenger cars and trucks will be zero-emissions by 2035; second, 100 percent of medium- and heavy-duty vehicles in the state will be zero-emissions vehicles by 2045 for all operations where feasible, and by 2035 for drayage trucks; and third, 100 percent of off-road vehicles and equipment will be zero emissions by 2035 where feasible.

2.2.4.15 Assembly Bill 1279

Approved by Governor Newsom on September 16, 2022, AB 1279, the California Climate Crisis Act, declares the policy of the State to achieve net zero GHG emissions as soon as possible, but no later than 2045, and achieve and maintain net negative GHG emissions thereafter, and to ensure that by 2045, statewide anthropogenic GHG emissions are reduced to at least 85 percent below the 1990 levels. AB 1279 anticipates achieving these policies through direct GHG emissions reductions, removal of CO₂ from the atmosphere (carbon capture), and an almost complete transition away from fossil fuels.

2.2.4.16 Senate Bill 905

Approved by Governor Newsom on September 16, 2022, SB 905, Carbon Sequestration: Carbon Capture, Removal, Utilization, and Storage Program, requires CARB to establish a Carbon Capture, Removal, Utilization, and Storage Program to evaluate the efficacy, safety, and viability of carbon capture, utilization, or storage technologies and CO₂ removal technologies and facilitate the capture and sequestration of CO₂ from those technologies, where appropriate. SB 905 is an integral part of achieving the state policies mandated in AB 1279.

2.2.4.17 California Air Resources Board: Scoping Plan

The Scoping Plan is a strategy CARB develops and updates at least once every five years, as required by AB 32. It lays out the transformations needed across California’s society and economy to reduce emissions and reach climate targets. The current 2022 Scoping Plan is the third update to the original plan that was adopted in 2008. The initial 2008 Scoping Plan laid out a path to achieve the AB 32 mandate of returning to 1990 levels of GHG emissions by 2020, a reduction of approximately 15 percent below business as usual. The 2008 Scoping Plan included a mix of incentives, regulations, and carbon pricing, laying out the portfolio approach to addressing climate change and clearly making the case for

using multiple tools to meet California’s GHG emission targets. The 2013 Scoping Plan assessed progress toward achieving the 2020 mandate and made the case for addressing short-lived climate pollutants (SLCPs). The 2017 Scoping Plan also assessed the progress toward achieving the 2020 limit and provided a technologically feasible and cost-effective path to achieving the SB 32 mandate of reducing GHGs by at least 40 percent below 1990 levels by 2030.

On December 15, 2022, CARB approved the 2022 Scoping Plan for Achieving Carbon Neutrality (2022 Scoping Plan). The 2022 Scoping Plan lays out a path to achieve targets for carbon neutrality and reduce anthropogenic GHG emissions by 85 percent below 1990 levels no later than 2045, as directed by Assembly Bill 1279. The actions and outcomes in the plan will achieve significant reductions in fossil fuel combustion by deploying clean technologies and fuels; further reductions in SLCPs; support for sustainable development; increased action on natural and working lands to reduce emissions and sequester carbon; and the capture and storage of carbon (CARB 2022b).

2.2.5 Regional Greenhouse Gas Plans

2.2.5.1 San Diego Association of Governments San Diego Forward: The Regional Plan

SANDAG’s 2021 Regional Plan (Regional Plan) is the long-range planning document developed to address the region’s housing, economic, transportation, environmental, and overall quality-of-life needs. The underlying purpose is to provide direction and guidance on future regional growth (i.e., the location of new residential and non-residential land uses) and transportation patterns throughout the region. The 2021 Regional Plan is a 30-year plan that considers how the community will grow, where residents will live, and how residents and visitors will move around the region. It combines the RTP, SCS, and Regional Comprehensive Plan. As such, the 2021 Regional Plan must comply with specific state and federal mandates. These include an SCS, per SB 375, that achieves GHG emissions reduction targets set by the CARB; compliance with federal civil rights requirements (Title VI); environmental justice considerations; air quality conformity; and public participation (SANDAG 2021).

2.2.5.2 City of San Marcos Climate Action Plan

The City’s Climate Action Plan (CAP) was first adopted in 2013 in compliance with the adopted policies in the General Plan and consistent with the State of California’s AB 32. On December 8, 2020, the City adopted an updated CAP. The updated 2020 CAP contains a baseline 2012 City GHG inventory and establishes projected GHG emissions and reduction targets for the year 2030 to meet the State’s GHG reduction goals mandated by SB 32, and to make reasonable progress towards the State’s post-2030 GHG reduction goals, including achieving carbon neutrality statewide by 2045. The City plans to achieve the following municipal and community GHG emissions reductions (City 2020):

- 4 percent below 2012 levels by 2020, and
- 42 percent below 2012 levels by 2030.

The CAP identifies eight strategies and 22 measures to achieve these GHG emissions reduction targets and achieve proportionate progress towards the State’s post-2030 GHG reduction goals. The City’s CAP is a qualified GHG reduction plan consistent with CEQA Guidelines Section 15183.5. Development projects consistent with an applicable local qualified GHG reduction plan are eligible for streamlined GHG analysis.

2.3 ENERGY

2.3.1 Federal Regulations

At the federal level, the U.S. Department of Transportation (USDOT), the U.S. Department of Energy (DOE), and the USEPA are three agencies with significant influence over energy policies and programs. Generally, federal agencies influence and regulate transportation energy consumption through the establishment and enforcement of fuel economy standards for automobiles and light trucks, through funding of energy-related research and development projects, and through funding for transportation infrastructure improvements. Major relevant federal energy-related laws and plans are discussed below.

2.3.1.1 Federal Energy Policy and Conservation Act

First enacted in 1975, the federal Energy Policy and Conservation Act (EPCA) established fuel economy standards for on-road motor vehicles in the United States. The National Highway Traffic and Safety Administration (NHTSA), which is part of USDOT, is responsible for establishing additional vehicle standards and revising the existing standards under EPCA. Current standards require a combined passenger car and light duty truck average fuel economy of 49 miles per gallon by 2026 (NHTSA 2022). Heavy duty vehicles (i.e., vehicles and trucks over 8,500 pounds gross vehicle weight) are not currently subject to fuel economy standards. Fuel economy is determined based on each manufacturer's average fuel economy for their fleet of vehicles available for sale in the United States. On the basis of information gathered under the program, USDOT is authorized to assess penalties for noncompliance. Over its nearly 40-year history, this regulatory program has resulted in vastly improved fuel economy throughout the United States' vehicle fleet.

2.3.1.2 Energy Independence and Security Act of 2007

The federal Energy Independence and Security Act (EISA) of 2007 set increased fuel economy standards for motor vehicles as well as a renewable fuel standard, building energy efficiency standards, and appliance and lighting efficiency standards. The lighting efficiency standards required increasing levels of energy efficiency, ultimately requiring light bulbs by 2020 to consume 60 percent less energy and effectively phasing out the incandescent lightbulb.

Under the EISA, the EPA is responsible for developing and implementing regulations to ensure that transportation fuel sold in the United States contains a minimum volume of renewable fuel. Under the EISA, the renewable fuels program was expanded to include diesel fuel in addition to gasoline. The EISA also required the 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, research for alternative energy, additional research in carbon capture, international energy programs, and the creation of "green" jobs.

2.3.1.3 Intermodal Surface Transportation Efficiency Act of 1991

The Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) promoted the development of inter-modal transportation systems to maximize mobility, as well as to address national and local interests in air quality and energy. The ISTEA contained factors that metropolitan planning organizations were required to address in developing transportation plans and programs, including some energy-

related factors. To meet the new ISTEA requirements, metropolitan planning organizations adopted explicit policies defining the social, economic, energy, and environmental values that were to guide transportation decisions in that metropolitan area. The planning process for specific projects would then address these policies. Another requirement was to consider the consistency of transportation planning with federal, state, and local energy goals. Through this requirement, energy consumption was expected to become a decision criterion, along with cost and other values that determine the best transportation solution (USDOT 2024a).

2.3.1.4 The Transportation Equity Act for the 21st Century

The Transportation Equity Act for the 21st Century (TEA-21) builds upon the initiatives established in the ISTEA legislation discussed previously. TEA-21 authorizes highway, highway safety, transit, and other efficient surface transportation programs. TEA-21 continues the program structure established for highways and transit under ISTEA, such as flexibility in the use of funds, emphasis on measures to improve the environment, and focus on a strong planning process as the foundation of good transportation decisions. TEA-21 also provides for investment in research and its application to maximize the performance of the transportation system through, for example, the deployment of Intelligent Transportation Systems, to help improve operations and management of transportation systems and vehicle safety (USDOT 2024b).

2.3.2 State Regulations

At the state level, the CEC, California Public Utilities Commission (CPUC), and CARB all regulate different aspects of energy. The CPUC regulates privately owned utilities in the energy, rail, telecommunications, and water sectors. The CEC collects and analyzes energy-related data, prepares statewide energy policy recommendations and plans, promotes, and funds energy efficiency programs, and adopts and enforces appliance and building energy efficiency standards. California is exempt under federal law from setting state fuel economy standards for new on-road motor vehicles. CARB has responsibility for mobile source emissions in the state.

This section focuses primarily on policies, regulations, and laws in the state of California that directly pertain to the regulation of energy resources. Refer to Section 2.2, above, for a discussion of policies, regulations, and laws that target the reduction of GHG emissions and are expected to achieve co-benefits in the form of reduced demand for energy-related resources and enhanced efficiencies related to energy consumption.

2.3.2.1 State of California Energy Action Plan

The CEC and CPUC approved the first State of California Energy Action Plan in 2003. The plan established shared goals and specific actions to ensure that adequate, reliable, and reasonably priced electrical power and natural gas supplies are provided and identified policies, strategies, and actions that are cost-effective and environmentally sound for California's consumers and taxpayers. In 2005, a second Energy Action Plan was adopted by the CEC and CPUC to reflect various policy changes and actions of the prior two years. In 2008, the CEC and CPUC determined that it was not necessary or productive to prepare a new energy action plan. This determination was based in part on a finding that the state's energy policies have been significantly influenced by the passage of AB 32, the California Global Warming Solutions Act of 2006 (discussed above). Rather than produce a new energy action plan, the CEC and

CPUC prepared an “update” that examines the state’s ongoing actions in the context of global climate change (CPUC 2008).

2.3.2.2 California Building Standards

CCR Title 24 Part 6, California’s Energy Efficiency Standards for Residential and Nonresidential Buildings, and CCR Title 24 Part 6, California Green Building Standards Code, are discussed in Section 2.2.4, above.

3.0 EXISTING CONDITIONS

The project site is currently developed with a 142,962 SF wholesale store, loading dock, parking areas, driveways, and landscaping. Land uses surrounding the project site include commercial to the south; commercial and industrial to the east and northeast (across South Bent Avenue); commercial to the north (across CA-78); and open space, industrial, commercial, and mixed-use to the west (see Figure 2).

3.1 CLIMATE AND METEOROLOGY

The climate in southern California, including the SDAB, is controlled largely by the large-scale meteorological condition that dominates the west coast of the United States: a seasonally semi-permanent high-pressure cell centered over the northeastern Pacific Ocean, called the Pacific high, which keeps most storms from affecting the California coast. Areas within 30 miles of the coast in the San Diego region, including the project site, experience moderate temperatures and comfortable humidity.

Temperature inversion layers (inversions; layers of warmer air over colder air) affect air quality conditions significantly because they influence the mixing depth (i.e., the vertical depth in the atmosphere available for diluting air contaminants near the ground). The highest air pollutant concentrations in the SDAB generally occur during inversions. During the summer, air quality problems in the SDAB are created due to the interaction between the ocean surface and the lower layer of the atmosphere, creating a moist marine layer. An upper layer of warm air mass forms over the cool marine layer, preventing air pollutants from dispersing upward. Additionally, hydrocarbons and NO₂ react under the strong, abundant sunlight in the San Diego region, creating smog. Light, daytime winds, predominantly from the west, further aggravate the condition by driving the air pollutants inland, toward the foothills. During the fall and winter, air quality problems are created due to CO and NO₂ emissions. High NO₂ levels usually occur during autumn or winter, on days with summer-like conditions.

The predominant wind direction in the vicinity of the project site is from the west-southwest and the average wind speed is approximately 5.5 miles per hour (mph), as measured at the McClellan-Palomar airport approximately 5 miles west of the project site (Iowa Environmental Mesonet 2024). The annual average maximum temperature in the project area is approximately 77 °F; the annual average minimum temperature is approximately 52 °F; and total precipitation in the project area averages approximately 15 inches annually, as measured at the Escondido 2 climatic station approximately 6 miles southeast of the project site (Western Regional Climate Center 2024). Precipitation occurs mostly during the winter and relatively infrequently during the summer.

3.2 SENSITIVE RECEPTORS

CARB and the Office of Environmental Health Hazard Assessment (OEHHA) have identified the following groups of individuals, known as sensitive receptors, as the most likely to be affected by air pollution: adults over 65, children under 14, infants (including in utero in the third trimester of pregnancy), and persons with cardiovascular and chronic respiratory diseases such as asthma, emphysema, and bronchitis (CARB 2005; OEHHA 2015). Some land uses are considered more sensitive to air pollution than others due to the types of population groups or activities involved and are referred to as sensitive receptor locations. Examples of these sensitive receptor locations are residences, schools, hospitals, and daycare centers.

The closest existing sensitive receptor location to the project site is a daycare center approximately 120 feet west of the project site (1,100 feet southwest of the proposed fuel facility canopy). Two additional daycare centers are located approximately 490 feet southwest of the project site (1,730 feet southwest of the proposed fuel facility canopy) and 700 feet east of the project site (940 feet southeast of the proposed fuel facility canopy). The closest residence to the project site is a single-family home approximately 310 feet south of the project site (1,260 feet south of the proposed fuel facility canopy). Additional residences include multi-family buildings approximately 1,065 feet southeast of the project site (1,940 feet southeast of the proposed fuel facility canopy) and 1,390 feet north of the project site (1,530 feet north of the proposed fuel facility canopy). The closest school to the project site is the Montessori School of San Marcos located approximately 2,890 feet (0.55 mile) northeast of the project site. The closest hospital to the project site is the Kaiser Permanente San Marcos Medical Center located approximately 4,400 feet (0.83 mile) southeast of the project site. Potential future sensitive receptor locations near the project site include an approved mixed-use residential and commercial specific plan located northwest of the project site across Linda Vista Drive, and parcels zoned for mixed-use adjacent to the project site's southwestern property line between Boardwalk and West San Marcos Boulevard (located approximately 1,130 feet southwest of the proposed fuel facility canopy). See Figure 4, *Modeled Receptor Locations*.

3.3 EXISTING AIR QUALITY

Attainment designations are discussed in Section 2.1 and Table 3. The SDAB, including the project site, is a federal and state nonattainment area for ozone and a state nonattainment area for PM₁₀ and PM_{2.5}.

3.3.1 Monitored Air Quality

The SDAPCD operates a network of ambient air monitoring stations throughout the San Diego region. The purpose of the monitoring stations is to measure ambient concentrations of criteria air pollutants and determine whether the ambient air quality meets state and federal standards, pursuant to the CAAQS and the NAAQS. The nearest ambient monitoring station to the project site is the Rancho Carmel Drive monitoring station located approximately 12 miles south of the project site. However, the Rancho Carmel Drive monitoring station only has data from the last three years for PM_{2.5} and NO₂ concentrations. The San Diego-Kearny Villa Road monitoring station (approximately 21 miles south of the project site) has data for ozone concentrations. There are no monitoring stations in San Diego County with data for PM₁₀ in the last three years. Air quality data collected at the three monitoring stations for the years 2020 through 2022 are shown in Table 5, *Air Quality Monitoring Data*.

Table 5
AIR QUALITY MONITORING DATA

Pollutant Standard	2021	2022	2023
Ozone (O₃) – Kearny Villa Road			
Maximum concentration 1-hour period (ppm)	0.095	0.095	0.091
Maximum concentration 8-hour period (ppm)	0.071	0.083	0.079
Days above 1-hour state standard (>0.09 ppm)	1	1	0
Days above 8-hour state/federal standard (>0.070 ppm)	2	2	3
Fine Particulate Matter (PM_{2.5}) – Rancho Carmel			
Maximum 24-hour concentration (µg/m ³)	23.5	14.9	23.2
Measured Days above 24-hour federal standard (>35 µg/m ³)	0	0	0
Annual average (µg/m ³)	8.5	7.6	6.9
Exceed state and federal annual standard (12 µg/m ³)	No	No	No
Nitrogen Dioxide (NO₂) – Rancho Carmel			
Maximum 1-hour concentration (ppm)	0.054	0.056	0.053
Days above state 1-hour standard (0.18 ppm)	0	0	0
Days above federal 1-hour standard (0.100 ppm)	0	0	0
Annual average (ppm)	0.013	0.015	0.014
Exceed annual federal standard (0.053 ppm)	No	No	No
Exceed annual state standard (0.030 ppm)	No	No	No

Source: CARB 2025

ppb = parts per billion; ppm = parts per million; µg/m³ = micrograms per cubic meter

As shown in Table 5, monitoring data at the Kearny Villa Road station reported one exceedance of the 1-hour state ozone standard in 2021 and 2022. Monitoring data at the Kearny Villa Road station exceeded the 8-hour state/federal ozone standard on 2 days in 2021 and 2022, and on 3 days in 2023. The Rancho Carmel Drive station reported no federal standard for PM_{2.5} exceedances from 2021 through 2023. No exceedances of the state or federal standards for NO₂ occurred from 2021 to 2023 (CARB 2025).

3.4 GREENHOUSE GAS INVENTORIES

3.4.1 Worldwide and National Greenhouse Gas Inventory

In 2020, total anthropogenic GHG emissions worldwide were estimated at 49,800 million metric tons (MMT) of CO₂e emissions (PBL Netherlands Environmental Assessment Agency [PBL] 2022). The five largest emitting countries and the European Union, together account for about 60 percent of total global GHG emissions: China (27 percent), the United States (12 percent), the European Union (about 7 percent), India (7 percent), the Russian Federation (4.5 percent) and Japan (2.4 percent) (PBL 2022).

Per USEPA Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990–2020, total United States GHG emissions were approximately 5,981 MMT CO₂e in 2020 (USEPA 2022). The primary GHG emitted by human activities in the United States was CO₂, which represented approximately 76.4 percent of total GHG emissions (4,760 MMT CO₂e). The largest source of CO₂, and overall GHG emissions, was fossil-fuel combustion, which accounted for approximately 92.8 percent of CO₂ emissions in 2018 (5,031.8 MMT CO₂e). Relative to 1990, gross United States GHG emissions in 2020 were lower by 7.3 percent, down from a high of 15.2 percent above 1990 levels in 2007. GHG emissions decreased from 2019 to 2020 by 10.6 percent and overall, net emissions in 2020 were 21.4% below 2005 levels (USEPA 2022).



3.4.2 State Greenhouse Gas Inventory

CARB performed statewide inventories for the years 2000 to 2021, as shown in Table 6, *California Greenhouse Gas Emissions by Sector*. The inventory is divided into seven broad sectors of economic activity: agriculture, commercial and residential, electricity generation, industrial, transportation, High GWP, and Recycling and Waste (CARB 2024e). For comparison, the 1990 baseline inventory for AB 32 is also shown in Table 6 (CARB 2007). Emissions are quantified in MMT CO₂e.

Table 6
CALIFORNIA GREENHOUSE GAS EMISSIONS BY SECTOR

Sector	Emissions (MMT CO ₂ e)			
	1990	2000	2010	2021
Agriculture and Forestry	18.9 (4%)	30.8 (7%)	34.0 (8%)	30.9 (8%)
Commercial and Residential	44.1 (10%)	44.3 (10%)	46.0 (12%)	38.8 (10%)
Electricity Generation	110.5 (26%)	104.7 (23%)	90.3 (20%)	62.4 (16%)
High Global Warming Potential	-	6.6 (1%)	13.7 (3%)	21.3 (6%)
Industrial	105.3 (24%)	92.8 (20%)	88.1 (20%)	73.9 (19%)
Recycling and Waste	-	6.8 (1%)	7.8 (2%)	8.4 (2%)
Transportation	150.6 (35%)	175.3 (38%)	162.9 (37%)	145.6 (38%)
Unspecified Remaining	1.3 (<1%)	0.3 (<1%)	0.3 (<1%)	0.0 (0%)
Total	430.7	461.6	442.7	381.3

Source: CARB 2007; CARB 2024e

MMT = million metric tons; CO₂e = carbon dioxide equivalent; - = not analyzed

As shown in Table 6, statewide GHG source emissions totaled 430.7 MMT CO₂e in 1990, 471.1 MMT CO₂e in 2000, 448.5 MMT CO₂e in 2010, and 381.3 MMT CO₂e in 2021. Transportation-related emissions consistently contribute the most GHG emissions, followed by electricity generation and industrial emissions (CARB 2007 and CARB 2024e).

3.4.3 Local Greenhouse Gas Inventory

As part of their CAP baseline, the City compiled a GHG inventory. The 2012 CAP baseline inventory as well as emissions inventories from 2013 and 2014 are shown in Table 7, *City of San Marcos Greenhouse Gas Inventory*. As shown in Table 7, the on-road transportation sector contributed the most GHG emissions in the City (City 2020).

Table 7
CITY OF SAN MARCOS GREENHOUSE GAS INVENTORY

Sector	2012 Emissions (MT CO ₂ e) ¹	2013 Emissions (MT CO ₂ e) ¹	2014 Emissions (MT CO ₂ e) ¹
On-Road Transportation	322,000 (54%)	323,000 (54%)	323,000 (57%)
Electricity	162,000 (27%)	156,000 (26%)	138,000 (24%)
Natural Gas	75,000 (13%)	77,000(13%)	66,000(12%)
Solid Waste	15,000 (3%)	14,000 (2%)	13,000 (2%)
Off-Road Transportation	14,000 (2%)	14,000 (2%)	14,000 (2%)
Water	9,000 (2%)	9,000 (2%)	9,000 (2%)
Wastewater	3,000 (1%)	3,000 (1%)	3,000 (1%)
Total	600,000	595,000	566,000

Source: City 2020

¹ Total may not sum due to rounding.

MT = metric tons; CO₂e = carbon dioxide equivalent

3.5 ENERGY

3.5.1 Existing Infrastructure

Electricity and natural gas service is currently provided to the project site by the San Diego Gas & Electric Company (SDG&E).

3.5.2 Electricity

Electricity usage for different land use categories varies depending on the type of electricity used in a building, the types of construction materials used in constructing the building, and the efficiency of the electricity-consuming devices used within the building. Electricity usage per capita in California has remained stable for more than thirty years because of the state's energy efficiency building standards and efficiency and conservation programs, even as the national average electricity usage per capita has steadily increased (CEC 2014).

California's electricity system has been undergoing a considerable shift from non-renewable to renewable sources in recent years. The energy resource mix has substantially changed in the past decade as new renewable energy sources have come online, and the CEC reports that coal use for California electricity sources shrank from 16.6 percent to 3 percent between 2007 and 2020, and coal use for California electricity demand will be drop to nearly zero by 2026 (CEC 2021a).

In 2022, total utility-scale electricity generation in the state of California was 287,220 gigawatt-hours (GWh), which was an increase of approximately 3.4 percent from 2021 (CEC 2022b). SDG&E serves approximately 3.7 million customers in a 4,100-square-mile service area that includes San Diego and southern Orange Counties (SDG&E 2024a). Per SDG&E reported energy use data, SDG&E customers consumed approximately 4,101 GWh of electricity in 2023 (SDG&E 2024b).

3.5.3 Natural Gas

Natural gas utility rates and services are regulated by the CPUC. In 2018, California gas utilities forecasted that they would deliver approximately 4,740 million cubic feet per day of gas to their customers, on average, under normal weather conditions. The majority of natural gas utility customers in California are residential and small commercial customers, although these customers consume only approximately 35 percent of natural gas used in the state. SDG&E provides natural gas services to San Diego County and the project area would continue to provide natural gas to the project site upon implementation of the project. SDG&E is a wholesale customer of Southern California Gas Company (SoCalGas) and currently receives all its natural gas supply from the SoCalGas System (CPUC 2024).

Most of the natural gas used in California is sourced from out-of-state natural gas basins. The state does not receive liquefied natural gas supplies. Biogas, including gas from wastewater treatment plants and dairy farms, has recently begun to be used, and the State has been encouraging its development and expansion. Natural gas from out-of-state production basins is delivered to California via the interstate natural gas pipeline system. This gas is then delivered via SoCalGas and Pacific Gas and Electric (PG&E)'s statewide network to local transmission and distribution pipelines or local storage fields (CPUC 2024).

Statewide natural gas demand is expected to decrease at an annual average rate of 1.0 percent through 2035. The decline in throughput demand is due to modest economic growth, CPUC-mandated energy efficiency standards and programs, and SB 350 goals. Other factors that contribute to the downward trend are tighter standards created by revised Title 24 Codes and Standards, renewable electricity goals, a decline in core commercial and industrial demand, and conservation savings linked to Advanced Metering Infrastructure (California Gas and Electric Utilities 2020).

3.5.4 Transportation Fuel

Automobiles and trucks consume gasoline and diesel fuel, which are non-renewable energy products derived from petroleum. As of the end of 2022, California had approximately 35.6 million registered vehicles which consumed approximately 13.6 billion gallons of gasoline and 3.1 billion gallons of diesel during the year (California Department of Motor Vehicles [DMV] 2024; California Department of Tax and Fee Administration 2024). Gasoline and other vehicle fuels are commercially provided commodities that would be available to the project through commercial outlets.

The 2021 Integrated Energy Policy Report (IEPR) provides the CEC's assessment of energy issues facing the state of California. The IEPR includes a transportation energy and demand forecast that considers vehicles and associated fuels, consumer preferences, regulatory impacts, economic and demographic factors, and projected improvements in technology. The most recent forecast estimated that between 2021 and 2035, gasoline fuel demand for transportation in California will decline primarily due to increases in electrification and the use of zero-emission vehicles. Petroleum-based fuels will continue to represent the largest shares of transportation energy demand. Under the high-demand case for light duty vehicles, gasoline consumption will drop from approximately 13.8 billion gross gasoline equivalents (GGE) in 2020 to approximately 11 billion GGE in 2035. Electricity consumption for transportation would increase from less than one billion GGE in 2020 to approximately four billion GGE, which includes raw energy used by the plug in-vehicles (PEVs), but also the gasoline energy avoided by using more PEVs. Diesel energy forecast is less than one GGE in 2020 and will remain roughly the same in 2035 (CEC 2021b).

4.0 METHODOLOGY AND SIGNIFICANCE CRITERIA

4.1 METHODOLOGY

Criteria pollutant and GHG emissions for the operation of the existing land use on the project site and for construction and operation of the project were calculated using the California Emission Estimator Model (CalEEMod) Version 2022.1. CalEEMod is a computer model used to estimate air emissions resulting from land development projects throughout the state of California. CalEEMod was developed by the California Air Pollution Control Officers Association (CAPCOA) in collaboration with the California air quality management and air pollution control districts. The calculation methodology, source of emission factors used, and default data is described in the CalEEMod User's Guide, and Appendices C, D, and G (CAPCOA 2022).

In brief, CalEEMod is a computer model that estimates criteria for air pollutant and greenhouse gas emissions from mobile (i.e., on-road vehicular) sources, area sources (e.g., fireplaces, wood stoves, landscape maintenance equipment, and consumer products), energy use (electricity and natural gas used in space heating, ventilation, and cooling; lighting; and plug-in appliances), water use and

wastewater generation, solid waste disposal, and refrigerants. Emissions are estimated based on land use information input to the model by the user.

In the first module, the user defines the specific land uses that will occur at the project site. The user also selects the appropriate land use setting (urban or rural), operational year, location, climate zone, and utility provider. The input land uses, size features, and population are used throughout CalEEMod in determining default parameters and calculations in each of the subsequent modules. The input land use information consists of land use subtypes (such as convenience stores with gas pumps) and their unit or square footage quantities.

Subsequent modules include construction and operations, each of which contains submodules including off-road equipment, mobile sources (on-road vehicle emissions), area sources (e.g., architectural coatings [painting], consumer products [cleansers, aerosols, solvents]), water and wastewater, solid waste, and refrigerants. Each module comprises multiple components including an associated mitigation module to account for further reductions in the reported baseline calculations. Other inputs include trip generation rates, trip lengths, vehicle fleet mix (percentage autos, trucks, etc.), trip distribution (percent work to home, etc.), duration and schedule of construction activities, construction equipment usage, construction material import and export, as well as other parameters.

In various places, the user can input additional information and/or override the default assumptions to account for project- or location-specific parameters. For this assessment, the default parameters were not changed unless project-specific information was available and noted. The CalEEMod output files are included in Appendix A to this report.

Mobiles source emissions (from customer and employee vehicles, fuel delivery trucks, and vehicles idling on the project site) were calculated using data from CARBs mobile source emission inventory (EMFAC) EMFAC2021 version 1.0.2 (CARB 2024f).

4.1.1 Construction Emissions

Construction emissions were estimated using CalEEMod based on the proposed construction phases and equipment described below.

4.1.1.1 Construction Activities

Construction activities would include demolition/site preparation (demolition of asphalt/concrete and removal of landscaping), grading, underground utilities and tanks, gas station construction, paving, and architectural coatings (primarily parking lot and driveway pavement marking). Construction emissions were estimated based on the timeline provided by the project engineer (Barghausen Consulting Engineers 2023). Construction would commence in January 2025 and be complete in April 2025. The quantity, duration, and intensity of construction activity influence the amount of construction emissions and related pollutant concentrations that occur at any one time. As such, the emission forecasts provided herein reflect a specific set of conservative assumptions based on the expected construction scenario wherein a relatively large amount of construction activity is occurring in a relatively intensive manner. Because of this conservative assumption, actual emissions could be less than those forecasted. If construction would be delayed or occur over a longer period, emissions could be reduced because of (1) a more modern and cleaner-burning construction equipment fleet mix than assumed in the modeling; and/or (2) a less intensive buildout schedule (i.e., fewer daily emissions occurring over a longer time interval).

The construction schedule modeling was based on estimates from the project engineer (Barghausen Consulting Engineers 2023). Construction was assumed to occur five days per week with equipment operating up to eight hours per day. The anticipated construction schedule is shown below in Table 8, *Anticipated Construction Schedule*.

Table 8
ANTICIPATED CONSTRUCTION SCHEDULE

Construction Activity	Construction Period Start	Construction Period End	Number of Working Days
Demolition/Site Preparation	1/2/2025	1/15/2025	10
Grading	1/16/2025	1/22/2025	5
Underground Utilities and Tanks	1/23/2025	2/13/2025	16
Gas Station Construction	2/14/2025	3/20/2025	25
Paving	3/21/2025	3/27/2025	5
Architectural Coatings	3/28/2025	4/10/2025	10

Source: Barghausen Consulting Engineers 2023

4.1.1.2 Construction Off-Road Equipment

Construction would require the use of heavy off-road equipment. Construction equipment modeling was based on estimates from the project engineer (Barghausen Consulting Engineers 2023). Table 9, *Construction Equipment*, presents a summary of the modeled equipment.

Table 9
CONSTRUCTION EQUIPMENT

Equipment	Horsepower	Number	Hours/Day
<i>Demolition/ Site Preparation</i>			
Backhoes/Skip loaders	84	2	8
Caterpillar 336 Excavators	300	2	8
Caterpillar 308 Excavators	70	1	8
Caterpillar 303 Excavators	24	1	8
Caterpillar 966 Loaders	321	1	8
Water Trucks	376	1	4
<i>Grading</i>			
Backhoes/Skip loaders	84	3	8
Skid Steer Loaders	77	1	8
Rollers (1 smooth and 1 sheepsfoot)	36	2	8
Water Trucks	376	1	4
<i>Underground Utilities and Tanks</i>			
Backhoes/Skip loaders	84	3	8
Skid Steer Loaders	77	1	8
Rollers (1 smooth and 1 sheepsfoot)	36	2	8
Water Trucks	376	1	4
<i>Gas Station Construction</i>			
Forklifts	82	1	8
Aerial Lifts (2 boom and 2 scissors)	46	4	8
<i>Paving</i>			
Pavers	81	1	8

Equipment	Horsepower	Number	Hours/Day
Rollers	36	2	8
Backhoes	84	1	8
Architectural Coating			
Air Compressors	37	1	6

Source: Barghausen Consulting Engineers 2023

4.1.1.3 Construction On-Road Trips

Worker commute trips and delivery trips for demolition/site preparation, grading, underground utilities and tanks, and paving were modeled based on CalEEMod defaults and would range from 10 to 20 trips per day, with the following exceptions. The CalEEMod default building construction (gas station construction) worker and vendor trips were near zero; instead, 20 worker trips (crew of 10) and 10 vendor trips (includes 3 to 4 truckloads of concrete per day) per day were assumed. The CalEEMod default architectural coating worker trips were near zero; instead, 8 worker trips (crew of 4) per day were assumed. Based on estimates from the project civil drawing package, approximately 6 truckloads of vegetation (1 to 2 one-way trips per day), and approximately 3,615 tons of asphalt and concrete (approximately 90 one-way trips per day) were assumed to be exported from the project site during demolition/site preparation. Per the project engineer, grading would result in approximately 140 truckload of soil export, resulting in approximately 56 one-way trips per day. Based on an estimate of 12 inches of uncompressed aggregate and pavement depth, approximately 180 tandem trailer truckloads (72 one-way trip per day) of asphalt and aggregate would be imported to the project site during paving. The CalEEMod default worker, vendor and haul trip distances, and default fleet mixes, were used in the model.

4.1.1.4 Construction Architectural Coatings

Architectural coatings applied during construction would primarily be for parking lot and driveway marking, with some painting for the small mechanical room/storage area. Per CalEEMod defaults for San Diego County all interior and exterior building coatings would have a maximum VOC content of 50 g/L and pavement marking would have a maximum VOC content of 100 g/L. These VOC content assumptions are consistent with the SDAPCD Rule 67.0.1 VOC limits, as discussed in Section 2.1.4.2.

4.1.2 Operational Emissions

Operational impacts were estimated using CalEEMod. Operational sources of emissions include mobile (transportation); area, energy, water/wastewater, and solid waste.

4.1.2.1 Mobile (Transportation) Sources

Operational emissions from mobile sources are associated with project-related vehicle miles traveled (VMT) and vehicle trips. Per the project VMT analysis, the project would result in a reduction in regional VMT of 1,565 miles per day for project customers (existing customer trips would be replaced with trips with an average shorter distance) and an increase in VMT of 116 miles per day for employees (8 new employee round trips per day) resulting in a net reduction in VMT of 1,499 (a reduction of approximately 528,885 miles per year) for cars, light trucks, and medium duty vehicles (Kittelson 2024a). The VMT analysis did not include fuel delivery trucks. All project fuel deliveries were assumed to result in new VMT in the region. Delivery truck on-road emissions were calculated using data from EMFAC, based on an estimate of 10 one-way fuel delivery truck trips per day (3,650 one-way trips per year) from

the VMT analysis (Kittelson 2024a), and a one-way fuel truck trip distance of 27 miles estimated by the project team. The net change in regional mobile emissions resulting from operation of the project (accounting for the reduction in customer VMT) was calculated using data from EMFAC2021 for San Diego County in 2026. Emissions from the following processes were included in the project emissions inventory (CARB 2021a):

Running Exhaust (RUNEX) – Emissions from the vehicle tailpipe while traveling on the road. Vehicle idling emissions were assumed to be approximately equivalent to the RUNEX emissions for vehicles traveling at 5 mph. Project RUNEX emissions were assumed to occur at an average annual ambient temperature of 60 °F and average annual humidity of 74 percent.

Start Exhaust (STREX) – Emissions from the vehicle tailpipe when starting a vehicle. These emissions are independent of RUNEX emissions and represent the emissions occurring during the initial running period when the treatment system (e.g., catalytic converter) and engine are warming up. The magnitude of STREX emissions is dependent on how long the vehicle has been sitting prior to starting. Each vehicle in the gas station queue and gas pump area was assumed to start its engine once after sitting for 5 minutes. STREX emissions are also dependent on the ambient air temperature, lower ambient temperatures result in a cooler treatment system and engine and slightly higher STREX emissions. Project STREX emissions were assumed to occur at an average annual ambient temperature of 60 °F.

Diurnal Emissions (DIURN) – Evaporative hydrocarbon emissions that occur when rising ambient temperatures cause fuel evaporation from vehicles sitting throughout the day. These losses are from leaks in the fuel system, fuel hoses, connectors, as a result of the breakthrough of vapors from the carbon canister.

Hot Soak (HOTOAK) – Evaporative hydrocarbon emissions that begin immediately from heated fuels after a car stops its engine operation and continue until the fuel tank reaches ambient temperature. Each vehicle in the gas station queue and gas pump area was assumed to stop its engine once.

Running Loss (RUNLOSS) – Evaporative hydrocarbon emissions that occur as a result of hot fuel vapors escaping from the fuel system or overwhelming the ORVR system while the vehicle is operating.

Idling Exhaust Emissions (IDLEX) – For heavy-duty diesel-powered vehicles only, EMFAC reports emissions from the truck exhaust stack during idling.

Tire Wear Particulate Matter Emissions (PMTW) – PM emissions that originate from tires as a result of wear.

Brake Wear Particulate Matter Emissions (PMBW) – PM emissions that originate from brake usage.

Mobile Source Emissions Calculations

Fleet Mix

Fuel delivery trucks were assumed to be heavy-duty trucks with vehicle gross weights of 33,000 pounds or greater. The mix of customer vehicles operating in the gas station queue and gas pump area was calculated using the ratio of vehicle classes from the CalEEMod default fleet mix for San Diego County. Vehicles refueling at the proposed gas station were assumed to be a combination of cars, light trucks (e.g., pickups), and medium-duty vehicles (trucks and vans with a gross vehicle weight rating between

6,000 and 8,500 pounds). All customer vehicles were assumed to be gasoline-powered or plug-in hybrid (a combination of gasoline and electric power). Employee vehicles were assumed to be gasoline, diesel, electric, or plug-in hybrid powered. The mix of fuel types was calculated using regional VMT data from EMFAC2021. The modeled fleet mix for employee and customer vehicles refueling at the proposed gas station is shown in Table 14, *Customer and Employee Fleet Mix*. A printout of the fleet mix calculation sheet is included in Appendix B, *Mobile Source Emissions Calculations*.

Table 10
CUSTOMER AND EMPLOYEE FLEET MIX

Vehicle Class	Percent of Total
LDA (passenger cars)	55.2%
LDT1 (light duty trucks with test weights less than 3,750 pounds)	5.4%
LDT2 (light duty trucks with test weights from 3,750 to 5,750 pounds)	24.5%
MDV (medium duty vehicles with a gross weight between 6,000 and 8,500 pounds)	14.9%

Source: CalEEMod

Off-Site Mobile Emissions

Criteria pollutant and GHG emissions from vehicles traveling to and from the project site were calculated using data from the VMT analysis and emissions factors from EMFAC2021. Emissions from VMT-based processes (RUNEX, RUNLOSS, PMTW, and PMBW) emissions were calculated using the VMT reported in the project VMT analysis, as described above, and emissions factors calculated from EMFAC2021 for aggregated vehicle speeds. For employee and fuel delivery truck emissions from trip-based processes (STREX, DIURN, and HOTSOAK) were calculated using on the round trips estimated from the project VMT analysis, 8 employee and 10 fuel delivery truck round trips per day (Kittelsohn 2024a), and using emissions factors calculated from EMFAC2021. Based on the VMT analysis of customer VMT reductions, project customer trips were assumed to be a redistribution of trips in the region which would not result in decreases or increases in off-site trip-based emissions (STREX, DIURN, and HOTSOAK).

Vehicle Queue Emissions

Although it is likely that overall regional vehicle idling time would not increase as a result of project implementation, to be conservative, emissions from all project gas station customer vehicles idling and operating in the gas station queue and gas pump area, and fuel delivery trucks idling on the project site were assumed to be new and were calculated and included in the project's emissions inventory. On-site vehicle idling emissions were calculated using data from EMFAC2021.

Criteria pollutant and GHG emissions from vehicles operating in the gas station queue and pump area used in this analysis were calculated using data and emissions factors from EMFAC2021. Idling emissions and RUNLOSS emissions calculations were based on the total vehicle idling minutes calculated by the traffic engineer: 2,371 vehicle-minutes per day Monday through Friday and 6,492 vehicle-minutes per day Saturday and Sunday (Kittelsohn 2024b). GHG emissions from idling and RUNLOSS emissions were based on the annual 1,295,176 vehicle-minutes per year. Maximum daily criteria pollutant emissions from Idling and RUNLOSS were based on the 6,492 peak day vehicle idling minutes. STREX and HOTSOAK emission calculations were based on the number of vehicles entering the gas station as reported in the Local Transportation analysis: 5,913 average daily trips (ADT) (Kittelsohn 2024c). A printout of the emissions calculation sheet, including a breakdown of emissions by process, is included in Appendix B.

Fuel Delivery Truck Idling Emissions

Criteria pollutant and GHG emissions from heavy-duty fuel delivery trucks idling on the project site were included in the project's emissions inventory. CARB's Airborne Toxic Control Measure to limit diesel-fueled commercial motor vehicle idling (Title 13, CCR, section 2485) prohibits diesel-fueled commercial motor vehicles with gross vehicle weight ratings greater than 10,000 pounds from idling the vehicle's primary diesel engine longer than five minutes at any location. Fuel delivery trucks were assumed to idle at the offloading area for the maximum allowable five minutes. A printout of the emissions calculation sheet is included in Appendix B.

4.1.2.2 Area Sources

Area sources include emissions from landscaping equipment, the use of consumer products, and the reapplication of architectural coatings for maintenance. Emissions associated with area sources were estimated using the CalEEMod default values.

4.1.2.3 Energy Sources

Operation of the project site use electricity for lighting and gas station equipment. Electricity generation typically entails the combustion of fossil fuels, including natural gas and coal, which is then transmitted to end users. A building's electricity use is thus associated with the off-site or indirect emission of GHGs at the source of electricity generation (power plant). The project would not use natural gas. Electricity use was modeled using CalEEMod defaults.

4.1.2.4 Water and Wastewater Sources

Water-related GHG emissions are from the conveyance and treatment of water and wastewater. The project would not include restrooms, or any other indoor water uses. Outdoor water use (i.e., landscape irrigation) was modeled using CalEEMod defaults.

4.1.2.5 Solid Waste Sources

The disposal of solid waste produces GHG emissions from anaerobic decomposition in landfills, incineration, and transportation of waste. CalEEMod determines the GHG emissions associated with disposal of solid waste into landfills. Portions of these emissions are biogenic. CalEEMod methods for quantifying GHG emissions from solid waste are based on the IPCC method using the degradable organic content of waste. Solid waste was modeled using CalEEMod defaults.

4.1.2.6 Gas Station ROG Emissions

Gasoline vapor emissions from the loading and storage of gasoline in USTs, and from refueling of vehicles are comprised mostly of ROG. Emissions of ROG from the project retail gasoline dispensing activities were calculated using emission factors in pounds of total organic gases per 1,000 gallons of gasoline throughput from CARB's *Revised Emission Factors for Gasoline Marketing Operations at California Gasoline Dispensing Facilities* (CARB 2013a). A printout of the ROG calculation sheet is included in Appendix C, *Gas Station Organic Gases Calculations*, to this report.

4.2 HEALTH RISK ASSESSMENT METHODOLOGY

Potential health risks to nearby sensitive receptors from the emission of TACs during operation of the project's gas station, including from gasoline dispensing, from vehicles idling and operating in the gas station queue and gas pump area, and from the diesel powered trucks operating on the project site for bulk delivery of gasoline, were analyzed in accordance with the CARB's *Gasoline Service Station Industrywide Risk Assessment Technical Guidance* (CARB 2022a), CARB's *Revised Emission Factors for Gasoline Marketing Operations at California Gasoline Dispensing Facilities* (CARB 2013a), CAPCOA's *Gasoline Service Station Industrywide Risk Assessment Guidelines* (CAPCOA 1997), and OEHHA's *Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments* (OEHHA 2015).

4.2.1 Gas Station TAC Modeling

4.2.1.1 Gasoline Vapor TAC Speciation

The TAC speciation (mix of chemicals listed as TACs) in gasoline is dependent on regulated formulations. California has a summer and a winter formulation, with the summer formulation having higher a TAC content. In accordance with the CARB technical guidance, chronic (long-term) health effects were analyzed assuming an average annual TAC speciation based on 59.2 percent summer formulation and 40.8 percent winter formulation (CARB 2022a). Acute (short-term) health effects were analyzed assuming the higher TAC content in the summer formulation (CARB 2022a). Table 11, *TAC Percent Weight in Gasoline Vapor*, shows the TAC speciation in gasoline vapor used in the analysis. Of the seven TACs, only benzene, toluene, and xylenes have OEHHA/CARB-approved acute health Reference Exposure Limits (RELs). Therefore, other TACs are not included in the acute health effect analysis (CARB 2022a).

Table 11
TAC PERCENT WEIGHT IN GASOLINE VAPOR

Substance	Chronic Effects – Combined Summer and Winter Formulation	Acute Effects – Summer Formulation Only
Benzene	0.457%	0.549%
Ethyl Benzene	0.107%	NA
n-Hexane	1.82%	NA
Naphthalene	0.000445%	NA
Propylene	0.0003594%	NA
Toluene	1.11%	1.35%
Xylenes	0.409%	0.509%

Source: CARB 2022a

TAC = toxic air contaminant; NA = not applicable

4.2.1.2 Gas Station TAC Emissions

The emissions of TACs in gasoline vapor were calculated in accordance with the CARB's *Gasoline Service Station Industrywide Risk Assessment Technical Guidance* (CARB 2022a) and the CARB's *Revised Emission Factors for Gasoline Marketing Operations at California Gasoline Dispensing Facilities* (CARB 2013a).

Modeled Sources

In accordance with the CARB technical guidance, gas station TAC emissions are broken into five sources (CARB 2022a):

Loading – Emissions occur when gasoline vapors are displaced by rising liquid in the gasoline station USTs during bulk transfer of gasoline from a cargo tank to an UST. The displaced vapors are collected by a Phase I vapor recovery system that returns approximately 98 percent of vapors to the cargo tank. The remaining vapors may be emitted from the UST vent stack.

Breathing – Emissions are generated when gasoline vapors are displaced to the atmosphere during the day-to-day operation of a gas station. During periods when there is either no dispensing or when there is a significant slowdown in the dispensing of fuel to vehicles, such as overnight periods, gasoline in an UST evaporates into the headspace above the liquid fuel. The vapor growth caused by this evaporation increases UST static pressure and results in pressure-driven emissions. Pressure-driven emissions are controlled by a processing unit that includes a bladder tank, membrane separator, carbon canister, or thermal oxidizer. The remaining vapors may be emitted from the UST vent stack.

Refueling – During the refueling process, gasoline vapors are emitted at the vehicle/nozzle interface. When dispensing gasoline to vehicles not equipped with ORVR, the rising liquid level in the vehicle fuel tank displaces gasoline vapors back through the fill-pipe where they are captured by a Phase II vapor recovery system. Vapors not captured by the Phase II vapor recovery system are emitted to the atmosphere. When an ORVR vehicle is fueled, almost all the gasoline vapor displaced from the fuel tank is routed to a carbon canister in the vehicle fuel system. At the start of dispensing, a small portion of the vapor in the vehicle fuel tank may escape through the fill pipe before the onboard system is fully engaged. All passenger, light-duty, and medium-duty vehicles manufactured since the 2006 model year are equipped with ORVR systems. For this analysis, 91 percent of vehicles refueling at the proposed gas station were assumed to be equipped with ORVR systems, corresponding to the estimated statewide penetration of ORVR vehicles in the fleet mix in 2025 (CARB 2013b).

Spillage – Emissions occur during vehicle fueling if there is overflow after a tank is filled or when other liquid fuel unintentionally discharges from the nozzle and evaporates.

Hose Permeation – Emissions occur when liquid gasoline or gasoline vapors diffuse through the dispensing hose outer surface to the atmosphere. CARB adopted performance standards for gasoline dispensing hose permeation on July 26, 2012, with all facilities subject to the standard required to comply by 2017 (CARB 2022a).

Gasoline Throughput

Health risks are analyzed based on the average annual emissions and maximum hourly emissions. Gas station TAC emissions are proportional to the gasoline throughput (amount of gasoline dispensed in a given time period). To account for potential fluctuations in annual gasoline sales and to be conservative (health protective) in evaluating risks, this report analyzes health risks at the maximum gasoline throughput of 36.5 million gallons per year (100,000 gallons per day) requested by the project applicant for permitting purposes. Actual gasoline sales/throughput could be lower but would not exceed 36.5 million gallons per year. Average annual TAC emissions for all sources were calculated using the reported maximum annual throughput. Maximum hourly emissions are dependent on the activity for each source and were estimated following the CARB technical guidance. The loading source (filling of

underground storage tanks) maximum hourly throughput assumes one truckload of gasoline (at the maximum legal gross vehicle weight) of 8,800 gallons loaded in one hour. The breathing source maximum hourly throughput is based on the average hourly gasoline throughput: 36.5 million gallons per year divided by 8,766 hours per year, or 4,164 gallons per hour. (CARB 2022a). The refueling, spillage, and hose permeation sources maximum hourly throughput is based on the estimated maximum hourly volume of gasoline dispensed. A maximum hourly dispensed volume of 8,300 gallons was estimated based on 100,000 gallons per day dispensed and 8.3% of daily gasoline dispensed during the peak afternoon hour.

Gas Station Emissions

Gas Station TAC emissions used in this analysis are calculated using emission factors for total organic gases (TOGs; equivalent to the gasoline vapor) per 1,000 gallons of gasoline throughput by source from CARB's *Revised Emission Factors for Gasoline Marketing Operations at California Gasoline Dispensing Facilities* (CARB 2013a). The emission factors by source are presented in Table 12, *Gas Station Emission Factors*.

Table 12
GAS STATION EMISSION FACTORS

Source	Emission Factor (TOG pounds per 1,000 gallons)
Loading	0.150
Breathing	0.024
Refueling (Non-ORVR Vehicles)	0.420
Refueling (ORVR Vehicles)	0.021
Spillage	0.240
Hose Permeation	0.009

Source: CARB 2013a

TOG = total organic gas; ORVR = onboard refueling vapor recovery

Based on the above emission factors and assumptions, the annual TAC emissions by source for chronic health effect analysis are shown in Table 13, *Gas Station Chronic Health Effect TAC Emissions*. The complete emissions calculation sheet is included in Appendix D, *HRA Modeling Input/Output*, to this report.

Table 13
GAS STATION CHRONIC HEALTH EFFECT TAC EMISSIONS

Source	Benzene	Ethyl Benzene	n-Hexane	Naphthalene	Propylene	Toluene	Xylenes
Loading Annual (pounds/year)	25.02	5.86	99.65	0.02	0.20	60.23	22.39
Loading Hourly (pounds/hour)	4.57E-4	1.07E-4	1.82E-3	4.45E-7	3.59E-6	1.10E-3	4.09E-4
Breathing Annual (pounds/year)	4.00	0.94	15.9	3.90E-3	0.03	9.64	3.58
Breathing Hourly (pounds/hour)	4.57E-4	1.07E-4	1.82E-3	4.45E-7	3.59E-6	1.10E-3	4.09E-4

Source	Benzene	Ethyl Benzene	n-Hexane	Naphthalene	Propylene	Toluene	Xylenes
Refueling Annual (pounds/year)	9.49	2.22	37.81	0.01	0.07	22.85	8.50
Refueling Hourly (pounds/hour)	2.16E-3	5.05E-4	8.60E-3	2.10E-6	1.70E-5	5.20E-3	1.93E-3
Spillage Annual (pounds/year)	40.03	9.37	159.43	0.04	0.31	96.36	35.83
Spillage Hourly (pounds/hour)	9.10E-3	2.13E-3	3.63E-2	8.86E-6	7.16E-5	2.19E-2	8.15E-3
Hose Permeation Annual (pounds/year)	1.50	0.35	5.98	1.46E-3	0.01	3.61	1.34
Hose Permeation Hourly (pounds/hour)	3.41E-4	7.99E-5	1.36E-3	3.32E-7	2.68E-6	8.22E-4	3.06E-4

Source: CARB 2022a, CARB 2013a

TAC = toxic air contaminant

The hourly TAC emissions by source for acute health effect analysis are shown in Table 14, *Gas Station Acute Health Effect TAC Emissions*. The complete emissions calculation sheet is included in Appendix D to this report.

Table 14
GAS STATION ACUTE HEALTH EFFECT TAC EMISSIONS

Source	Benzene	Toluene	Xylenes
Loading Annual (pounds/year)	30.06	73.91	22.87
Loading Hourly (pounds/hour)	7.25E-3	1.78E-2	6.72E-3
Breathing Annual (pounds/year)	4.81	11.83	4.46
Breathing Hourly (pounds/hour)	5.49E-4	1.35E-3	5.09E-4
Refueling Annual (pounds/year)	11.40	28.04	10.57
Refueling Hourly (pounds/hour)	2.59E-3	6.38E-3	2.40E-3
Spillage Annual (pounds/year)	48.09	118.26	44.59
Spillage Hourly (pounds/hour)	1.09E-2	2.69E-2	1.01E-2
Hose Permeation Annual (pounds/year)	1.80	4.43	1.67
Hose Permeation Hourly (pounds/hour)	4.10E-4	1.01E03	3.80E-4

Source: CARB 2022a, CARB 2013a

TAC = toxic air contaminant

4.2.2 Vehicle Queue TAC Emissions

4.2.2.1 Fleet Mix

The mix of vehicles operating in the gas station queue was calculated as described in Section 4.1.2, above.

4.2.2.2 TAC Emission Factors

TAC emissions factors for the vehicle operation processes described in Section 4.1.2, above, were calculated for TACs in gases (ROG) and particulate matter (PM_{2.5}) using data from EMFAC and are shown in Table 15, *Vehicle Emissions Factors* (CARB 2024f). EMFAC only reports idling emissions for heavy-duty

diesel trucks; vehicle queue idling emissions assume the RUNEX emissions rate for the 0 to 5 mph bin with a correction factor of 2.5 mph applied per EMFAC2021 Volume II - Handbook for Project -Level Analysis (CARB 2021b). Evaporative processes (RUNLOSS and HOTSOAK) only include gaseous emissions (e.g., ROG). A printout of the emission factors calculation sheet is included in Appendix D.

Table 15
VEHICLE EMISSIONS FACTORS

Vehicle Class	Fuel	ROG Idle Exhaust (lb/min)	PM2.5 Idle Exhaust (lb/min)	ROG Run Loss (lb/min)	ROG Hot Soak (lb/trip)	ROG Start Exhaust (lb/trip)	PM2.5 Start Exhaust (lb/trip)
LDA	Gasoline	2.34E-06	3.88E-07	1.70E-05	1.00E-04	2.92E-05	1.70E-07
LDA	Plug-In Hybrid	2.61E-08	7.87E-09	1.87E-07	7.26E-07	4.96E-07	2.86E-09
LDT1	Gasoline	9.61E-07	5.89E-08	4.37E-06	2.33E-05	6.53E-06	2.86E-08
LDT1	Plug-In Hybrid	1.97E-10	4.18E-11	9.37E-10	3.16E-09	3.71E-09	1.50E-11
LDT2	Gasoline	1.49E-06	1.83E-07	7.95E-06	4.40E-05	1.77E-05	7.63E-08
LDT2	Plug-In Hybrid	3.44E-09	8.52E-10	1.73E-08	6.05E-08	6.49E-08	3.06E-10
MDV	Plug-In Hybrid	1.19E-06	1.09E-07	6.22E-06	3.22E-05	1.39E-05	4.83E-08
MDV	Gasoline	2.33E-09	6.51E-10	1.34E-08	4.85E-08	4.41E-08	2.35E-10
	Total ¹	6.01E-06	7.48E-07	3.57E-05	2.01E-04	6.79E-05	3.26E-07

Source: CARB 2024f

¹ Total emission factors are weighted by fleet mix.

lb = pounds, min = minutes

4.2.2.3 Vehicle Emissions TAC Speciation

The TAC speciation in ROG emissions from vehicles operating in the gas station queue and pump area was modeled using the most recent speciation profiles from CARB. For RUNEX emissions (e.g., idling exhaust), organic gas speciation for catalyzed gasoline-powered vehicle running exhaust – E6 fuel (6 percent ethanol) profile number OG2303 (summer formulation) and OG2304 (winter formulation) were used (CARB 2013c). For STREX emissions, organic gas speciation for catalyzed gasoline-powered vehicle start exhaust – E6 fuel (6 percent ethanol) profile number OG2301 (summer formulation) and OG2302 (winter formulation) were used (CARB 2013d). For evaporative vehicle emissions (e.g., RUNLOSS and HOTSOAK), organic gas speciation for gasoline-powered vehicle evaporation – E10 fuel (10 percent ethanol) profile number OG2315 (summer formulation) was used (CARB 2015a). In accordance with the CARB gas station health risk technical guidance, chronic (long-term) health effects for RUNEX and STREX were analyzed assuming an average annual TAC speciation based on 59.2 percent summer formulation and 40.8 percent winter formulation (CARB 2022a). Acute (short-term) health effects were analyzed assuming the higher TAC content in the summer formulation (CARB 2022a). An evaporative organic gases emissions profile was not available for the winter formulation. Therefore, RUNLOSS and HOTSOAK used the higher TAC content in the summer formulation only.

The CARB speciation profiles do not include PAHs other than naphthalene. PAHs in vehicle exhaust can occur as gases and as PM. The TAC speciation of PAH emissions from vehicles operating in the gas station queue and pump area was modeled using the most recent speciation profiles from the USEPA's Motor Vehicle Emission Simulator (MOVES). The MOVES profiles include gaseous emissions, PM_{2.5} starting emissions, and PM_{2.5} running emissions (USEPA 2020).

All chemicals from the above speciation profiles which are listed by CARB as TACs and have an OEHHA/CARB approved cancer potency factor and/or non-cancer chronic or acute REL, were included in

the analysis (CARB 2023). A printout of the speciation profiles (chemicals and the percentage by weight in vehicle emissions) is included in Appendix D.

4.2.2.4 Vehicle Queue Emissions

TAC emissions from vehicles operating in the gas station queue and pump area used in this analysis were calculated using emission factors and speciation profiles described above. Idling emissions and RUNLOSS emissions calculations were based on the total vehicle idling minutes calculated by the traffic engineer: 2,371 vehicle-minutes per day Monday through Friday and 6,492 vehicle-minutes per day Saturday and Sunday (Kittelson 2024b). Idling emissions and RUNLOSS emissions cancer risks and non-cancer chronic risks were based on the annual 1,295,176 vehicle-minutes per year. Idling emissions and RUNLOSS emissions acute risks were based on the peak hour vehicle idling minutes, estimated to be 528 vehicle-minutes per hour (about eight percent of the Saturday/Sunday vehicle-minutes per day). STREX and HOTSOAK emission calculations were based on the number of vehicles entering the gas station as reported in the Local Transportation analysis: 5,913 average daily trips (ADT) and 511 Saturday midday peak hour trips (Kittelson 2024c). The total calculated annual vehicle emissions by chemical for cancer risks and non-cancer chronic risks is shown in Table 16, *Vehicle Queue Chronic Health Effect TAC Emissions*. A printout of the emissions calculation sheet, including a breakdown of emissions by process, is included in Appendix D.

Table 16
VEHICLE QUEUE CHRONIC HEALTH EFFECT TAC EMISSIONS

Chemical	Pounds per Year
1,3-Butadiene	0.98
Acetaldehyde	1.68
Acrolein	0.01
Benzene	11.15
Ethyl Benzene	6.66
Formaldehyde	2.60
Hexane	6.79
Methanol	23.99
Methyl Ethyl Ketone	0.16
Methyl Tert-Butyl Ether	0.07
Naphthalene	0.09
Propylene (propene)	6.76
Styrene	0.44
Toluene	42.37
Xylenes	33.91
Polycyclic Aromatic Hydrocarbons (7 Chemicals)	
Benzo(a)anthracene	1.52E-03
Benzo(a)pyrene	1.77E-03
Benzo(b)fluoranthene	1.46E-03
Benzo(k)fluoranthene	1.46E-03
Chrysene	1.51E-03
Dibenzo(a,h)anthracene	4.03E-05
Indeno(1,2,3,c,d)pyrene	1.75E-03

Source: CARB 2024f; CARB 2015a; CARB 2013a; CARB 2013b; USEPA 2020

The total calculated hourly vehicle emissions by chemical for acute risks is shown in Table 17, *Vehicle Queue Acute Health Effect TAC Emissions*. None of the PAHs listed in the speciation profiles has an approved OEHHa/CARB acute REL (CARB 2023).

Table 17
VEHICLE QUEUE ACUTE HEALTH EFFECT TAC EMISSIONS

Chemical	Pounds per Hour
1,3-Butadiene	2.54E-04
Acetaldehyde	3.59E-04
Acrolein	2.45E-06
Benzene	2.86E-03
Formaldehyde	6.03E-04
Methanol	6.07E-03
Methyl Ethyl Ketone	3.39E-05
Styrene	1.08E-04
Toluene	1.07E-02
Xylenes	8.46E-03

Source: CARB 2024f; CARB 2015a; CARB 2013a; CARB 2013b; USEPA 2020

4.2.3 Fuel Delivery Truck TAC Modeling

TAC emissions from heavy-duty trucks delivering fuel to the project were included in the HRA. On-site TAC emissions were calculated for fuel delivery trucks circulating on the project site and idling in the designated offloading area near the USTs. Delivery trucks would enter the project at the southernmost driveway on South Bent Avenue, proceed around the existing Cosco store on the south and west sides to the fuel offloading area, and then exit the site on a delivery truck-only driveway onto Linda Vista Drive.

Fuel delivery truck emissions were calculated assuming trucks would circulate on the site at an average speed of 5 mph. CARB's Airborne Toxic Control Measure to limit diesel-fueled commercial motor vehicle idling (Title 13, CCR, section 2485) prohibits diesel-fueled commercial motor vehicles with gross vehicle weight ratings greater than 10,000 pounds from idling the vehicle's primary diesel engine longer than five minutes at any location. Fuel delivery trucks were assumed to idle at the offloading area for the maximum allowable five minutes.

4.2.3.1 Fuel Delivery Truck Emission Factors

Emissions factors for fuel delivery were calculated for gases (ROG) and particulate matter (PM₁₀ and PM_{2.5}) using data from EMFAC and are shown in Table 18, *Fuel Delivery Truck Emissions Factors* (CARB 2024f). A printout of the emission factors calculation sheet is included in Appendix D.

Table 18
FUEL DELIVERY TRUCK EMISSIONS FACTORS

Vehicle Class	Fuel	PM ₁₀ Idle Exhaust (lb/min)	ROG Idle Exhaust (lb/min)	PM _{2.5} Idle Exhaust (lb/min)	PM ₁₀ Run Exhaust (lb/mile)	ROG Run Exhaust (lb/mile)	PM _{2.5} Run Exhaust (lb/mile)
HHD	Diesel	5.20E-07	8.69E-05	4.97E-07	1.89E-04	1.10E-03	1.81E-04

Source: CARB 2024f

lb = pounds, min = minutes

4.2.3.2 Vehicle Emissions TAC Speciation

The primary TAC of concern from diesel engines is DPM. DPM was calculated assuming all diesel PM₁₀ RUNEX emissions calculated by EMFAC are DPM. In addition to DPM, diesel exhaust contains small amounts of gaseous TAC emissions. The TAC speciation in gaseous emissions from fuel delivery trucks was modeled using the most recent speciation profiles from the USEPA's MOVES (USEPA 2020). All organic gases and PAHs from the MOVES speciation profiles which are listed by CARB as TACs and have an OEHHA/CARB approved cancer potency factor and/or non-cancer chronic or acute REL, were included in the analysis (CARB 2023). A printout of the speciation profiles (chemicals and the percentage by weight in vehicle emissions) is included in Appendix D.

4.2.3.3 Fuel Delivery Truck Emissions

TAC emissions from fuel delivery trucks used in this analysis were calculated using emission factors and speciation profiles described above. The number of fuel delivery trucks entering the project site was estimated per the project VMT: five fuel delivery trucks entering the site per day (Kittelson 2024a), resulting in 1,825 fuel delivery trucks per year. Cancer risks and non-cancer chronic risks were based on 1,825 trucks idling for 5 minutes each and on 1,825 trucks traveling along an approximately 0.381-mile on-site truck route. Acute risks were based on one truck idling for minutes, and one truck traveling along an approximately 0.381-mile on-site truck route. The total calculated annual fuel delivery truck emissions by chemical for cancer risk and non-cancer chronic risks are shown in Table 19, *Delivery Truck Chronic Health Effect TAC Emissions*. A printout of the emissions calculation sheet is included in Appendix D.

Table 19
DELIVERY TRUCK CHRONIC HEALTH EFFECT TAC EMISSIONS

Chemical	Pounds per Year
Circulation Emissions	
DPM	1.31E-01
Acetaldehyde	3.18E-02
Acrolein	2.74E-03
Ethyl Benzene	8.54E-03
Formaldehyde	2.03E-02
Hexane	6.86E-04
Toluene	1.39E-02
Xylenes	6.46E-02
Polycyclic Aromatic Hydrocarbons (3 Chemicals)	
Naphthalene	4.45E-04
Benz(a)anthracene	5.27E-07
Chrysene	1.91E-07
Idling Emissions	
DPM	4.74E-03
Acetaldehyde	3.31E-02
Acrolein	2.86E-03
Ethyl Benzene	8.89E-03
Formaldehyde	2.11E-02
Hexane	7.14E-04
Toluene	1.45E-02
Xylenes	6.73E-02
Polycyclic Aromatic Hydrocarbons (3 Chemicals)	
Naphthalene	4.63E-04
Benz(a)anthracene	1.53E-05
Chrysene	1.99E-07

Source: CARB 2024f; USEPA 2020

The total calculated hourly fuel delivery truck emissions by chemical for acute risks is shown in Table 20, *Delivery Truck Acute Health Effect TAC Emissions*. Neither DPM nor any of the PAHs listed in the speciation profiles has an approved OEHHA/CARB acute REL (CARB 2023).

Table 20
DELIVERY TRUCK ACUTE HEALTH EFFECT TAC EMISSIONS

Chemical	Pounds per Hour
Circulation Emissions	
Acetaldehyde	1.74E-05
Acrolein	1.50E-06
Formaldehyde	1.11E-05
Toluene	7.64E-06
Xylenes	3.54E-05
Idling Emissions	
Acetaldehyde	1.81E-05
Acrolein	1.56E-06
Formaldehyde	1.16E-05
Toluene	7.96E-06
Xylenes	3.69E-05

Source: CARB 2024f; USEPA 2020

4.2.4 Dispersion Modeling

Localized concentrations of TACs were modeled using Lakes AERMOD View version 12.0.0. The Lakes program utilizes the USEPA's AERMOD gaussian air dispersion model version 23132.

4.2.4.1 Source Parameters

In accordance with the CARB technical guidance, the loading and breathing sources were modeled as point sources with emissions emanating from the USTs vent stack at 12 feet (3.7 meters) above the ground. The location of the USTs vent stack was unknown at the time of this analysis. Therefore, the vent stack was modeled at the recommended default location at the center of the gas pump canopy. The stack diameter was set at 2 inches (0.05 meters), and the exhaust gas temperature was set to 64 °F (291 Kelvin [K]) for the loading source and 60 °F (289 K) for the breathing source. The USTs vent stack was assumed to have a rain cap resulting in a near-zero initial vertical gas velocity (CARB 2022a).

The refueling, spillage, and hose permeation sources were modeled as volume sources corresponding to the approximate volume beneath the gas pump canopy (92 feet wide by 141.5 feet long by 14.5 feet high). The release height for the refueling and hose permeation was set to the recommended height of 4.9 feet (1.5 meters). The release height for the spillage source was set at the recommended height of 3.3 feet (1 meter). The gas station source parameters are summarized in Table 21, *Gas Station Source Modeling Parameters* (CARB 2022a).

Table 21
GAS STATION SOURCE MODELING PARAMETERS

Source	Release Height (m)	Stack Diameter (m)	Gas Temperature (K)	Gas Velocity (m/s)	Volume Side (m)	Volume Height (m)
Loading	3.66	0.0508	291	0.001	NA	NA
Breathing	3.66	0.0508	289	0.001	NA	NA
Refueling	1.5	NA	NA	NA	34.78	4.42
Spillage	1.0	NA	NA	NA	34.78	4.42
Hose Permeation	1.5	NA	NA	NA	34.78	4.42

Source: CARB 2022a

m = meters; K = degrees Kelvin; m/s = meters per second; NA = not applicable

Emissions from vehicles operating in the gas station queue and pump area were modeled as an area source covering the vehicle queueing area and the gas pump area (43,527.4 SF) with a release height of 1.6 feet (the estimated average height above the ground of vehicle tail pipes). Emissions from fuel delivery trucks idling were modeled as an area source covering the fuel delivery truck offloading area (3,900.7 SF) with a release height of 13.1 feet (the estimated average height above the ground of truck exhaust stacks). Fuel delivery trucks circulating in the project site were modeled as line volume sources following methodology/calculations recommended in the USEPA Haul Road Workgroup Final Report, using an average truck height of 13.1 feet and an average truck width of 8.5 feet (USEPA 2011). The total length of the modeled fuel delivery truck circulation route was 0.381 miles. A figure showing the locations of all modeled sources is included in Appendix D.

Emissions of gasoline vapor for gas stations are not constant throughout the day. Refueling and spillage sources vary by the quantity dispensed each hour. Loading sources only occur during fuel deliveries, typically one hour a day on several days per week. Breathing and permeation sources may vary depending on environmental conditions and on gasoline dispensing activity. Based on anticipated operating hours per the project applicant (6:00 a.m. to 8:00 p.m. Monday through Friday, 6:00 a.m. to 7:00 p.m. Saturday, and 7:00 a.m. to 6:00 p.m. Sunday) and estimated distribution of customers throughout the day, refueling, spillage and hose permeation sources were assumed to emit variably with 10 percent of gasoline dispensed between 6 a.m. and 8 a.m. (1.2 variable emission rate factor), 80 percent of gasoline dispensed between 9 a.m. and 6 p.m. (1.92 variable emission rate factor), and 10 percent of gasoline dispensed between 6 p.m. and 8 p.m. (1.2 variable emission rate factor).² Because fuel delivery schedules for the loading source are unknown, deliveries were assumed to occur at any time between 6 a.m. and 8 p.m. throughout the year (1.71 variable emission rate factor). The breathing source was assumed to occur at a steady rate throughout the year. Acute health risks are calculated using peak hour emissions and the variable rate emissions factor for acute emissions sources was set to 1 for all project facility operating hours.

Downwash from the project's buildings was modeled using the Building Profile Input Program (BPIP), a building preprocessing program for AERMOD. The project building sizes and locations were estimated from the project site plan. AERMOD only calculates the effects of building downwash for point sources (loading and breathing).

² The reduced variable emissions rate in the early morning and evening hours, and increased midday variable emissions rate account for lower anticipated fuel dispensing in the first two and last two operational hours, when metrological conditions are likely to result in different dispersion patterns compared to midday emissions.

4.2.4.2 Meteorological Data

SDAPCD provides pre-processed meteorological data suitable for use with AERMOD. The available data set most representative of conditions in the project site vicinity was from the Escondido station, approximately six miles east of the project site. The Escondido station is in an area of similar development, terrain, vegetation, and elevation as the project site. The Escondido station set includes 3 years of data collected from 2010 through 2013. Per guidance from OEHHA, dispersion modeling can account for the surface roughness and heat island effects of urban areas if the land use within a three-kilometer radius around the emissions sources is at least 50 percent developed with industrial (less than 5 percent vegetation), commercial (less than 15 percent vegetation), and medium to high-density residential land uses (less than 35 percent vegetation) (OEHHA 2015). Based on a review of aerial images, the area within three kilometers around the project site is more than 60 percent developed with commercial, industrial, and higher-density residential uses. Therefore, urban dispersion coefficients were selected in the model using the city's 2020 population of 94,833 (U.S. Census 2024).

4.2.4.3 Terrain Data

United States Geological Survey (USGS) Digital Elevation Model (DEM) files with a 30-meter resolution covering an area approximately 0.6 kilometer (km) around the project site were used in the model to cover the analysis area. Terrain data was imported to the model using AERMAP (a terrain preprocessing program for AERMOD).

4.2.5 Receptor Modeling

To develop risk isopleths (linear contours showing equal level of risk), receptors were placed in a cartesian grid 1200 meters by 1200 meters (approximately 3,937 feet by 3,937 feet), centered on the project site with a grid spacing of 50 meters (164 feet) and a receptor height (flagpole height) of 1.2 meters (four feet) above the ground. To ensure the area of maximum off-site impact was captured, receptors were placed along the project site boundary at 10-meter (33 feet) intervals. Six additional tiers of receptors were placed at 10-meter intervals at distances of 10, 20, 30, 50, 70, and 90 meters from the project site boundary. Additional discrete receptors were placed at the closest primary outdoor spaces for the 7 closest existing and potential future residential properties (including the closest residential building, live-work space, shown on the site plan for the approved San Marcos Specific Plan, receptor FR4, as shown on Figure 4), 3 closest daycare centers, and 14 closest commercial buildings around the project site (including the closest commercial building shown on the site plan for the approved San Marcos Specific Plan, receptor C14, as shown on Figure 4). See Figure 4, *Modeled Receptor Locations*, for the modeled discrete receptor locations relative to the project site and proposed gas pump canopy location. A figure showing all modeled receptors (1,566 total) is included in Appendix D.

4.2.6 Risk Determination

Adverse health effects resulting from localized concentrations of TACs were calculated using CARB's Hotspots Analysis and Reporting Program (HARP), Air Dispersion Modeling and Risk Tool (ADMRT) version 22118. Plot files from AERMOD using unitized emissions (one gram per second) for each TAC source were imported into the ADMRT. The ADMRT calculated ground-level concentrations of each TAC utilizing the imported plot files and the annual and hourly emissions inventories shown in Tables 12, 13, 16, 17, 19, and 20. The latest cancer potency factors, non-cancer chronic RELs, acute RELs, exposure paths, and target organ or system for all TACs designated by CARB are included in the ADMRT. For the

residential cancer risk, an exposure duration of 30 years was selected in accordance with the OEHHA guidelines (OEHHA 2015). The model conservatively assumes that residents would be standing and breathing outdoors at the location of the outdoor use space (e.g., backyard or front yard) closest to the gas station every day between 17 and 21 hours per day (depending on the age group, starting with infants in utero in the third trimester of pregnancy) for 30 years. Because of the proximity of the daycare centers, fraction of time at home adjustments for age groups under 16 were turned off to reflect potential exposure of children at home and at daycare. The OEHHA derived intake rate percentile method was selected for cancer and non-cancer chronic scenarios. For off-site worker cancer risk, an exposure duration of 25 years, 8 hours per day, 5 days per week, starting at age group 16, was selected per OEHHA guidance (OEHHA 2015). Because typical work hours on a day shift would overlap with a large portion of the project emissions, a worker adjustment factor of 2.48 was used: 4,954 annual project emission hours (14 hours per day Monday through Saturday and 11 hours per day Sundays) divided by 2,000 annual worker exposure hours (8 hours per day for 250 days per year). For daycare cancer risk, an exposure duration of 13 years, starting at age group zero years old, was selected with an assumption of eight hours per day, five days per week of exposure while standing outside with moderate intensity breathing rates. Similar to off-site worker risks, an adjustment factor of 2.48 was used for daycare risks to account for the overlap of daycare hours with project emissions. For all risk scenarios, the warm climate option was selected for the dermal pathway, reflecting the increased amount of exposed skin in warm climates such as San Diego County. The ADMRT risk modeling input and output is included in Appendix D to this report.

4.3 SIGNIFICANCE CRITERIA

4.3.1 Air Quality Significance Criteria

Thresholds used to evaluate potential air quality and odor impacts are based on applicable criteria in the State's CEQA Guidelines Appendix G. A significant air quality and/or odor impact could occur if the implementation of the project would:

- (1) Conflict with or obstruct implementation of the applicable air quality plan;
- (2) Result in a cumulatively considerable net increase of any criteria pollutant for which San Diego County is non-attainment under an applicable NAAQS or CAAQS;
- (3) Expose sensitive receptors to substantial pollutant concentrations; or
- (4) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people.

Appendix G of the State CEQA Guidelines states that the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the above determinations. The SDAPCD has not adopted significance criteria for evaluation of emissions from typical land use development projects. However, the SDAPCD does specify Air Quality Impact Analysis (AQIA) trigger levels for new or modified stationary sources (SDAPCD Rules 20.2 and 20.3). If the incremental levels in Rules 20.2 and 20.3 for stationary sources are exceeded, an AQIA must be performed for the proposed new or modified source (SDAPCD 2019; SDAPCD 2021b).

Although the AQIA trigger levels do not generally apply to mobile sources or general land development projects, the daily emission rate AQIA trigger levels may be used as screening thresholds to evaluate the increased emissions which would be discharged to the SDAB from proposed land development projects. If project construction or operational emissions would exceed the screening level thresholds, additional air quality modeling may be needed to demonstrate that ground level concentrations resulting from project emissions would not exceed the applicable NAAQS and CAAQS, shown in Table 2, above. SDAPCD Rules 20.2 and 20.3 do not have AQIA trigger levels for emissions of VOCs. Therefore, the construction and operation VOC thresholds adopted by the South Coast Air Quality Management District (SCAQMD) are used as project screening level thresholds (SCAQMD 2019). The screening level thresholds based on SDAPCD AQIA trigger levels and SCAQMD VOC thresholds are shown in Table 22, *Screening-level Thresholds for Air Quality Impact Analysis*.

Table 22
SCREENING-LEVEL THRESHOLDS FOR AIR QUALITY IMPACT ANALYSIS

Pollutant	Construction Threshold (pounds per day)	Operations Threshold (pounds per day)
Coarse Particulate Matter (PM ₁₀)	100	100
Fine Particulate Matter (PM _{2.5})	67	67
Oxides of Nitrogen (NO _x)	250	250
Oxides of Sulfur (SO _x)	250	250
Carbon Monoxide (CO)	550	550
Volatile Organic Compounds (VOC)	75	55

Source: SDAPCD 2019; SDAPCD 2021b; SCAQMD 2019

The City has not adopted thresholds to determine the significance of exposure of sensitive receptors to TACs generated by a development project. Therefore, this analysis relies on the threshold adopted by the County. For cancer risk, incrementally increased cancer risk is an estimate of the chance a person exposed to a specific source of a TAC may have of developing cancer from that exposure beyond the individual's risk of developing cancer from existing background levels of TACs in the ambient air. Impact to sensitive receptors would be significant if the incrementally increased cancer risk to sensitive receptors resulting from exposure to project-generated TACs exceeds 10 chances per million (County 2007). Health risks associated with non-cancer chronic health risks effects and acute health risks from TAC exposure are quantified using the maximum hazard index (HI). HI is the potential exposure to a substance divided by the REL (the level at which no adverse effects are expected). An HI of less than one indicates no adverse health effects are expected from the potential exposure to the substance. Impacts to sensitive receptors would be significant if the HI for sensitive receptor non-cancer chronic risk or acute risk resulting from exposure to project-generated TACs exceeds 1.0 (County 2007).

4.3.2 Greenhouse Gas Emissions Significance Criteria

Given the relatively small levels of GHG emissions generated by a typical development in relationship to the total amount of GHG emissions generated on a national or global basis, individual development projects are not expected to result in significant, direct impacts with respect to climate change. However, given the magnitude of the impact of GHG emissions on the global climate, GHG emissions from new development could result in significant, cumulative impacts with respect to climate change. Therefore, the potential for a significant GHG impact is limited to cumulative impacts.

According to Appendix G of the CEQA Guidelines, a project would have a significant GHG impact if it would:

- (1) Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment; or
- (2) Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs.

As described in Section 2.2.5, the City's CAP is a qualified GHG reduction plan consistent with CEQA Guidelines Section 15183.5. Development projects consistent with an applicable local qualified GHG reduction plan are eligible for streamlined GHG analysis. Development projects within the City that are consistent with the City's CAP would be consistent with statewide GHG reduction goals for 2020 (per AB 32) and 2030 (per SB 32) and would demonstrate progress towards the 2045 GHG reduction goal established by EO S-3-05. Consistency with the City's CAP is determined through the use of a CAP Consistency Review Checklist which contains questions pertaining to how a development project would be consistent with relevant CAP strategies and measures. Projects that would be consistent with relevant CAP strategies and measures demonstrated through regulatory compliance or mitigation would have less than cumulatively considerable GHG emissions. The CAP Consistency Review Checklist is included as an attachment to the City's CAP (City 2020).

4.3.3 Energy Significance Criteria

Thresholds used to evaluate potential impacts related to energy are based on applicable criteria in CEQA Guidelines Appendix G. A significant impact associated with energy could occur if the implementation of the project would:

- (1) Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation; or
- (2) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency.

5.0 AIR QUALITY IMPACT ANALYSIS

This section evaluates potential impacts related to air pollutant emissions resulting from implementation of the project. Project-level air quality modeling and health risk modeling was completed as part of this analysis. Complete modeling results are included in appendices A, B, and C of this report.

5.1 ISSUE 1: CONFLICT WITH AIR QUALITY PLANS

5.1.1 Impacts

As discussed in Section 4.2.1, the thresholds of significance for the project's criteria pollutant and precursor emissions are based on the SDAPCD AQIA trigger levels and SCAQMD VOC thresholds. These significance thresholds have been established to assist lead agencies in determining whether a project may have a significant air quality impact during the initial study. A project with emissions lower than the thresholds would not conflict with or obstruct implementation of the district's air quality plans for

attainment of the applicable NAAQS and CAAQS. As discussed in Section 5.2 below, the project would not exceed the temporary construction-related or long-term operational-related thresholds of significance for criteria pollutants and precursor emissions.

The RAQS outlines SDAPCD's plans and control measures designed to attain the CAAQS for ozone. In addition, the SDAPCD's Attainment Plan includes the SDAPCD's plans and control measures for attaining the ozone NAAQS. These plans accommodate emissions from all sources, including natural sources, through the implementation of control measures, where feasible, on stationary sources to attain the standards. Mobile sources are regulated by the USEPA and CARB, and the emissions and reduction strategies related to mobile sources are considered in the RAQS, Attainment Plan, and SIP.

The RAQS and Attainment Plan rely on information from CARB and SANDAG, including projected growth in San Diego County, mobile, area, and all other source emissions to project future emissions and determine from that the strategies necessary for the reduction of stationary source emissions through regulatory controls. CARB mobile source emission projections and SANDAG growth projections are based on population, vehicle trends, and land use plans developed by the cities and San Diego County. As such, projects that propose development that is consistent with the growth anticipated by the general plans would be consistent with the RAQS and Attainment Plan. If a project proposes development that is less dense than anticipated within the General Plan, the project would likewise be consistent with the RAQS and Attainment Plan. If a project proposes development that is greater than that anticipated in the City General Plan and SANDAG's growth projections upon which the Attainment Plan is based, the project may conflict with the RAQS, Attainment Plan, and SIP and may have a potentially significant impact on air quality. This situation would warrant further analysis to determine if the project and the surrounding projects exceed the growth projections used in the RAQS and Attainment Plan for the specific subregional area.

The current General Plan land use designation and zoning for the project site is Commercial. The project would be consistent with the current Commercial land use and zoning designations for the project site and would not require a general plan amendment or rezone. Therefore, the project's contribution to population growth in the City would be consistent with the growth projections in the City's General Plan and the growth projections used to develop the SDAPCD's RAQS and Attainment Plan.

5.1.2 Significance of Impacts

Because implementation of the project would not result in criteria pollutant emissions exceeding thresholds and the project would be consistent with regional growth projections, the project would not conflict with or obstruct implementation of the SDAPCD's RAQS and Attainment Plan. The impact would be less than significant.

5.1.3 Mitigation Framework

Impacts would be less than significant; therefore, no mitigation measures would be required.

5.1.4 Significance After Mitigation

Impacts related to conflicts with the applicable air quality plan would be less than significant.

5.2 ISSUE 2: CUMULATIVELY CONSIDERABLE NET INCREASE OF NONATTAINMENT CRITERIA POLLUTANTS

5.2.1 Impacts

By its very nature, air pollution is largely a cumulative impact. The nonattainment status of regional pollutants is a result of past and present development within the region. The project would generate criteria pollutants and precursors in the short-term during construction and the long-term during operation. To determine whether a project would result in cumulatively considerable emissions that would violate an air quality standard or contribute substantially to an existing or projected air quality violation, a project's emissions are evaluated based on the quantitative emission thresholds described in Section 4.3.1.

5.2.1.1 Construction

The project construction emissions were estimated using the CalEEMod model as described in Section 4.1.1. The complete CalEEMod output files are included in Appendix A to this report. The results of the calculations for the construction of the project are compared to the screening level thresholds (described in Section 4.3.1) in Table 23, *Maximum Daily Construction Emissions*. The data shown assumes the application of water on exposed surfaces a minimum of two times per day in compliance with SDAPCD Rule 55, Fugitive Dust.

Table 23
MAXIMUM DAILY CONSTRUCTION EMISSIONS

Activities/Year/Season	Pollutant Emissions (pounds per day)					
	VOC	NO _x	CO	SO _x	PM ₁₀	PM _{2.5}
Demolition/Site Preparation	1.8	20.7	18.3	<0.1	7.4	1.8
Grading	1.0	12.8	13.4	<0.1	1.6	0.7
Underground Utilities and Tanks	1.0	7.4	11.4	<0.1	0.4	0.3
Gas Station Construction	0.3	4.0	5.1	<0.1	0.3	0.1
Paving	1.2	12.5	10.6	<0.1	1.8	0.7
Architectural Coatings	1.6	0.9	1.5	<0.1	<0.1	<0.1
Maximum Daily Emissions	1.8	20.7	18.3	<0.1	7.4	1.8
<i>Screening Threshold</i>	75	250	550	250	100	67
Exceed Screening Threshold?	No	No	No	No	No	No

Source: CalEEMod (output data is provided in Appendix A); Thresholds SDAPCD 2019, SDAPCD 2021b, SCAQMD 2019
VOC = volatile organic compounds; NO_x = nitrogen oxides; CO = carbon monoxide; SO_x = sulfur oxides;
PM₁₀ = particulate matter 10 microns or less in diameter; PM_{2.5} = particulate matter 2.5 microns or less in diameter

As shown in Table 23, the project's short-term construction-related emissions are not anticipated to exceed the screening level thresholds for emissions for any criteria pollutant or precursor. Accordingly, construction activities associated with the development of the project would not substantially contribute to the SDAB's nonattainment status for ozone, PM₁₀, and PM_{2.5}. Therefore, construction of the project would not violate an air quality standard or contribute to an existing or projected air quality violation.

5.2.1.2 Operation

The project operational emissions were estimated using CalEEMod and EMFAC, as described in Section 4.1.2. Model outputs are provided in Appendices A and B of this report. Table 24, *Maximum Daily Operational Emissions*, compares the project's maximum daily operational emissions with the screening level thresholds described in Section 4.3.1. Per the project VMT analysis, the project would result in a reduction in customer-related VMT and an increase in employee-related VMT, with a total net reduction in regional VMT of 1,449 miles per day (approximately 528,885 miles per year) for customers and employees (Kittelson 2024a). There would also be an increase in delivery truck-related VMT, with a total net increase of 270 miles per day (98,550 miles per year). The mobile source emissions calculations account for reductions in regional mobile source emissions resulting from the project's regional reduction in VMT from customer trips and an increase in regional VMT from employee trips and fuel delivery truck trips, as described in Section 4.1.2, above.

Table 24
MAXIMUM DAILY OPERATIONAL EMISSIONS

Source	Pollutant Emissions (pounds per day)					
	VOC	NO _x	CO	SO _x	PM ₁₀	PM _{2.5}
Off-Site Mobile	-0.1	0.9	-2.4	<0.1	<0.1	<0.1
On-Site Vehicle Idling	1.9	0.7	4.2	<0.1	<0.1	<0.1
Area	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Gas Station Gasoline Vapor	44.4	-	-	-	-	-
Project Maximum Daily Emissions^{1, 2}	46.3	1.6	1.8	<0.1	<0.1	<0.1
<i>Screening Threshold</i>	<i>55</i>	<i>250</i>	<i>550</i>	<i>250</i>	<i>100</i>	<i>67</i>
Exceed Screening Threshold?	No	No	No	No	No	No

Source: CalEEMod (output data is provided in Appendix A); EMFAC (data is provided in Appendix B); Thresholds SDAPCD 2019, SDAPCD 2021b, SCAQMD 2019

¹ Total may not sum due to rounding.

² Maximum daily emissions of VOC, CO, SO_x, PM₁₀, and PM_{2.5} would occur during summer, and maximum daily emission of NO_x would occur during winter.

VOC = volatile organic compounds; NO_x = nitrogen oxides; CO = carbon monoxide; SO₂ = sulfur dioxide;

PM₁₀ = particulate matter 10 microns or less in diameter; PM_{2.5} = particulate matter 2.5 microns or less in diameter;

- = not applicable

As shown in Table 24, the project's operational emissions of criteria pollutants and precursors would be below the applicable screening thresholds of significance. The reduction in VOC and CO emissions from off-site mobile sources is due to the reduction in regional VMT for customers and employees, which are primarily trips by gasoline-powered vehicles. The lack of a reduction in NO_x emissions from off-site mobile sources is due to the increase in regional VMT from fuel delivery truck trips, which are primarily diesel-powered and have higher NO_x emissions than gasoline-powered vehicles. Accordingly, the project's operational emissions would not substantially contribute to the SDAB nonattainment status for ozone, PM₁₀, and PM_{2.5}. Long-term operation of the project would not violate an air quality standard or contribute to an existing or projected air quality violation.

5.2.2 Significance of Impacts

As shown in Tables 23 and 24, above, the project's construction and operational emissions of criteria pollutants and precursors would be below the screening level thresholds of significance. Therefore, the project's construction and operational emissions would not contribute to the SDAB nonattainment

status of ozone, PM₁₀, and PM_{2.5}. Construction and operation of the project would not violate an air quality standard or contribute to an existing or projected air quality violation and the impact would be less than significant.

5.2.3 Mitigation Framework

Impacts would be less than significant; therefore, no mitigation measures would be required.

5.3 ISSUE 3: IMPACTS TO SENSITIVE RECEPTORS

5.3.1 Impacts

5.3.1.1 Construction Activities

Fugitive Dust

As discussed in Section 5.2.2, construction of the project would not result in the emission of PM in excess of the screening thresholds. In addition, the project would be required to implement fugitive dust control measures during project construction in compliance with SDAPCD Rule 55.

Toxic Air Contaminants (Diesel Particulate Matter)

Implementation of the project would result in the use of heavy-duty construction equipment, haul trucks, on-site generators, and construction worker vehicles. These vehicles and equipment could generate the TAC DPM. Generation of DPM from construction projects typically occurs in a localized area (e.g., at the project site) for a short period of time. Because construction activities and subsequent emissions vary depending on the phase of construction (e.g., grading, building construction), the construction-related emissions to which nearby receptors are exposed would also vary throughout the construction period. During some equipment-intensive phases, such as grading, construction-related emissions would be higher than in other less equipment-intensive phases such as building construction. Concentrations of mobile-source DPM emissions are typically reduced by 70 percent at approximately 500 feet (CARB 2005).

The dose (of TAC) to which receptors are exposed is the primary factor used to determine health risk. The dose is a function of the concentration of a substance in the environment and the extent of exposure a person has to the substance; a longer exposure period to a fixed quantity of emissions would result in higher health risks. Current models and methodologies for conducting cancer health risk assessments are associated with longer-term exposure periods (typically 30 years for individual residents based on guidance from OEHHA) and are best suited for the evaluation of long-duration TAC emissions with predictable schedules and locations. These assessment models and methodologies do not correlate well with the temporary and highly variable nature of construction activities. Cancer potency factors are based on animal lifetime studies or worker studies where there is long-term exposure to the carcinogenic agent. There is considerable uncertainty in trying to evaluate the cancer risk from projects that will only last a small fraction of a lifetime (OEHHA 2015). Considering the short duration (4 months) of construction activity, the highly dispersive nature of DPM, and that construction activities would occur at various locations throughout the project site, construction of the project would not expose off-site sensitive receptors to substantial DPM concentrations.

5.3.1.2 Operational Activities

CO Hotspots

Vehicle exhaust is the primary source of CO in California. In an urban setting, the highest CO concentrations are generally found near congested intersections. Under typical meteorological conditions, CO concentrations tend to decrease as the distance from the emissions source (i.e., congested intersection) increases. Project-generated traffic has the potential of contributing to localized “hot spots” of CO off-site. Because CO is a byproduct of incomplete combustion, exhaust emissions are worse when fossil-fueled vehicles are operated inefficiently, such as in stop-and-go traffic or through heavily congested intersections. However, the volume of traffic required for CO concentrations to exceed the NAAQS and CAAQS is very high. The SDAPCD does not provide any screening guidance for analysis of CO hotspot impacts.

The Bay Area Air Quality Management District (BAAQMD) provides screening guidance in their CEQA Guidelines concerning the volume of traffic that could result in a CO hotspot: intersections that carry more than 44,000 vehicles per hour; or intersections that carry more than 24,000 vehicles per hour and where vertical and/or horizontal mixing is substantially limited (e.g., tunnel, parking garage, bridge underpass, natural or urban street canyon, below-grade roadway) (BAAQMD 2023).

The project's Local Transportation Analysis includes an analysis of traffic volumes for project-affected intersections. The highest volume analyzed intersection would be the intersection of West San Marcos Boulevard and the CA-78 eastbound ramps which carries an existing volume of 4,435 vehicles during the afternoon peak hour (Kittelson 2024c). This traffic volume is substantially below the 44,000 vehicles per hour screening level for CO hotspots suggested by the BAAQMD. Therefore, the long-term operation of the project would not expose sensitive receptors to substantial localized concentrations of CO.

Toxic Air Contaminants (Gas Station, Vehicle, and Fuel Delivery Truck)

Implementation of the project would result in emissions of TAC in gasoline vapor from the operation of a retail gasoline dispensing facility (gas station), emissions from the vehicles operating the gas station queue and pump area, and emissions from fuel delivery truck operating on the project site. To evaluate potential impacts to sensitive receptors from the TAC emissions, an HRA was completed as described in Section 4.2.

The incremental excess cancer risk is an estimate of the chance a person exposed to a specific source of a TAC may have of developing cancer from that exposure beyond the individual's risk of developing cancer from existing background levels of TACs in the ambient air. For context, the average cancer risk from TACs in the ambient air for an individual living in an urban area of California is 830 in 1 million (CARB 2015b). Cancer risk estimates do not mean, and should not be interpreted to mean, that a person will develop cancer from estimated exposures to toxic air pollutants.

The maximum estimated community incremental health effects due to exposure to the project's TAC emissions from long-term operation of the project for the Maximally Exposed Individual Resident (MEIR; modeled receptor ER1) are presented in Table 25, *Maximum Residential Incremental Health Effects*. These estimates are conservative (health protective) and assume that the resident is outdoors for the entire exposure period. The MEIR risks reported are for existing residential receptors in the project vicinity. Calculated health risks for some of the potential future residential receptors (modeled receptors

FR1 through FR4) and daycare sensitive receptors (modeled receptors D1 through D3) are higher than health risks for the MEIR, see the discrete receptor health risks and Table 27, below.

Table 25
MAXIMUM RESIDENTIAL INCREMENTAL HEALTH EFFECTS

	MEIR Cancer Risk (chances per million)	MEIR Non-Cancer Chronic Hazard Index	MEIR Acute Hazard Index
Results	0.51	0.002	0.046
Threshold	10	1	1
<i>Exceed Threshold?</i>	<i>No</i>	<i>No</i>	<i>No</i>

Source: Lakes AERMOD View and ADMRT
MEIR = Maximally Exposed Individual Resident

The maximum estimated community incremental health effects due to exposure to the project's TAC emissions from the long-term operation of the project for the Maximally Exposed Individual Worker (MEIW) would be modeled receptor C4 for cancer and non-cancer chronic risks (a point outside of the permanent building for the business across South Bent Avenue from the project site, see Figure 4). For off-site worker short-term acute risks, workers were assumed to be anywhere with the commercial/industrial properties surrounding the project site and the MEIW-Acute would be at approximately 150 feet northwest of the MEIW for cancer and non-cancer chronic risks (modeled receptor C4), near the sidewalk across South Bent Avenue from the project site. Health risks for the MEIW are presented in Table 26, *Maximum Worker Incremental Health Effects*. These estimates are conservative (health protective) and assume that the worker is outdoors for the entire exposure period.

Table 26
MAXIMUM WORKER INCREMENTAL HEALTH EFFECTS

	MEIW Cancer Risk (chances per million)	MEIW Non-Cancer Chronic Hazard Index	MEIW Acute Hazard Index
Results	3.42	0.057	0.45
Threshold	10	1	1
<i>Exceed Threshold?</i>	<i>No</i>	<i>No</i>	<i>No</i>

Source: Lakes AERMOD View and ADMRT
MEIW = Maximally Exposed Individual Worker

The estimated incremental excess cancer risk, chronic hazard index, and acute hazard index due to exposure to the project's TAC emissions for each discrete receptor location shown in Figure 4 are presented in Table 27, *Discrete Receptor Incremental Cancer, Chronic, and Acute Health Effects*. The model inputs, outputs, and risk isopleth figures are available in Appendix D of this report.

Table 27
DISCRETE RECEPTOR INCREMENTAL CANCER, CHRONIC, AND ACUTE HEALTH EFFECTS

Receptor ID	Description	Cancer Risk (chances per million)	Non-Cancer Chronic Hazard Index	Acute Hazard Index
ER1	Existing Single-Family Residential	0.51	0.002	0.046
ER2	Existing Multi-Family Residential	0.31	0.001	0.027
ER3	Existing Multi-Family Residential	0.36	0.001	0.032
FR1	Future Mixed Use Residential	0.73	0.003	0.043
FR2	Future Mixed Use Residential	0.67	0.002	0.043
FR3	Future Mixed Use Residential	1.12	0.003	0.102
FR4	Future Mixed Use Residential	1.32	0.005	0.092
D1	Daycare Facility	2.23	0.006	0.038
D2	Daycare Facility	0.95	0.003	0.055
D3	Daycare Facility	0.41	0.001	0.038
C1	Off-site Commercial Building	0.14	0.003	0.067
C2	Off-site Commercial Building	0.20	0.004	0.092
C3	Off-site Commercial Building	0.36	0.008	0.159
C4	Off-site Commercial Building	3.42	0.057	0.186
C5	Off-site Commercial Building	0.78	0.016	0.045
C6	Off-site Commercial Building	0.58	0.013	0.110
C7	Off-site Commercial Building	0.51	0.011	0.076
C8	Off-site Commercial Building	0.41	0.009	0.074
C9	Off-site Commercial Building	0.38	0.009	0.128
C10	Off-site Commercial Building	0.27	0.006	0.064
C11	Off-site Commercial Building	0.56	0.011	0.148
C12	Off-site Commercial Building	0.55	0.011	0.146
C13	Off-site Commercial Building	0.37	0.008	0.077
C14	Off-site Commercial Building	0.94	0.021	0.220

Source: Lakes AERMOD View and ADMRT

The point of maximum off-site impact for residential cancer and non-cancer chronic health risks would be on the project site south boundary at approximately Universal Transverse Mercator (UTM) coordinates Zone 11, 482905 meters East, 3666762 meters North, on the edge of South Bent Avenue, near the proposed gas pump canopy location. No residents or off-site workers are anticipated to be at the point of maximum impact for prolonged periods. If residents were to be located at the point of maximum impact for 30 years, the estimated incremental excess cancer risk would be 176 in 1 million. The point of maximum impact, MEIR, and MEIW locations are shown in Figure 4.

As shown in Tables 25, 26, and 27, the incremental increased cancer risks would not exceed the County threshold of 10 in 1 million and the chronic and acute HI would not exceed the County threshold of 1. Therefore, community health effects due to exposure to TAC emissions from the long-term operation of the project would not exceed the County thresholds at the maximum proposed permitted throughput of 36.5 million gallons per year of gasoline, and the long-term operation of the project would not expose sensitive receptors to substantial TAC concentrations.

5.3.2 Significance of Impacts

Implementation of the project would not expose sensitive receptors to substantial pollutant concentrations, and the impact would be less than significant.

5.3.3 Mitigation Framework

Impacts would be less than significant; therefore, no mitigation measures would be required.

5.3.4 Significance After Mitigation

Impacts related to exposure of sensitive receptors to substantial pollutant concentrations would be less than significant.

5.4 ISSUE 4: OTHER EMISSIONS (SUCH AS THOSE LEADING TO ODORS)

According to the SCAQMD *CEQA Air Quality Handbook*, land uses associated with odor complaints include agricultural uses, wastewater treatment plants, food processing plants, chemical plants, composting activities, refineries, landfills, dairies, and fiberglass molding operations (SCAQMD 1993). The project, involving a retail gas station, would not include any of the typical sources of odors identified by the SCAQMD. Emissions of gasoline vapor (which has an odor) are regulated and controlled by SCAQMD and CARB using the Phase I and Phase II EVR systems discussed in Section 2.1.1, above. Project construction could result in minor amounts of odors associated with unburned hydrocarbons in diesel heavy equipment exhaust. The odor of these diesel exhausts is objectionable to some; however, emissions would be intermittent and would disperse rapidly, and, therefore, would not affect a substantial number of people. Therefore, the project would not result in emissions leading to odors adversely affecting a substantial number of people.

5.4.1 Significance of Impacts

Implementation of the project would not result in other emissions (such as those leading to odors) adversely affecting a substantial number of people, and the impact would be less than significant.

5.4.2 Mitigation Framework

Impacts would be less than significant; therefore, no mitigation measures are required.

5.4.3 Significance After Mitigation

Implementation of the project would not result in other emissions (such as those leading to odors) adversely affecting a substantial number of people, and the impact would be less than significant.

6.0 GREENHOUSE GAS IMPACT ANALYSIS

This section evaluates potential impacts of the project related to the generation of GHG emissions. Complete modeling results are included in Appendices A and B of this report.

6.1 ISSUE 1: GREENHOUSE GAS EMISSIONS

6.1.1 Impacts

As described in Section 4.2.2, the significance of the project's GHG emissions is determined through an analysis of consistency with the City's CAP using the CAP Consistency Review Checklist (City 2020). Although not required for the CAP consistency analysis, the project's potential construction and operational GHG emissions were quantified and are disclosed below.

6.1.1.1 Construction Emissions

Project construction GHG emissions were estimated using the CalEEMod model as described in Section 4.1.1. Project-specific input was based on project-specific information described in Sections 1.2 and 4.1.1 and default model settings to estimate reasonably conservative conditions. Additional details of construction activities, selection of construction equipment, and other input parameters are shown in the CalEEMod output report, included in Appendix A to this report. Emissions of GHGs related to the construction of the project would be temporary. Total GHG emissions associated with the construction of the project are estimated at 114.6 MT CO₂e, all during 2025. For construction emissions, SCAQMD guidance recommends that the emissions be amortized (i.e., averaged) over 30 years and added to operational emissions. Averaged over 30 years, the proposed construction activities would contribute approximately 3.8 MT CO₂e emissions per year.

6.1.1.2 Operation Emissions

Project operational GHG emissions were estimated using CalEEMod and EMFAC as described in Section 4.1.2. Project-specific input was based on project-specific information described in Sections 1.2 and 4.1.2 and default model settings to estimate reasonably conservative conditions. Additional details of operational emissions and other input parameters are shown in Appendices A and B to this report. The calculated project operational emissions for the first anticipated full year of operation (2025) combined with amortized construction emissions are shown in Table 28, *Total Operational GHG Emissions*. Per the project VMT analysis, the project would result in a reduction of VMT from project customers and an increase in VMT from project employees, resulting in a net regional VMT reduction of 1,449 miles per day (approximately 528,885 miles per year) for customers and employees (Kittelson 2024a). Project fuel delivery truck trips were assumed to result in an increase in regional truck VMT of 270 miles per day (98,550 miles per year). Project emissions modeling accounts for reductions in regional mobile source emissions resulting from the project's net regional reduction in VMT from customers and employees and the project's increase in regional truck VMT from fuel delivery trucks, as described in Section 4.1.2, above.

Table 28
TOTAL OPERATIONAL GHG EMISSIONS

Emission Sources	2025 Emissions (MT CO ₂ e)
Off-Site Mobile	-10.5
On-Site Vehicle Idling	115.1
Area	<0.1
Energy	0.9
Water/Wastewater	<0.1
Solid Waste	3.0
Subtotal¹	108.5
Construction (Annualized over 30 years)	3.8
Project Total¹	112.3

Source: CalEEMod (output data is provided in Appendix A); EMFAC (data is provided in Appendix B)

¹ Totals may not sum due to rounding.

MT = metric tons; CO₂e = carbon dioxide equivalent

As shown in Table 28, the project would result in a net of approximately 112.3 MT CO₂e per year starting in 2026.

6.1.1.3 CAP Consistency Checklist

Project consistency with the City's CAP is determined using the steps and questions contained in the CAP Consistency Review Checklist. Per question 1 of the CAP Consistency Review Checklist, because the project would emit less than 500 MT CO₂e per year, in accordance with the City's CAP screening criteria, the project's GHG impact is less than significant and is not subject to the measures of the CAP (City 2020).

6.1.2 Significance of Impacts

As described in Section 2.2.5, the City's CAP is a qualified GHG reduction plan consistent with CEQA guidelines Section 15183.5. Projects that would be consistent with a qualified GHG reduction plan would have less than cumulatively considerable GHG emissions. Because the project would emit less than 500 MT CO₂e per year, in accordance with the City's CAP screening criteria, the project's GHG impact is less than significant and is not subject to the measures of the CAP (City 2020). Therefore, implementation of the project would not generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment, and the impact would be less than significant.

6.1.3 Mitigation Framework

Impacts would be less than significant; therefore, no mitigation measures would be required.

6.1.4 Significance After Mitigation

Implementation of the project would not generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment, and the impact would be less than significant.

6.2 CONFLICT WITH GHG REDUCTION PLANS

The project was analyzed for conflicts with the General Plan land use growth projections; the General Plan goals and policies applicable to the project that affect regional GHG emissions; the City's CAP; the Regional Plan; and the CARB 2022 Scoping Plan.

6.2.1 Impact Analysis

6.2.1.1 General Plan Land Use

The current General Plan land use designation and zoning for the project site is Commercial. The project would be consistent with the current Commercial land use and zoning designations for the project site and would not require a general plan amendment or rezone. Therefore, the project's contribution to employment growth in the City would be consistent with the growth projections in the City's General Plan and the growth projections used to develop the SDAPCD's RAQS and Attainment Plan. Therefore, the project would be consistent with the General Plan growth projections used in the development of the Regional Plan and in the development of GHG emissions inventories and projections used in the City's CAP and CARB's 2022 Scoping Plan.

6.2.1.2 Regional Plan and Scoping Plan

The project would result in a reduction in regional VMT of 1,449 miles per day (approximately 528,885 miles per year) for project customers and employees (Kittelson 2024a). A reduction in regional VMT (and VMT-related GHG emissions) is a primary objective of the Regional Plan as the San Diego County RTP/SCS in accordance with the mandates of SB 375. Implementation of the RTP/SCS plans in the state's metropolitan areas to reduce VMT is a key component of the mobile source GHG emissions reduction policies and control measures in the CARB 2022 Scoping Plan. In addition, as discussed above, the project would be consistent with the General Plan growth projections used in the development of the Regional Plan and in the development of GHG emissions inventories and projections used in the CARB 2022 Scoping Plan. Therefore, the project would be consistent with and would not obstruct the implementation of the SANDAG Regional Plan or the CARB 2022 Scoping Plan, and the impact would be less than significant.

6.2.2 Significance of Impacts

The project would not conflict with or obstruct the implementation of applicable plans and regulations adopted for the purpose of reducing the emissions of GHGs. The impact would be less than significant.

6.2.3 Mitigation Measures

Impacts would be less than significant, and no mitigation would be required.

6.2.4 Significance after Mitigation

The project would not conflict with or obstruct the implementation of applicable plans and regulations adopted for the purpose of reducing the emissions of GHGs. The impact would be less than significant.

7.0 ENERGY IMPACT ANALYSIS

7.1 ISSUE 1: WASTEFUL, INEFFICIENT, OR UNNECESSARY ENERGY CONSUMPTION

7.1.1 Impacts

The project would result in the demand for energy resources during both construction and long-term operation, as described below.

7.1.1.1 Construction Energy Use

Project-related construction activities would consume energy, primarily in the form of diesel fuel and gasoline (for mobile construction equipment, for on-road vehicles used to transport debris, soil, and supplies, and for construction worker commute trips). Project consumption of diesel and gasoline during construction was calculated using the estimated construction schedule, off-road equipment, and on-road trips described in Section 4.1.1; and using fuel consumption data from CARB's OFFROAD2021 version 1.0.7 and EMFAC version 1.0.2 emissions inventory databases (CARB 2024f; CARB 2024g). The project is anticipated to use 6,341 gallons of diesel and 712 gallons of gasoline during construction, all in 2025. A printout of the project energy use calculation sheet is included in Appendix E, *Energy Use Calculations*, to this report.

There are no known conditions within the project site that would require non-standard equipment or construction practices that would be less energy-efficient than at comparable construction sites in the region or the state.

The project would be required to comply with applicable state regulations. Construction equipment would be required to comply with the latest USEPA and CARB engine emissions standards. Per CALGreen regulations, the project is required to divert 65 percent of waste generated during construction from landfills. Recycling construction and demolition waste not only keeps it from being transported to the landfill, but also reduces the "upstream" energy consumption from the manufacturing of virgin material. Some incidental energy conservation would also occur through compliance with CCR Title 13, Motor Vehicles, section 2449(d)(3) Idling, which limits the idling times of construction vehicles to no more than 5 minutes, thereby avoiding unnecessary and wasteful consumption of fuel.

As discussed above, there are no unusual characteristics that would necessitate the use of construction equipment that would be less energy efficient than at comparable construction sites in the region or state. Therefore, construction energy use associated with the project would be typical of similar construction projects throughout the region and state and would not be inefficient, wasteful, or unnecessary.

7.1.1.2 Operational Energy Use

Operational Transportation Energy Use

Per the project VMT analysis, the project would result in a net reduction in regional VMT of 1,449 miles per day (approximately 528,885 miles per year) for project customers and employees (Kittelson 2024a). Therefore, the project would result in a reduction in regional transportation energy use for the

estimated 747,885 one-way trips per year from project customers and employees (Kittleson 2024b). The project could result in an increase in regional transportation fuels related to fuel delivery trucks and vehicle idling. The project's transportation energy use was calculated using the data described in Section 4.1.2 and using transportation fuel and energy use data from CARB's OFFROAD2021 version 1.0.7 emissions inventory database (CARB 2024f). During Operation, the project is anticipated to result in a 15,302 gallons per year decrease in regional gasoline use (from the net decrease in regional VMT from project customer and employee trips), a 16,290 gallons per year increase in regional diesel use (from the increase in regional truck VMT from project fuel delivery trucks), and a 901 kilowatt-hours (kWh) per year increase in regional electric vehicle energy use (from project employee trips). A printout of the project energy use calculation sheet is included in Appendix E.

Operational Electricity Use

The project would require electricity for the operation of the gas station equipment and lighting. Per the CalEEMod defaults for a gas station with 18 pumps (36 fueling positions) and approximately 46,000 SF of lighted parking and driveway areas, the project would result in the direct consumption of approximately 42,880 kWh of electricity per year. In addition, per the CalEEMod defaults for the irrigation of approximately 4,590 net new landscaped area, the project would use approximately 68,594 gallons of water per year resulting in the indirect use of 364 kWh of electricity to treat and supply water. A printout of the project energy use calculation sheet is included in Appendix E.

7.1.2 Significance of Impacts

The project would result in a 15,302 gallons per year reduction of regional gasoline use and a 16,290 gallons per year increase in regional diesel use. As described in Section 3.5.3, statewide consumption of diesel is approximately 3.1 billion gallons per year. The project's use of 16,290 gallons per year would be a negligible portion of the supply and use of diesel in California.

As described in Section 3.5.2, SDG&E customers consumed approximately 4,101 GWh (4,101,000,000 kWh) in 2023. The project's direct use of 42,880 kWh per year would be a negligible portion of the supply and use electricity in San Diego County. Because of the project building's small size (271 SF), the project would not be subject to the 2022 Title 24 Part 6 requirements for the installation of solar panels and energy storage for non-residential buildings (CEC 2022a).

Because the project would result in a reduction in regional VMT for customers and a reduction in the related gasoline use, and the project would result in negligible increases in statewide and regional use of diesel and electricity; and because the project's energy use would only be a function of gas station construction and operation (and not other ancillary, unrelated, or otherwise unnecessary uses), implementation of the project would not result in wasteful, inefficient, or unnecessary consumption of energy resources. The impact would be less than significant.

7.1.3 Mitigation Framework

Impacts would be less than significant; therefore, no mitigation measures would be required.

7.1.4 Significance After Mitigation

Implementation of the project would not result in wasteful, inefficient, or unnecessary consumption of energy resources. The impact would be less than significant.

7.2 ISSUE 2: CONFLICT WITH RENEWABLE ENERGY OR ENERGY EFFICIENCY PLANS

7.2.1 Impacts

The project would comply with applicable energy standards and regulations during construction and would be built and operated in accordance with existing applicable regulations at the time of construction, including Title 24 Part 6 building energy efficiency requirements and Title 24 Part 11 CALGreen requirements. As discussed in Section 7.1.1, the project would result in a reduction in regional VMT and gasoline use for customers and a negligible increase in statewide and regional diesel and electricity use. Therefore, the project would not conflict with or obstruct a state or local plan for renewable energy or energy efficiency.

7.2.2 Significance of Impacts

The project would not conflict with or obstruct a state or local plan for renewable energy or energy efficiency, and the impact would be less than significant.

7.2.3 Mitigation Framework

Impacts would be less than significant; therefore, no mitigation measures would be required.

7.2.4 Significance After Mitigation

The project would not conflict with or obstruct a state or local plan for renewable energy or energy efficiency, and the impact would be less than significant.

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Appendix A

CalEEMod Output

San Marcos Costco Fuel Facility R3 Detailed Report

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8. User Changes to Default Data

1. Basic Project Information

1.1. Basic Project Information

Data Field	Value
Project Name	San Marcos Costco Fuel Facility R3
Construction Start Date	1/2/2025
Operational Year	2026
Lead Agency	—
Land Use Scale	Project/site
Analysis Level for Defaults	County
Windspeed (m/s)	2.20
Precipitation (days)	9.80
Location	33.13937914312757, -117.18372316453124
County	San Diego
City	San Marcos
Air District	San Diego County APCD
Air Basin	San Diego
TAZ	6271
EDFZ	12
Electric Utility	San Diego Gas & Electric
Gas Utility	San Diego Gas & Electric
App Version	2022.1.1.28

1.2. Land Use Types

Land Use Subtype	Size	Unit	Lot Acreage	Building Area (sq ft)	Landscape Area (sq ft)	Special Landscape Area (sq ft)	Population	Description
Gasoline/Service Station	18.0	Pump	1.04	271	4,590	—	—	—

Parking Lot	46.2	1000sqft	1.06	0.00	0.00	—	—	—
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1.3. User-Selected Emission Reduction Measures by Emissions Sector

No measures selected

2. Emissions Summary

2.1. Construction Emissions Compared Against Thresholds

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

Un/Mit.	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Unmit.	1.57	0.91	1.51	< 0.005	0.03	0.07	0.10	0.03	0.02	0.04	211
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Unmit.	1.76	20.6	18.3	0.09	0.57	6.82	7.39	0.54	1.25	1.79	11,924
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.19	1.54	1.72	0.01	0.04	0.25	0.29	0.04	0.05	0.09	692
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.03	0.28	0.31	< 0.005	0.01	0.04	0.05	0.01	0.01	0.02	115

2.2. Construction Emissions by Year, Unmitigated

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

Year	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
2025	1.57	0.91	1.51	< 0.005	0.03	0.07	0.10	0.03	0.02	0.04	211

Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
2025	1.76	20.6	18.3	0.09	0.57	6.82	7.39	0.54	1.25	1.79	11,924
Average Daily	—	—	—	—	—	—	—	—	—	—	—
2025	0.19	1.54	1.72	0.01	0.04	0.25	0.29	0.04	0.05	0.09	692
Annual	—	—	—	—	—	—	—	—	—	—	—
2025	0.03	0.28	0.31	< 0.005	0.01	0.04	0.05	0.01	0.01	0.02	115

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.	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.02	< 0.005	0.01	< 0.005	< 0.005	0.00	< 0.005	< 0.005	0.00	< 0.005	23.9
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	23.9
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.01	< 0.005	0.01	< 0.005	< 0.005	0.00	< 0.005	< 0.005	0.00	< 0.005	23.9
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—
Unmit.	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.00	< 0.005	< 0.005	0.00	< 0.005	3.96

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	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Area	0.02	< 0.005	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	0.05
Energy	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	5.54
Water	—	—	—	—	—	—	—	—	—	—	0.05
Waste	—	—	—	—	—	—	—	—	—	—	18.3
Total	0.02	< 0.005	0.01	< 0.005	< 0.005	0.00	< 0.005	< 0.005	0.00	< 0.005	23.9
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Area	0.01	—	—	—	—	—	—	—	—	—	—
Energy	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	5.54
Water	—	—	—	—	—	—	—	—	—	—	0.05
Waste	—	—	—	—	—	—	—	—	—	—	18.3
Total	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	23.9
Average Daily	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Area	0.01	< 0.005	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	0.02
Energy	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	5.54
Water	—	—	—	—	—	—	—	—	—	—	0.05
Waste	—	—	—	—	—	—	—	—	—	—	18.3
Total	0.01	< 0.005	0.01	< 0.005	< 0.005	0.00	< 0.005	< 0.005	0.00	< 0.005	23.9
Annual	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Area	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	< 0.005
Energy	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	0.92
Water	—	—	—	—	—	—	—	—	—	—	0.01
Waste	—	—	—	—	—	—	—	—	—	—	3.03
Total	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.00	< 0.005	< 0.005	0.00	< 0.005	3.96

3. Construction Emissions Details

3.1. Demolition/Site Preparation (2025) - Unmitigated

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

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.55	11.6	14.2	0.05	0.45	—	0.45	0.42	—	0.42	4,840
Dust From Material Movement	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—
Demolition	—	—	—	—	—	4.95	4.95	—	0.75	0.75	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.04	0.32	0.39	< 0.005	0.01	—	0.01	0.01	—	0.01	133
Dust From Material Movement	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—
Demolition	—	—	—	—	—	0.14	0.14	—	0.02	0.02	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.06	0.07	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	22.0
Dust From Material Movement	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—
Demolition	—	—	—	—	—	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
Offsite	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Worker	0.08	0.07	0.81	0.00	0.00	0.17	0.17	0.00	0.04	0.04	182
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.14	8.94	3.26	0.04	0.12	1.70	1.82	0.12	0.46	0.59	6,902
Average Daily	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.02	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	5.03
Vendor	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	0.25	0.09	< 0.005	< 0.005	0.05	0.05	< 0.005	0.01	0.02	189
Annual	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	0.83
Vendor	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	0.04	0.02	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	31.3

3.3. Grading (2025) - Unmitigated

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

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.88	7.31	10.7	0.02	0.28	—	0.28	0.26	—	0.26	2,072
Dust From Material Movement	—	—	—	—	—	0.01	0.01	—	< 0.005	< 0.005	—

Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.10	0.15	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	28.4
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
Annual	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	0.02	0.03	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	4.70
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
Offsite	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Worker	0.07	0.06	0.71	0.00	0.00	0.15	0.15	0.00	0.03	0.03	159
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.08	5.47	1.99	0.03	0.07	1.04	1.11	0.07	0.28	0.36	4,220
Average Daily	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	2.20
Vendor	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	0.07	0.03	< 0.005	< 0.005	0.01	0.02	< 0.005	< 0.005	< 0.005	57.8
Annual	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	0.36
Vendor	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	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	9.58

3.5. Building Construction (2025) - Unmitigated

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

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.23	3.63	4.15	0.01	0.06	—	0.06	0.06	—	0.06	745
Onsite truck	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	0.25	0.28	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	51.1
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	0.05	0.05	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	8.45
Onsite truck	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	0.08	0.07	0.81	0.00	0.00	0.17	0.17	0.00	0.04	0.04	182
Vendor	0.01	0.35	0.16	< 0.005	< 0.005	0.06	0.07	< 0.005	0.02	0.02	261
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	< 0.005	0.06	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	12.6
Vendor	< 0.005	0.02	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	17.9

Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	2.08
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	2.96
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.7. Paving (2025) - Unmitigated

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

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.52	5.48	7.64	0.01	0.26	—	0.26	0.24	—	0.24	1,177
Paving	0.56	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.08	0.10	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	16.1
Paving	0.01	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	0.01	0.02	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	2.67
Paving	< 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
Offsite	—	—	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Worker	0.04	0.03	0.41	0.00	0.00	0.08	0.08	0.00	0.02	0.02	90.8
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.11	7.03	2.56	0.03	0.10	1.33	1.43	0.10	0.37	0.46	5,425
Average Daily	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	1.26
Vendor	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	0.10	0.03	< 0.005	< 0.005	0.02	0.02	< 0.005	< 0.005	0.01	74.4
Annual	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	0.21
Vendor	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	0.02	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	12.3

3.9. Architectural Coating (2025) - Unmitigated

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

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.13	0.88	1.14	< 0.005	0.03	—	0.03	0.03	—	0.03	134
Architectural Coatings	1.41	—	—	—	—	—	—	—	—	—	—
Onsite truck	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	0.13	0.88	1.14	< 0.005	0.03	—	0.03	0.03	—	0.03	134

Architectural Coatings	1.41	—	—	—	—	—	—	—	—	—	—
Onsite truck	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	< 0.005	0.02	0.03	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	3.67
Architectural Coatings	0.04	—	—	—	—	—	—	—	—	—	—
Onsite truck	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	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	0.61
Architectural Coatings	0.01	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Worker	0.03	0.02	0.37	0.00	0.00	0.07	0.07	0.00	0.02	0.02	77.1
Vendor	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
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Worker	0.03	0.03	0.32	0.00	0.00	0.07	0.07	0.00	0.02	0.02	72.6
Vendor	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	2.01
Vendor	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
Annual	—	—	—	—	—	—	—	—	—	—	—

Worker	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	0.33
Vendor	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

3.11. Underground Utilities and Tanks (2025) - Unmitigated

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

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.88	7.31	10.7	0.02	0.28	—	0.28	0.26	—	0.26	2,072
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.04	0.32	0.47	< 0.005	0.01	—	0.01	0.01	—	0.01	90.8
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.06	0.09	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	15.0
Onsite truck	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	0.07	0.06	0.71	0.00	0.00	0.15	0.15	0.00	0.03	0.03	159
Vendor	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

Average Daily	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.03	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	7.04
Vendor	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
Annual	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	1.16
Vendor	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

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	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Gasoline/Service Station	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Parking Lot	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
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Gasoline/Service Station	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Parking Lot	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
Annual	—	—	—	—	—	—	—	—	—	—	—

Gasoline/Serv Station	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Parking Lot	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

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	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Gasoline/Serv ice Station	—	—	—	—	—	—	—	—	—	—	0.31
Parking Lot	—	—	—	—	—	—	—	—	—	—	5.22
Total	—	—	—	—	—	—	—	—	—	—	5.54
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Gasoline/Serv ice Station	—	—	—	—	—	—	—	—	—	—	0.31
Parking Lot	—	—	—	—	—	—	—	—	—	—	5.22
Total	—	—	—	—	—	—	—	—	—	—	5.54
Annual	—	—	—	—	—	—	—	—	—	—	—
Gasoline/Serv ice Station	—	—	—	—	—	—	—	—	—	—	0.05
Parking Lot	—	—	—	—	—	—	—	—	—	—	0.86
Total	—	—	—	—	—	—	—	—	—	—	0.92

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	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Gasoline/Service Station	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	0.00
Parking Lot	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
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Gasoline/Service Station	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	0.00
Parking Lot	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
Annual	—	—	—	—	—	—	—	—	—	—	—
Gasoline/Service Station	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	0.00
Parking Lot	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

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	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—

Consumer Products	0.01	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	< 0.005	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	< 0.005	< 0.005	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	0.05
Total	0.02	< 0.005	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	0.05
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	0.01	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	< 0.005	—	—	—	—	—	—	—	—	—	—
Total	0.01	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	< 0.005	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	< 0.005	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	< 0.005
Total	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	< 0.005

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	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Gasoline/Service Station	—	—	—	—	—	—	—	—	—	—	0.05

Parking Lot	—	—	—	—	—	—	—	—	—	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	0.05
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Gasoline/Service Station	—	—	—	—	—	—	—	—	—	—	0.05
Parking Lot	—	—	—	—	—	—	—	—	—	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	0.05
Annual	—	—	—	—	—	—	—	—	—	—	—
Gasoline/Service Station	—	—	—	—	—	—	—	—	—	—	0.01
Parking Lot	—	—	—	—	—	—	—	—	—	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	0.01

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	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Gasoline/Service Station	—	—	—	—	—	—	—	—	—	—	18.3
Parking Lot	—	—	—	—	—	—	—	—	—	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	18.3
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—

Gasoline/Serv ice Station	—	—	—	—	—	—	—	—	—	—	18.3
Parking Lot	—	—	—	—	—	—	—	—	—	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	18.3
Annual	—	—	—	—	—	—	—	—	—	—	—
Gasoline/Serv ice Station	—	—	—	—	—	—	—	—	—	—	3.03
Parking Lot	—	—	—	—	—	—	—	—	—	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	3.03

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	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—

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)

Equipment Type	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	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)

Equipment Type	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—

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	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	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	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—

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

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

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—

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

4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

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

Species	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	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
Demolition/Site Preparation	Demolition	1/2/2025	1/15/2025	5.00	10.0	—
Grading	Grading	1/16/2025	1/22/2025	5.00	5.00	—
Building Construction	Building Construction	2/14/2025	3/20/2025	5.00	25.0	—
Paving	Paving	3/21/2025	3/27/2025	5.00	5.00	—
Architectural Coating	Architectural Coating	3/28/2025	4/10/2025	5.00	10.0	—
Underground Utilities and Tanks	Trenching	1/23/2025	2/13/2025	5.00	16.0	—

5.2. Off-Road Equipment

5.2.1. Unmitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Demolition/Site Preparation	Tractors/Loaders/Back hoes	Diesel	Average	2.00	8.00	84.0	0.37
Demolition/Site Preparation	Excavators	Diesel	Average	2.00	8.00	300	0.38

Demolition/Site Preparation	Excavators	Diesel	Average	1.00	8.00	70.0	0.38
Demolition/Site Preparation	Excavators	Diesel	Average	1.00	8.00	24.0	0.38
Demolition/Site Preparation	Rubber Tired Loaders	Diesel	Average	1.00	8.00	321	0.36
Demolition/Site Preparation	Off-Highway Trucks	Diesel	Average	1.00	4.00	376	0.38
Grading	Tractors/Loaders/Back hoes	Diesel	Average	3.00	8.00	84.0	0.37
Grading	Skid Steer Loaders	Diesel	Average	1.00	8.00	71.0	0.37
Grading	Rollers	Diesel	Average	2.00	8.00	36.0	0.38
Grading	Off-Highway Trucks	Diesel	Average	1.00	4.00	376	0.38
Building Construction	Forklifts	Diesel	Average	1.00	8.00	82.0	0.20
Building Construction	Aerial Lifts	Diesel	Average	4.00	8.00	46.0	0.31
Paving	Pavers	Diesel	Average	1.00	8.00	81.0	0.42
Paving	Rollers	Diesel	Average	2.00	8.00	80.0	0.38
Paving	Tractors/Loaders/Back hoes	Diesel	Average	1.00	8.00	84.0	0.37
Architectural Coating	Air Compressors	Diesel	Average	1.00	6.00	37.0	0.48
Underground Utilities and Tanks	Tractors/Loaders/Back hoes	Diesel	Average	3.00	8.00	84.0	0.37
Underground Utilities and Tanks	Skid Steer Loaders	Diesel	Average	1.00	8.00	71.0	0.37
Underground Utilities and Tanks	Rollers	Diesel	Average	2.00	8.00	36.0	0.38
Underground Utilities and Tanks	Off-Highway Trucks	Diesel	Average	1.00	4.00	376	0.38

5.3. Construction Vehicles

5.3.1. Unmitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Demolition/Site Preparation	—	—	—	—
Demolition/Site Preparation	Worker	20.0	12.0	LDA,LDT1,LDT2
Demolition/Site Preparation	Vendor	—	7.63	HHDT,MHDT
Demolition/Site Preparation	Hauling	91.6	20.0	HHDT
Demolition/Site Preparation	Onsite truck	—	—	HHDT
Grading	—	—	—	—
Grading	Worker	17.5	12.0	LDA,LDT1,LDT2
Grading	Vendor	—	7.63	HHDT,MHDT
Grading	Hauling	56.0	20.0	HHDT
Grading	Onsite truck	—	—	HHDT
Building Construction	—	—	—	—
Building Construction	Worker	20.0	12.0	LDA,LDT1,LDT2
Building Construction	Vendor	10.0	7.63	HHDT,MHDT
Building Construction	Hauling	0.00	20.0	HHDT
Building Construction	Onsite truck	—	—	HHDT
Paving	—	—	—	—
Paving	Worker	10.0	12.0	LDA,LDT1,LDT2
Paving	Vendor	—	7.63	HHDT,MHDT
Paving	Hauling	72.0	20.0	HHDT
Paving	Onsite truck	—	—	HHDT
Architectural Coating	—	—	—	—
Architectural Coating	Worker	8.00	12.0	LDA,LDT1,LDT2
Architectural Coating	Vendor	—	7.63	HHDT,MHDT
Architectural Coating	Hauling	0.00	20.0	HHDT
Architectural Coating	Onsite truck	—	—	HHDT
Underground Utilities and Tanks	—	—	—	—
Underground Utilities and Tanks	Worker	17.5	12.0	LDA,LDT1,LDT2

Underground Utilities and Tanks	Vendor	—	7.63	HHDT,MHDT
Underground Utilities and Tanks	Hauling	0.00	20.0	HHDT
Underground Utilities and Tanks	Onsite truck	—	—	HHDT

5.4. Vehicles

5.4.1. Construction Vehicle Control Strategies

Non-applicable. No control strategies activated by user.

5.5. Architectural Coatings

Phase Name	Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)
Architectural Coating	0.00	0.00	407	136	2,770

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 (Ton of Debris)	Acres Paved (acres)
Demolition/Site Preparation	—	96.0	0.00	3,615	—
Grading	—	2,240	0.00	0.00	—
Paving	0.00	0.00	0.00	0.00	55.1

5.6.2. Construction Earthmoving Control Strategies

Control Strategies Applied	Frequency (per day)	PM10 Reduction	PM2.5 Reduction
Water Exposed Area	2	61%	61%
Water Demolished Area	2	36%	36%

5.7. Construction Paving

Land Use	Area Paved (acres)	% Asphalt
Gasoline/Service Station	54.0	0%
Parking Lot	1.06	100%

5.8. Construction Electricity Consumption and Emissions Factors

kWh per Year and Emission Factor (lb/MWh)

Year	kWh per Year	CO2	CH4	N2O
2025	0.00	589	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
Gasoline/Service Station	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Parking Lot	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	407	136	2,770

5.10.3. Landscape Equipment

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

5.11. Operational Energy Consumption

5.11.1. Unmitigated

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

Land Use	Electricity (kWh/yr)	CO2	CH4	N2O	Natural Gas (kBTU/yr)
Gasoline/Service Station	2,432	45.1	0.0330	0.0040	0.00
Parking Lot	40,448	45.1	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)
Gasoline/Service Station	0.00	68,594
Parking Lot	0.00	0.00

5.13. Operational Waste Generation

5.13.1. Unmitigated

Land Use	Waste (ton/year)	Cogeneration (kWh/year)
Gasoline/Service Station	9.70	—
Parking Lot	0.00	—

5.14. Operational Refrigeration and Air Conditioning Equipment

5.14.1. Unmitigated

Land Use Type	Equipment Type	Refrigerant	GWP	Quantity (kg)	Operations Leak Rate	Service Leak Rate	Times Serviced
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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)
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5.17. User Defined

Equipment Type	Fuel Type
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5.18. Vegetation

5.18.1. Land Use Change

5.18.1.1. Unmitigated

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

5.18.1.1. Unmitigated

Biomass Cover Type	Initial Acres	Final Acres
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5.18.2. Sequestration

5.18.2.1. Unmitigated

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

6.1. Climate Risk Summary

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

Climate Hazard	Result for Project Location	Unit
Temperature and Extreme Heat	14.7	annual days of extreme heat
Extreme Precipitation	5.15	annual days with precipitation above 20 mm
Sea Level Rise	—	meters of inundation depth
Wildfire	10.5	annual hectares burned

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

Extreme Precipitation data are for the grid cell in which your project are located. The threshold of 20 mm is equivalent to about $\frac{3}{4}$ 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	1	0	0	N/A
Wildfire	1	0	0	N/A
Flooding	0	0	0	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	1	1	1	2
Wildfire	1	1	1	2
Flooding	1	1	1	2
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	42.6
AQ-PM	28.1
AQ-DPM	76.8
Drinking Water	24.2
Lead Risk Housing	39.5
Pesticides	35.7
Toxic Releases	27.8
Traffic	61.5
Effect Indicators	—
CleanUp Sites	78.6
Groundwater	67.5
Haz Waste Facilities/Generators	82.7
Impaired Water Bodies	43.8
Solid Waste	96.6
Sensitive Population	—
Asthma	3.22
Cardio-vascular	14.1
Low Birth Weights	40.5

Socioeconomic Factor Indicators	—
Education	78.3
Housing	82.8
Linguistic	77.9
Poverty	78.2
Unemployment	36.4

7.2. Healthy Places Index Scores

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

Indicator	Result for Project Census Tract
Economic	—
Above Poverty	14.57718465
Employed	17.95200821
Median HI	15.05196972
Education	—
Bachelor's or higher	34.96727833
High school enrollment	100
Preschool enrollment	1.873476197
Transportation	—
Auto Access	7.878865649
Active commuting	68.52303349
Social	—
2-parent households	81.04709355
Voting	41.66559733
Neighborhood	—
Alcohol availability	17.16925446
Park access	56.96137559
Retail density	84.51174131

Supermarket access	77.74926216
Tree canopy	38.40626203
Housing	—
Homeownership	8.623123316
Housing habitability	19.36353137
Low-inc homeowner severe housing cost burden	79.81521879
Low-inc renter severe housing cost burden	64.18580778
Uncrowded housing	31.19466188
Health Outcomes	—
Insured adults	5.902733222
Arthritis	9.2
Asthma ER Admissions	99.1
High Blood Pressure	21.8
Cancer (excluding skin)	21.2
Asthma	30.0
Coronary Heart Disease	3.1
Chronic Obstructive Pulmonary Disease	5.5
Diagnosed Diabetes	18.3
Life Expectancy at Birth	13.9
Cognitively Disabled	11.9
Physically Disabled	7.5
Heart Attack ER Admissions	99.6
Mental Health Not Good	25.4
Chronic Kidney Disease	2.7
Obesity	34.9
Pedestrian Injuries	81.7
Physical Health Not Good	17.6
Stroke	5.6

Health Risk Behaviors	—
Binge Drinking	68.3
Current Smoker	35.6
No Leisure Time for Physical Activity	16.4
Climate Change Exposures	—
Wildfire Risk	0.0
SLR Inundation Area	0.0
Children	16.3
Elderly	23.2
English Speaking	15.1
Foreign-born	80.3
Outdoor Workers	11.8
Climate Change Adaptive Capacity	—
Impervious Surface Cover	47.4
Traffic Density	77.2
Traffic Access	23.0
Other Indices	—
Hardship	72.9
Other Decision Support	—
2016 Voting	49.7

7.3. Overall Health & Equity Scores

Metric	Result for Project Census Tract
CalEnviroScreen 4.0 Score for Project Location (a)	59.0
Healthy Places Index Score for Project Location (b)	15.0
Project Located in a Designated Disadvantaged Community (Senate Bill 535)	No
Project Located in a Low-Income Community (Assembly Bill 1550)	Yes
Project Located in a Community Air Protection Program Community (Assembly Bill 617)	No

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

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

7.4. Health & Equity Measures

No Health & Equity Measures selected.

7.5. Evaluation Scorecard

Health & Equity Evaluation Scorecard not completed.

7.6. Health & Equity Custom Measures

No Health & Equity Custom Measures created.

8. User Changes to Default Data

Screen	Justification
Land Use	Land use sizes per site plan. Parking lot size includes asphalt surface. Gasoline/Service Station acreage includes replaced landscaping (4,590 SF net new landscaped area) and all concrete surfaces (pump and tank slab, drive aisles, sidewalks in ROW, and driveway aprons in ROW).
Construction: Construction Phases	Construction schedule per project engineer. Demolition/site preparation includes removal of asphalt/concrete and landscaping. Underground Utilities and Tanks includes excavation for USTs and stormwater retention.
Construction: Off-Road Equipment	Equipment per project engineer. Off-highway Trucks = water truck. Tractors/Loader/Backhoes includes skip loaders . Aerial Lifts includes boom lifts and scissors lifts.
Construction: Dust From Material Movement	140 truckloads of soil exported during grading per project engineer. 6 truckloads of vegetation exported during demolition/site, estimated from civil plan set.
Construction: Trips and VMT	180 truckloads of asphalt/aggregate imported during paving (360 one-way trips), based on an assumption of 12 inches uncompressed depth and 16 CY per tandem trailer load. Default building construction worker and vendor trips are near zero, 20 worker trips (crew of 10) and 10 vendor trips (includes 3 to 4 truckload of concrete per day) per day were assumed. Default architectural coating worker trips are near zero, 8 worker trips (crew of 4) per day assumed.
Construction: Paving	Impervious areas per civil drawing set and project engineer.
Operations: Vehicle Data	Per the project VMT analysis, the project would result in a reduction in regional VMT of 1,449 miles per day (Kittelson 2024). Trip rate set to zero, reductions in mobile emissions not included in modeling.
Operations: Energy Use	Gas station would not use natural gas.
Operations: Water and Waste Water	Gas station does not include restroom or any other indoor water use.

Appendix B

Mobile Source Emissions Calculations

San Marcos Costco Business Center Fuel Facility Project

Mobile Source Emissions Calculation Totals (Details on Following Pages)

Maximum Daily Criteria Pollutant Emissions (pounds per day)

Source	ROG	NOX	CO	SOX	PM10	PM2.5
Off-Site Travel	-0.109	0.920	-2.390	-0.001	0.028	0.017
On-Site Idling	1.860	0.719	4.243	0.006	0.007	0.007

Annual GHG Emissions (metric tons per year)

Source	CO2e
Off-Site Travel	-10.50
On-Site Idling	115.11

Definition of Terms Used in Calculations

EMFAC2007 Vehicle Category Scheme

LDA - Light-Duty Automobiles (passenger cars).

LDT1 - Light-Duty Trucks (gross vehicle weight rating <6,000 pounds, equivalent test weight <= 3,750 pounds).

LDT2 - Light-Duty Trucks (gross vehicle weight rating <6,000 pounds, equivalent test weight <= 3,751 to 5,750 pounds).

MDV - Medium-Duty Vehicles (gross vehicle weight rating 6,000 to 8,500 pounds).

HHD - Heavy-Duty Trucks (equivalent test weight <= 33,001 to 60,000 pounds).

EMFAC2021 Emission Processes

RUNEX - Running Exhaust Emissions: the emissions that come out of the vehicle tailpipe while the vehicle is traveling on the road, including at speed and idling that occurs as part of normal driving, such as at intersections.

IDLEX - Idle Exhaust Emissions: the emissions during extended idling events (i.e., a continuous segment of vehicle activity that meets three criteria: all instantaneous vehicle speeds being lower than 5 mph, the total distance of less than 1 mile, and the total duration of more than 5 minutes) by heavy duty trucks.

STREX - Start Exhaust Emissions: the excess tailpipe emissions that occur when a vehicle is starting because the emissions-control equipment has not yet reached its optimal operating temperature. Start exhaust emissions are independent of running exhaust emissions.

HOTSOAK - Hot Soak Emissions: the evaporative hydrocarbon emissions that are emitted from a vehicle while the engine is still hot after the vehicle stopped operating until the fuel tank temperature cools down to a non-operation level.

RUNLOSS - Running Loss Emissions: the evaporative hydrocarbon emissions that are emitted while the vehicle engine is on.

DIURNAL - Diurnal Emissions: the evaporative hydrocarbon emissions from a sitting vehicle while the ambient temperature changes.

PMBW - Break Wear Particulate Matter Emissions: the emissions of dust from the vehicle's brakes while moving.

PMTW - Tire Wear Particulate Matter Emissions: the emissions of dust from the vehicle's tires resulting from friction with the road surface.

Off-Site Mobile Source Max Daily Criteria Pollutant Emissions

Fleet Mix Calculations

CalEEMod Default Fleet Mix for San Diego County

HHD	LDA	LDT1	LDT2	LHD1	LHD2	MCY	MDV	MH	MHD	OBUS	SBUS	UBUS
0.65%	50.42%	4.95%	22.39%	2.84%	0.71%	2.75%	13.63%	0.54%	0.86%	0.07%	0.10%	0.04%

Employee Fleet Mix

LDA Gasoline	LDA Diesel	LDA Electric	LDA Plug-In Hybrid	LDT1 Gasoline	LDT1 Diesel	LDT1 Electric	LDT1 Plug-In Hybrid	LDT2 Gasoline	LDT2 Diesel	LDT2 Electric	LDT2 Plug-In Hybrid	MDV Gasoline	MDV Diesel	MDV Electric	MDV Plug-In Hybrid
48.97%	0.15%	4.18%	1.87%	5.38%	0.00%	0.02%	0.02%	23.93%	0.09%	0.20%	0.28%	14.28%	0.24%	0.22%	0.18%

Customer Fleet Mix

LDA Gasoline	LDA Plug-In Hybrid	LDT1 Gasoline	LDT1 Plug-In Hybrid	LDT2 Gasoline	LDT2 Plug-In Hybrid	MDV Gasoline	MDV Plug-In Hybrid
53.14%	2.03%	5.40%	0.02%	24.22%	0.28%	14.73%	0.19%

Fuel Delivery Truck Fleet Mix

HHD Diesel
100%

Project Change in Daily Trips and VMT

Category	Trips	VMT (miles)
Customer	0	-1,565
Employee	8	116
Fuel Delivery Trucks	10	270

ROG Emissions (pounds per day)

Vehicle Category and Fuel	RUNEX	STREX	DIURN	HOTSOAK	RUNLOSS	Total
Employee LDA Gasoline	1.090E-03	2.392E-03	2.559E-03	7.385E-04	3.197E-03	9.977E-03
Employee LDA Diesel	1.236E-05					1.236E-05
Employee LDA Plug-In Hybrid	8.405E-06	5.469E-05	3.556E-05	1.341E-05	1.566E-05	1.277E-04
Employee LDT1 Gasoline	5.144E-04	5.305E-04	6.893E-04	1.857E-04	9.674E-04	2.887E-03
Employee LDT1 Diesel	7.370E-07					7.370E-07
Employee LDT1 Plug-In Hybrid	6.805E-08	4.917E-07	2.020E-07	7.032E-08	6.905E-08	9.012E-07
Employee LDT2 Gasoline	7.561E-04	1.412E-03	1.292E-03	3.480E-04	1.593E-03	5.402E-03
Employee LDT2 Diesel	6.178E-06					6.178E-06
Employee LDT2 Plug-In Hybrid	1.184E-06	8.171E-06	3.699E-06	1.278E-06	1.391E-06	1.572E-05
Employee MDV Gasoline	5.922E-04	1.096E-03	9.760E-04	2.498E-04	1.230E-03	4.144E-03
Employee MDV Diesel	1.392E-05					1.392E-05
Employee MDV Plug-In Hybrid	7.876E-07	5.378E-06	2.732E-06	9.929E-07	1.060E-06	1.095E-05
Customer LDA Gasoline	-1.596E-02				-4.680E-02	-6.276E-02
Customer LDA Plug-In Hybrid	-1.230E-04				-2.293E-04	-3.523E-04
Customer LDT1 Gasoline	-6.971E-03				-1.311E-02	-2.008E-02
Customer LDT1 Plug-In Hybrid	-9.221E-07				-9.357E-07	-1.858E-06
Customer LDT2 Gasoline	-1.032E-02				-2.175E-02	-3.208E-02
Customer LDT2 Plug-In Hybrid	-1.616E-05				-1.899E-05	-3.516E-05
Customer MDV Gasoline	-8.241E-03				-1.712E-02	-2.536E-02
Customer MDV Plug-In Hybrid	-1.096E-05				-1.475E-05	-2.571E-05
Fuel Delivery Truck HHD Diesel	9.336E-03					9.336E-03
ROG Total						-0.1088

NOX Emissions (pounds per day)

Vehicle Category and Fuel	RUNEX	STREX	Total
Employee LDA Gasoline	4.254E-03	1.983E-03	6.236E-03
Employee LDA Diesel	5.434E-05		5.434E-05
Employee LDA Plug-In Hybrid	1.623E-05	3.722E-05	5.344E-05
Employee LDT1 Gasoline	1.952E-03	3.812E-04	2.333E-03
Employee LDT1 Diesel	3.318E-06		3.318E-06
Employee LDT1 Plug-In Hybrid	1.314E-07	3.346E-07	4.660E-07
Employee LDT2 Gasoline	3.659E-03	1.255E-03	4.914E-03
Employee LDT2 Diesel	1.085E-05		1.085E-05
Employee LDT2 Plug-In Hybrid	2.286E-06	5.561E-06	7.847E-06
Employee MDV Gasoline	2.892E-03	9.402E-04	3.833E-03
Employee MDV Diesel	5.035E-05		5.035E-05
Employee MDV Plug-In Hybrid	1.521E-06	3.660E-06	5.181E-06
Customer LDA Gasoline	-6.227E-02		-6.227E-02
Customer LDA Plug-In Hybrid	-6.323E-04		-6.323E-04
Customer LDT1 Gasoline	-2.645E-02		-2.645E-02
Customer LDT1 Plug-In Hybrid	-1.780E-06		-1.780E-06
Customer LDT2 Gasoline	-4.995E-02		-4.995E-02
Customer LDT2 Plug-In Hybrid	-3.121E-05		-3.121E-05
Customer MDV Gasoline	-4.025E-02		-4.025E-02
Customer MDV Plug-In Hybrid	-2.116E-05		-2.116E-05
Fuel Delivery Truck HHD Diesel	1.082E+00		1.082E+00
NOX Total			0.9199

Off-Site Mobile Source Max Daily Criteria Pollutant Emissions

CO Emissions (pounds per day)

Vehicle Category and Fuel	RUNEX	STREX	Total
Employee LDA Gasoline	8.355E-02	7.070E-05	8.362E-02
Employee LDA Diesel	1.934E-04		1.934E-04
Employee LDA Electric			0.000E+00
Employee LDA Plug-In Hybrid	1.109E-03	4.190E-04	1.528E-03
Employee LDT1 Gasoline	2.137E-02	5.042E-03	2.642E-02
Employee LDT1 Diesel	4.123E-06		4.123E-06
Employee LDT1 Electric			0.000E+00
Employee LDT1 Plug-In Hybrid	8.994E-06	3.768E-06	1.276E-05
Employee LDT2 Gasoline	4.882E-02	1.352E-02	6.234E-02
Employee LDT2 Diesel	6.375E-05		6.375E-05
Employee LDT2 Electric			0.000E+00
Employee LDT2 Plug-In Hybrid	1.564E-04	6.261E-05	2.190E-04
Employee MDV Gasoline	3.232E-02	8.787E-03	4.111E-02
Employee MDV Diesel	2.626E-04		2.626E-04
Employee MDV Electric			0.000E+00
Employee MDV Plug-In Hybrid	1.040E-04	4.121E-05	1.452E-04
Customer LDA Gasoline	-1.223E+00		-1.223E+00
Customer LDA Plug-In Hybrid	-1.624E-02		-1.624E-02
Customer LDT1 Gasoline	-2.896E-01		-2.896E-01
Customer LDT1 Plug-In Hybrid	-1.219E-04		-1.219E-04
Customer LDT2 Gasoline	-6.665E-01		-6.665E-01
Customer LDT2 Plug-In Hybrid	-2.135E-03		-2.135E-03
Customer MDV Gasoline	-4.497E-01		-4.497E-01
Customer MDV Plug-In Hybrid	-1.447E-03		-1.447E-03
Fuel Delivery Truck HHD Diesel	4.333E-02		4.333E-02
CO Total			-2.3896

SOX Emissions (pounds per day)

Vehicle Category and Fuel	RUNEX	STREX	Total
Employee LDA Gasoline	3.523E-04	5.692E-06	3.580E-04
Employee LDA Diesel	8.810E-07		8.810E-07
Employee LDA Plug-In Hybrid	6.750E-06	2.049E-07	6.955E-06
Employee LDT1 Gasoline	4.739E-05	8.052E-07	4.819E-05
Employee LDT1 Diesel	9.288E-09		9.288E-09
Employee LDT1 Plug-In Hybrid	5.468E-08	1.948E-09	5.663E-08
Employee LDT2 Gasoline	2.131E-04	3.472E-06	2.166E-04
Employee LDT2 Diesel	7.443E-07		7.443E-07
Employee LDT2 Plug-In Hybrid	9.512E-07	3.534E-08	9.865E-07
Employee MDV Gasoline	1.545E-04	2.546E-06	1.570E-04
Employee MDV Diesel	2.530E-06		2.530E-06
Employee MDV Plug-In Hybrid	6.327E-07	2.873E-08	6.615E-07
Customer LDA Gasoline	-5.157E-03		-5.157E-03
Customer LDA Plug-In Hybrid	-9.881E-05		-9.881E-05
Customer LDT1 Gasoline	-6.421E-04		-6.421E-04
Customer LDT1 Plug-In Hybrid	-7.409E-07		-7.409E-07
Customer LDT2 Gasoline	-2.909E-03		-2.909E-03
Customer LDT2 Plug-In Hybrid	-1.299E-05		-1.299E-05
Customer MDV Gasoline	-2.150E-03		-2.150E-03
Customer MDV Plug-In Hybrid	-8.804E-06		-8.804E-06
Fuel Delivery Truck HHD Diesel	8.892E-03		8.892E-03
SOX Total			-0.0013

PM10 Emissions (pounds per day)

Vehicle Category and Fuel	RUNEX	STREX	PMTW	PMBW	Total
Employee LDA Gasoline	1.947E-04	1.741E-05	1.002E-03	9.108E-04	2.125E-03
Employee LDA Diesel	5.097E-06		2.973E-06	2.773E-06	1.084E-05
Employee LDA Electric			2.973E-06	1.626E-06	4.599E-06
Employee LDA Plug-In Hybrid	3.542E-06	6.664E-07	3.825E-05	1.853E-05	6.099E-05
Employee LDT1 Gasoline	3.311E-05	2.828E-06	1.100E-04	1.263E-04	2.723E-04
Employee LDT1 Diesel	6.053E-07		1.748E-08	2.266E-08	6.454E-07
Employee LDT1 Electric			4.671E-07	2.555E-07	7.226E-07
Employee LDT1 Plug-In Hybrid	2.014E-08	4.217E-09	3.440E-07	1.683E-07	5.366E-07
Employee LDT2 Gasoline	9.867E-05	8.516E-06	4.896E-04	5.366E-04	1.133E-03
Employee LDT2 Diesel	1.226E-06		1.927E-06	2.110E-06	5.263E-06
Employee LDT2 Electric			3.991E-06	2.177E-06	6.168E-06
Employee LDT2 Plug-In Hybrid	4.090E-07	8.150E-08	5.716E-06	2.785E-06	8.992E-06
Employee MDV Gasoline	5.770E-05	5.162E-06	2.922E-04	3.255E-04	6.805E-04
Employee MDV Diesel	4.249E-06		4.889E-06	5.582E-06	1.472E-05
Employee MDV Electric			4.400E-06	2.400E-06	6.800E-06
Employee MDV Plug-In Hybrid	3.067E-07	6.073E-08	3.762E-06	1.832E-06	5.961E-06
Customer LDA Gasoline	-2.850E-03		-1.467E-02	-1.333E-02	-3.085E-02
Customer LDA Plug-In Hybrid	-5.186E-05		-5.600E-04	-2.712E-04	-8.831E-04
Customer LDT1 Gasoline	-4.487E-04		-1.491E-03	-1.712E-03	-3.651E-03
Customer LDT1 Plug-In Hybrid	-2.729E-07		-4.661E-06	-2.281E-06	-7.215E-06
Customer LDT2 Gasoline	-1.347E-03		-6.684E-03	-7.326E-03	-1.536E-02
Customer LDT2 Plug-In Hybrid	-5.585E-06		-7.804E-05	-3.802E-05	-1.216E-04
Customer MDV Gasoline	-8.029E-04		-4.065E-03	-4.529E-03	-9.398E-03
Customer MDV Plug-In Hybrid	-4.267E-06		-5.235E-05	-3.800E-05	-9.462E-05
Fuel Delivery Truck HHD Diesel	1.617E-02		2.102E-02	4.697E-02	8.417E-02
PM10 Total					0.0281

Off-Site Mobile Source Max Daily Criteria Pollutant Emissions

PM2.5 Emissions (pounds per day)

Vehicle Category and Fuel	RUNEX	STREX	PMTW	PMBW	Total
Employee LDA Gasoline	1.790E-04	1.601E-05	2.505E-04	3.188E-04	7.643E-04
Employee LDA Diesel	4.877E-06		7.433E-07	9.706E-07	6.591E-06
Employee LDA Electric			2.137E-05	1.636E-05	3.774E-05
Employee LDA Plug-In Hybrid	3.257E-06	1.369E-06	9.563E-06	6.485E-06	2.068E-05
Employee LDT1 Gasoline	3.045E-05	2.600E-06	2.750E-05	4.422E-05	1.048E-04
Employee LDT1 Diesel	5.791E-07		4.369E-09	7.930E-09	5.914E-07
Employee LDT1 Electric			1.168E-07	3.346E-09	1.201E-07
Employee LDT1 Plug-In Hybrid	1.852E-08	3.877E-09	8.599E-08	5.891E-08	1.673E-07
Employee LDT2 Gasoline	9.072E-05	7.830E-06	1.224E-04	1.878E-04	4.088E-04
Employee LDT2 Diesel	1.173E-06		4.818E-07	7.386E-07	2.393E-06
Employee LDT2 Electric			9.977E-07	7.619E-07	1.760E-06
Employee LDT2 Plug-In Hybrid	3.761E-07	7.494E-08	1.429E-06	9.748E-07	2.855E-06
Employee MDV Gasoline	5.306E-05	4.746E-06	7.304E-05	1.139E-04	2.448E-04
Employee MDV Diesel	4.065E-06		1.222E-06	1.954E-06	7.241E-06
Employee MDV Electric			1.100E-06	8.400E-07	1.940E-06
Employee MDV Plug-In Hybrid	2.820E-07	5.584E-08	9.405E-07	6.412E-07	1.920E-06
Customer LDA Gasoline	-2.620E-03		-3.667E-03	-4.667E-03	-1.095E-02
Customer LDA Plug-In Hybrid	-4.768E-05		-1.400E-04	-9.494E-05	-2.826E-04
Customer LDT1 Gasoline	-4.126E-04		-3.727E-04	-5.992E-04	-1.384E-03
Customer LDT1 Plug-In Hybrid	-2.509E-07		-1.165E-06	-7.983E-07	-2.214E-06
Customer LDT2 Gasoline	-1.239E-03		-1.671E-03	-2.564E-03	-5.474E-03
Customer LDT2 Plug-In Hybrid	-5.135E-06		-1.951E-05	-1.331E-05	-3.795E-05
Customer MDV Gasoline	-7.383E-04		-1.016E-03	-1.585E-03	-3.340E-03
Customer MDV Plug-In Hybrid	-3.924E-06		-1.309E-05	-8.922E-06	-2.593E-05
Fuel Delivery Truck HHD Diesel	1.547E-02		5.256E-03	1.644E-02	3.717E-02
PM2.5 Total					0.0173

VMT based emissions in pounds per day calculation (RUNEX, RUNLOSS, PMTW, PMBW):

regional emissions (tons/year) / regional VMT (miles per year) * 2,000 (pounds/ton) * project VMT (miles/day) * fleet mix (%)

Trip based emissions in pounds per day calculation (STREX, DIURN, HOTSOK):

regional emissions (tons/year) / regional trips (trips per year) * 2,000 (pounds/ton) * project trips (trips/day) * fleet mix (%)

Notes:

1. Emissions factors calculated from EMFAC2021 Inventory-Level emissions, VMT, and trips for San Diego County in 2026.
2. Evaporative emissions DIURN, HOTSOK and RUNLOSS only reported in EMFAC for gasoline-fueled vehicle ROG emissions.
3. Customer and employee daily VMT from the Regional VMT Assessment Memorandum (Kittelton 2024); project would result in a decrease in customer VMT, customer trips would not be new to the region and trip based emissions from customer vehicles (STREX, DIURN, and HOATSOAK) are not included in the analysis.
4. One way daily employee and fuel delivery truck trips from the Regional VMT Assessment Memorandum (Kittelton 2024).
5. Fuel delivery truck trips distance (27-miles one-way) from the Costco Project Team.
6. Fleet mix calculated using the ratio of vehicle categories from CalEEMod 2022.1 defaults for San Diego County in 2026, and the ratio of VMT by fuel and vehicle category from EMFAC2021 for San Diego

Off-Site Mobile Source Annual GHG Emissions

Fleet Mix Calculations

CalEEMod Default Fleet Mix for San Diego County

HHD	LDA	LDT1	LDT2	LHD1	LHD2	MCY	MDV	MH	MHD	OBUS	SBUS	UBUS
0.65%	50.42%	4.95%	22.39%	2.84%	0.71%	2.75%	13.63%	0.54%	0.86%	0.07%	0.10%	0.04%

Employee Fleet Mix

LDA Gasoline	LDA Diesel	LDA Electric	LDA Plug-In Hybrid	LDT1 Gasoline	LDT1 Diesel	LDT1 Electric	LDT1 Plug-In Hybrid	LDT2 Gasoline	LDT2 Diesel	LDT2 Electric	LDT2 Plug-In Hybrid	MDV Gasoline	MDV Diesel	MDV Electric	MDV Plug-In Hybrid
48.97%	0.15%	4.18%	1.87%	5.38%	0.00%	0.02%	0.02%	23.93%	0.09%	0.20%	0.28%	14.28%	0.24%	0.22%	0.18%

Customer Fleet Mix

LDA Gasoline	LDA Plug-In Hybrid	LDT1 Gasoline	LDT1 Plug-In Hybrid	LDT2 Gasoline	LDT2 Plug-In Hybrid	MDV Gasoline	MDV Plug-In Hybrid
53.14%	2.03%	5.40%	0.02%	24.22%	0.28%	14.73%	0.19%

Fuel Delivery Truck Fleet Mix

HHD Diesel
100%

Project Change in Annual Trips and VMT

Category	Trips	VMT (miles)
Customer	0	-571,225
Employee	2,920	42,340
Fuel Delivery Trucks	3,650	98,550

CO2 Emissions (metric tons per year)

Vehicle Category and Fuel	RUNEX	STREX	Total
Employee LDA Gasoline	7.168E+00	1.158E-01	7.284E+00
Employee LDA Diesel	1.870E-02	0.000E+00	1.870E-02
Employee LDA Plug-In Hybrid	1.374E-01	4.169E-03	1.415E-01
Employee LDT1 Gasoline	9.643E-01	1.639E-02	9.807E-01
Employee LDT1 Diesel	1.972E-04	0.000E+00	1.972E-04
Employee LDT1 Plug-In Hybrid	1.113E-03	3.963E-05	1.152E-03
Employee LDT2 Gasoline	4.336E+00	7.066E-02	4.407E+00
Employee LDT2 Diesel	1.580E-02	0.000E+00	1.580E-02
Employee LDT2 Plug-In Hybrid	1.936E-02	7.192E-04	2.008E-02
Employee MDV Gasoline	3.144E+00	5.180E-02	3.195E+00
Employee MDV Diesel	5.370E-02	0.000E+00	5.370E-02
Employee MDV Plug-In Hybrid	1.288E-02	5.847E-04	1.346E-02
Customer LDA Gasoline	-1.049E+02		-1.049E+02
Customer LDA Plug-In Hybrid	-2.011E+00		-2.011E+00
Customer LDT1 Gasoline	-1.307E+01		-1.307E+01
Customer LDT1 Plug-In Hybrid	-1.508E-02		-1.508E-02
Customer LDT2 Gasoline	-5.920E+01		-5.920E+01
Customer LDT2 Plug-In Hybrid	-2.643E-01		-2.643E-01
Customer MDV Gasoline	-4.374E+01		-4.374E+01
Customer MDV Plug-In Hybrid	-1.792E-01		-1.792E-01
Fuel Delivery Truck HHD Diesel	1.889E+02		1.889E+02
CO2 Total			-18.3728

CH4 Emissions (metric tons per year)

Vehicle Category and Fuel	RUNEX	STREX	Total
Employee LDA Gasoline	6.046E-05	1.076E-04	1.681E-04
Employee LDA Diesel	1.155E-07	0.000E+00	1.155E-07
Employee LDA Plug-In Hybrid	5.342E-07	2.704E-06	3.238E-06
Employee LDT1 Gasoline	2.323E-05	2.050E-05	4.373E-05
Employee LDT1 Diesel	6.887E-09	0.000E+00	6.887E-09
Employee LDT1 Plug-In Hybrid	4.314E-09	2.426E-08	2.858E-08
Employee LDT2 Gasoline	3.990E-05	6.271E-05	1.026E-04
Employee LDT2 Diesel	5.772E-08	0.000E+00	5.772E-08
Employee LDT2 Plug-In Hybrid	7.507E-08	4.032E-07	4.783E-07
Employee MDV Gasoline	2.953E-05	4.521E-05	7.474E-05
Employee MDV Diesel	1.301E-07	0.000E+00	1.301E-07
Employee MDV Plug-In Hybrid	5.010E-08	2.662E-07	3.163E-07
Customer LDA Gasoline	-8.850E-04		-8.850E-04
Customer LDA Plug-In Hybrid	-7.820E-06		-7.820E-06
Customer LDT1 Gasoline	-3.147E-04		-3.147E-04
Customer LDT1 Plug-In Hybrid	-5.846E-08		-5.846E-08
Customer LDT2 Gasoline	-5.447E-04		-5.447E-04
Customer LDT2 Plug-In Hybrid	-1.025E-06		-1.025E-06
Customer MDV Gasoline	-4.109E-04		-4.109E-04
Customer MDV Plug-In Hybrid	-6.971E-07		-6.971E-07
Fuel Delivery Truck HHD Diesel	8.723E-05		8.723E-05
CH4 Total			-0.0017

Off-Site Mobile Source Annual GHG Emissions

N2O Emissions (metric tons per year)			
Vehicle Category and Fuel	RUNEX	STREX	Total
Employee LDA Gasoline	1.064E-04	5.396E-05	1.603E-04
Employee LDA Diesel	2.947E-06	0.000E+00	2.947E-06
Employee LDA Plug-In Hybrid	5.895E-07	1.351E-06	1.940E-06
Employee LDT1 Gasoline	2.862E-05	7.525E-06	3.615E-05
Employee LDT1 Diesel	3.107E-08	0.000E+00	3.107E-08
Employee LDT1 Plug-In Hybrid	4.750E-09	1.210E-08	1.685E-08
Employee LDT2 Gasoline	6.858E-05	2.989E-05	9.847E-05
Employee LDT2 Diesel	2.490E-06	0.000E+00	2.490E-06
Employee LDT2 Plug-In Hybrid	8.265E-08	2.010E-07	2.837E-07
Employee MDV Gasoline	4.873E-05	1.940E-05	6.814E-05
Employee MDV Diesel	8.461E-06	0.000E+00	8.461E-06
Employee MDV Plug-In Hybrid	5.532E-08	1.331E-07	1.884E-07
Customer LDA Gasoline	-1.557E-03		-1.557E-03
Customer LDA Plug-In Hybrid	-8.629E-06		-8.629E-06
Customer LDT1 Gasoline	-3.878E-04		-3.878E-04
Customer LDT1 Plug-In Hybrid	-6.436E-08		-6.436E-08
Customer LDT2 Gasoline	-9.363E-04		-9.363E-04
Customer LDT2 Plug-In Hybrid	-1.128E-06		-1.128E-06
Customer MDV Gasoline	-6.781E-04		-6.781E-04
Customer MDV Plug-In Hybrid	-7.698E-07		-7.698E-07
Fuel Delivery Truck HHD Diesel	2.976E-02		2.976E-02
N2O Total			0.0266

Global Warming Potential			
Gas	CO2	CH4	N2O
GWP	1	25	298

CO2e Total (metric tons per year)				
Gas	CO2	CH4	N2O	CO2e
Total	-18.37	-1.68E-03	2.66E-02	-10.50

VMT based emissions in metric tons per year calculation (RUNEX):

$$\text{regional emissions (tons/year)} / \text{regional VMT (miles per year)} * 1.102311 \text{ (metric tons/ton)} * \text{project VMT (miles/year)} * \text{fleet mix (\%)}$$

Trip based emissions in metric tons per year calculation (STREX):

$$\text{regional emissions (tons/year)} / \text{regional trips (trips per year)} * 1.102311 \text{ (metric tons/ton)} * \text{project trips (trips/year)} * \text{fleet mix (\%)}$$

Notes:

1. Emissions factors calculated from EMFAC2021 Inventory-Level emissions, VMT, and trips for San Diego County in 2026.
2. Customer and employee annual VMT from the Regional VMT Assessment Memorandum (Kittelson 2024); project would result in a decrease in customer VMT, customer trips would not be new to the region and trip based emissions from customer vehicles (STREX) are not included in the analysis.
3. Customer and employee annual trips from the Regional VMT Assessment Memorandum (Kittelson 2024).
4. One way annual employee and fuel delivery truck trips from the Regional VMT Assessment Memorandum (Kittelson 2024).
5. Fuel delivery truck trips distance (27-miles one-way) from the Costco Project Team.
6. To comply with international reporting standards, GHG Global Warming Potentials are from the United Nations Intergovernmental Panel on Climate Change (IPCC) Fourth Assessment Report (AR4).
7. Fleet mix calculated using the ratio of vehicle categories from CalEEMod 2022.1 defaults for San Diego County in 2026, and the ratio of VMT by fuel and vehicle category from EMFAC2021 for San Diego County in 2026.

Summary Maximum Idling Emissions (pounds per day)

grams per pound	453.5924
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CalEEMod Default Fleet Mix for San Diego County

Customer Fleet Mix

Fuel Delivery Truck Fleet Mix

Maximum Daily ROG Idling Emissions (pounds per day)

Maximum Daily NOX Idling Emissions (pounds per day)

Maximum Daily CO Idling Emissions (pounds per day)

Vehicle Class	Fuel	Fleet Mix	Trips/Day	Idle Time (min/day)	IDLEX	RUNEX	STREX	Total
HHDT	Diesel	100%	5	25	3.169E-02			3.169E-02
LDA	Gasoline	53.14%	5913	6492		3.720E-01	1.641E+00	2.013E+00
LDA	Plug-In Hybrid	2.03%	5913	6492		1.097E-02	3.017E-02	4.114E-02
LDT1	Gasoline	5.40%	5913	6492		9.217E-02	3.320E-01	4.241E-01
LDT1	Plug-In Hybrid	0.02%	5913	6492		8.223E-05	2.253E-04	3.075E-04
LDT2	Gasoline	24.22%	5913	6492		2.042E-01	8.310E-01	1.035E+00
LDT2	Plug-In Hybrid	0.28%	5913	6492		1.442E-03	3.945E-03	5.387E-03
MDV	Gasoline	14.73%	5913	6492		1.381E-01	5.505E-01	6.886E-01
MDV	Plug-In Hybrid	0.19%	5913	6492		9.774E-04	2.680E-03	3.657E-03
							Total	4.2431

On-Site Fuel Delivery Truck and Customer Vehicle Maximum Daily Idling Criteria Pollutant Emissions

Maximum Daily SOX Idling Emissions (pounds per day)

Vehicle Class	Fuel	Fleet Mix	Trips/Day	Idle Time (min/day)	IDLEX	RUNEX	STREX	Total
HHDT	Diesel	100%	5	25	4.674E-05			4.674E-05
LDA	Gasoline	53.14%	5913	6492		1.971E-03	8.221E-04	2.793E-03
LDA	Plug-In Hybrid	2.03%	5913	6492		4.608E-05	1.183E-05	5.791E-05
LDT1	Gasoline	5.40%	5913	6492		2.457E-04	8.356E-05	3.293E-04
LDT1	Plug-In Hybrid	0.02%	5913	6492		3.453E-07	9.341E-08	4.387E-07
LDT2	Gasoline	24.22%	5913	6492		1.114E-03	3.923E-04	1.506E-03
LDT2	Plug-In Hybrid	0.28%	5913	6492		6.054E-06	1.785E-06	7.839E-06
MDV	Gasoline	14.73%	5913	6492		8.244E-04	2.929E-04	1.117E-03
MDV	Plug-In Hybrid	0.19%	5913	6492		4.104E-06	1.497E-06	5.601E-06
SOX Total								0.0059

Maximum Daily PM10 Idling Emissions (pounds per day)

Vehicle Class	Fuel	Fleet Mix	Trips/Day	Idle Time (min/day)	IDLEX	RUNEX	STREX	Total
HHDT	Diesel	100%	5	25	1.299E-05			1.299E-05
LDA	Gasoline	53.14%	5913	6492		2.738E-03	1.092E-03	3.829E-03
LDA	Plug-In Hybrid	2.03%	5913	6492		4.995E-05	1.836E-05	6.832E-05
LDT1	Gasoline	5.40%	5913	6492		4.156E-04	1.841E-04	5.998E-04
LDT1	Plug-In Hybrid	0.02%	5913	6492		2.629E-07	9.651E-08	3.594E-07
LDT2	Gasoline	24.22%	5913	6492		1.291E-03	4.906E-04	1.782E-03
LDT2	Plug-In Hybrid	0.28%	5913	6492		5.379E-06	1.966E-06	7.345E-06
MDV	Gasoline	14.73%	5913	6492		7.681E-04	3.103E-04	1.078E-03
MDV	Plug-In Hybrid	0.19%	5913	6492		4.110E-06	1.511E-06	5.622E-06
PM10 Total								0.0074

Maximum Daily PM2.5 Idling Emissions (pounds per day)

Vehicle Class	Fuel	Fleet Mix	Trips/Day	Idle Time (min/day)	IDLEX	RUNEX	STREX	Total
HHDT	Diesel	100%	5	25	1.243E-05			1.243E-05
LDA	Gasoline	53.14%	5913	6492		2.517E-03	1.004E-03	3.521E-03
LDA	Plug-In Hybrid	2.03%	5913	6492		4.593E-05	1.689E-05	6.281E-05
LDT1	Gasoline	5.40%	5913	6492		3.822E-04	1.693E-04	5.515E-04
LDT1	Plug-In Hybrid	0.02%	5913	6492		2.417E-07	8.874E-08	3.304E-07
LDT2	Gasoline	24.22%	5913	6492		1.187E-03	4.511E-04	1.638E-03
LDT2	Plug-In Hybrid	0.28%	5913	6492		4.946E-06	1.807E-06	6.753E-06
MDV	Gasoline	14.73%	5913	6492		7.062E-04	2.853E-04	9.915E-04
MDV	Plug-In Hybrid	0.19%	5913	6492		3.779E-06	1.390E-06	5.169E-06
PM2.5 Total								0.0068

HHD idling emissions in pounds per day calculation (IDLEX):

emissions rate (grams/hour) / 453.5924 (grams/pound) * project idling time (hours/day) * fleet mix (%)

Customer and employee vehicle idling emissions in pounds per day calculation (RUNEX):

emissions rate 0 to 5 mph bin (grams/hour) / 453.5924 (grams/pound) * 2.5 correction factor * project idling time (hours/day) * fleet mix (%)

Customer and employee vehicle RUNLOSS emissions in pounds per day calculation:

emissions rate (grams/hour) / 453.5924 (grams/pound) * 2.5 correction factor * project idling time (hours/day) * fleet mix (%)

Trip based emissions in pounds per day calculation (STREX, HOTSOAK):

emissions rate (grams/hour) / 453.5924 (grams/pound) * project trips (trips/day) * fleet mix (%)

Notes:

1. Emissions factors from EMFAC2021 Project-Level Analysis for San Diego County in 2026.
2. EMFAC only reports idling emissions (IDLEX) for heavy duty diesel trucks; car and light truck idling emissions assume the RUNEX emissions rate (in grams per mile) for the 0 to 5 mph bin with a correction factor of 2.5 mph applied per EMFAC2021 Volume II - Handbook for Project -Level Analysis.
3. Evaporative Emissions HOTSOAK, RUNLOSS only reported in EMFAC for gasoline-fueled vehicle ROG emissions.
4. HOTSOAK reported in EMFAC2021 Project-Level Analysis in grams per vehicle start, all vehicles in the gas station que assume to start their engine on-site once (after refueling).
5. RUNLOSS reported in EMFAC2021 Project-Level Analysis in grams per vehicle hour.
6. STREX reported in EMFAC2021 Project-Level Analysis in grams per vehicle start, all vehicles in the gas station que assumed to start their engine on-site once following a 5 minute cooling period (after refueling).
7. Start exhaust emissions (STREX) rates for HHD diesel only reported in EMFAC for NOX emissions.
8. Customer vehicle trips are for vehicles entering the project site, from the project Local Transportation Analysis (Kittelson 2024), includes pass-by, diverted, and internal capture trips.
9. Daily customer vehicle idling time from the traffic engineer (Kittelson 2024).
10. Truck trips are for fuel delivery truck entering the project site, from the Regional VMT Assessment Memorandum (Kittelson 2024).
11. Fuel delivery trucks assumed to idle on-site for the maximum 5 minutes per truck allowable per Title 13, CCR, section 2485.

On-Site Fuel Delivery Truck and Customer Vehicle Annual Idling GHG Emissions

grams per metric ton	1,000,000
metric tons per ton	1.102311

Fleet Mix

CalEEMod Default Fleet Mix for San Diego County

HHD	LDA	LDT1	LDT2	LHD1	LHD2	MCY	MDV	MH	MHD	OBUS	SBUS	UBUS
0.65%	50.42%	4.95%	22.39%	2.84%	0.71%	2.75%	13.63%	0.54%	0.86%	0.07%	0.10%	0.04%
Gas Station Queue Fleet Mix												
LDA	LDT1	LDT2	MDV									
55.17%	5.42%	24.50%	14.92%									

Fleet Mix Calculations

CalEEMod Default Fleet Mix for San Diego County

HHD	LDA	LDT1	LDT2	LHD1	LHD2	MCY	MDV	MH	MHD	OBUS	SBUS	UBUS
0.65%	50.42%	4.95%	22.39%	2.84%	0.71%	2.75%	13.63%	0.54%	0.86%	0.07%	0.10%	0.04%

Customer Fleet Mix

LDA Gasoline	LDA Plug-In Hybrid	LDT1 Gasoline	LDT1 Plug-In Hybrid	LDT2 Gasoline	LDT2 Plug-In Hybrid	MDV Gasoline	MDV Plug-In Hybrid
53.14%	2.03%	5.40%	0.02%	24.22%	0.28%	14.73%	0.19%

Fuel Delivery Truck Fleet Mix

HHD Diesel
100%

Annual CO2 Idling Emissions (metric tons per year)

Vehicle Class	Fuel	Fleet Mix	Trips/year	Idle Time (hours/year)	IDLEX	RUNEX	STREX	Total
HHDT	Diesel	100%	1,825	9,125	4.867E+01			4.867E+01
LDA	Gasoline	53.14%	2,158,063	21,586		1.781E+01	1.091E+01	2.872E+01
LDA	Plug-In Hybrid	2.03%	2,158,063	21,586		4.162E-01	1.874E-01	6.036E-01
LDT1	Gasoline	5.40%	2,158,063	21,586		2.212E+00	1.285E+00	3.497E+00
LDT1	Plug-In Hybrid	0.02%	2,158,063	21,586		3.119E-03	1.483E-03	4.602E-03
LDT2	Gasoline	24.22%	2,158,063	21,586		1.007E+01	6.249E+00	1.632E+01
LDT2	Plug-In Hybrid	0.28%	2,158,063	21,586		5.468E-02	2.845E-02	8.314E-02
MDV	Gasoline	14.73%	2,158,063	21,586		7.453E+00	4.682E+00	1.213E+01
MDV	Plug-In Hybrid	0.19%	2,158,063	21,586		3.707E-02	2.404E-02	6.111E-02
CO2 Total								110.0930

Annual CH4 Idling Emissions (metric tons per year)

Vehicle Class	Fuel	Fleet Mix	Trips/year	Idle Time (hours/year)	IDLEX	RUNEX	STREX	Total
HHDT	Diesel	100%	1,825	9,125	1.003E-03			1.003E-03
LDA	Gasoline	53.14%	2,158,063	21,586		3.594E-04	6.961E-03	7.321E-03
LDA	Plug-In Hybrid	2.03%	2,158,063	21,586		4.328E-06	1.198E-04	1.241E-04
LDT1	Gasoline	5.40%	2,158,063	21,586		1.143E-04	1.368E-03	1.482E-03
LDT1	Plug-In Hybrid	0.02%	2,158,063	21,586		3.243E-08	8.947E-07	9.272E-07
LDT2	Gasoline	24.22%	2,158,063	21,586		2.151E-04	4.102E-03	4.318E-03
LDT2	Plug-In Hybrid	0.28%	2,158,063	21,586		5.686E-07	1.567E-05	1.624E-05
MDV	Gasoline	14.73%	2,158,063	21,586		1.621E-04	3.034E-03	3.196E-03
MDV	Plug-In Hybrid	0.19%	2,158,063	21,586		3.855E-07	1.064E-05	1.103E-05
CH4 Total								0.0175

Annual N2O Idling Emissions (metric tons per year)

Vehicle Class	Fuel	Fleet Mix	Trips/year	Idle Time (hours/year)	RUNEX	Total
HHDT	Diesel	100%	1,825	9,125	1.476E-02	1.476E-02
LDA	Gasoline	53.14%	2,158,063	21,586	2.588E-04	2.588E-04
LDA	Plug-In Hybrid	2.03%	2,158,063	21,586	3.174E-06	3.174E-06
LDT1	Gasoline	5.40%	2,158,063	21,586	6.636E-05	6.636E-05
LDT1	Plug-In Hybrid	0.02%	2,158,063	21,586	2.391E-08	2.391E-08
LDT2	Gasoline	24.22%	2,158,063	21,586	1.567E-04	1.567E-04
LDT2	Plug-In Hybrid	0.28%	2,158,063	21,586	4.174E-07	4.174E-07
MDV	Gasoline	14.73%	2,158,063	21,586	1.135E-04	1.135E-04
MDV	Plug-In Hybrid	0.19%	2,158,063	21,586	2.845E-07	2.845E-07
N2O Total						0.0154

On-Site Fuel Delivery Truck and Customer Vehicle Annual Idling GHG Emissions

Global Warming Potential

Gas	CO2	CH4	N2O
GWP	1	25	298

Annual CO2e Idling Emissions (metric tons per year)

	CO2	CH4	N2O	CO2e
Total	110.093	0.017	0.015	115.11

HHO CO2 and CH4 idling emissions in metric tons per year calculation (IDLEX):

emissions rate (grams/hour) / 1,000,000 (grams/metric ton) * project idling time (hours/year) * fleet mix (%)

Customer and employee vehicle CO2 and CH4 idling emissions in metric tons per year calculation (RUNEX):

emissions rate 0 to 5 mph bin (grams/hour) / 1,000,000 (grams/metric ton) * 2.5 correction factor * project idling time (hours/year) * fleet mix (%)

Trip based emissions in metric tons per year calculation (STREX):

emissions rate (grams/hour) / 1,000,000 (grams/metric ton) * project trips (trips/year) * fleet mix (%)

N2O emissions for all vehicle categories in metric tons per year calculation (RUNEX):

regional emissions (tons/year) / regional VMT (miles per year) * 2.5 correction factor (miles/hour) * 1.102311 (metric tons/ton)
* project VMT (miles/year) * fleet mix (%)

Notes:

1. Emissions factors for CO2 and CH4 from EMFAC2021 Project-Level Analysis for San Diego County in 2026. EMFAC only reports idling emissions (IDLEX) for heavy duty diesel trucks; car and light truck idling emissions assume the RUNEX emissions rate (in grams per mile) at 5 mph with a correction factor of 2.5 mph applied per EMFAC2021 Volume II - Handbook for Project -Level Analysis.
2. EMFAC Project-Level Analysis does not report emissions factors for N2O. N2O emissions factor calculated from EMFAC2021 Inventory-Level RUNEX emissions and VMT (tons per mile) for 0 to 5 mph bin with a correction factor of 2.5 mph applied per EMFAC2021 Volume II - Handbook for Project -Level Analysis. EMFAC2021 Inventory-Level only reports RUNEX emissions for N2O (STREX not reported).
3. STREX reported in EMFAC2021 Project-Level Analysis in grams per vehicle start, all vehicles in the gas station que assumed to start their engine on-site once following a 5 minute cooling period (after refueling).
4. Customer vehicle trips are for vehicles entering the project site, from the project Local Transportation Analysis (Kittelsohn 2024), includes pass-by, diverted, and internal capture trips.
5. Annual customer vehicle idling time from the traffic engineer (Kittelsohn 2024).
6. Truck trips are for fuel delivery truck entering the project site, from the Regional VMT Assessment Memorandum (Kittelsohn 2024).
7. Fuel delivery trucks assumed to idle on-site for the maximum 5 minutes per truck allowable per Title 13, CCR, section 2485.
8. To comply with international reporting standards, GHG Global Warming Potentials are from the United Nations Intergovernmental Panel on Climate Change (IPCC) Fourth Assessment Report (AR4).

EMFAC Output

Emission Rates from EMFAC Inventory Level
Source: EMFAC2021 (v1.0.2) Emissions Inventory
Region Type: Sub-Area
Region: San Diego (SD)
Calendar Year: 2026
Season: Annual
Vehicle Classification: EMFAC2007 Categories
Units: miles/year for VMT, trips/year for Trips, tons/year for Emissions

Region	Calendar Year	Vehicle Category	Model Year	Speed	Fuel	Total VMT	Trips	NOx_RUNEX	NOx_STREX	PM2.5_RUNEX	PM2.5_STREX	PM2.5_PMTW	PM2.5_PMBW	PM10_RUNEX	PM10_STREX	PM10_PMTW	PM10_PMBW	ROG_RUNEX	ROG_STREX	ROG_DIURN	ROG_HOTSOA	ROG_RUNLOSS	CO_RUNEX	CO_STREX	SOx_RUNEX	SOx_STREX
San Diego (SD)	2026	LDA	Aggregate	Aggregate	Gasoline	16102600607	1.86E+09	602.8697007	470.4239516	25.36728353	3.797980125	35.50042286	45.1807088	27.58923537	4.130649917	142.0016915	129.0877394	154.4863345	567.5023562	607.142231	175.2258125	453.1315896	11840.91252	5652.87979	49.924983	1.35056691
San Diego (SD)	2026	LDA	Aggregate	Aggregate	Diesel	47783453.21	6750523	7.701566234	0	0.691167947	0	0.105345269	0.137556318	0.722419494	0	0.421381077	0.39301805	1.75176506	0	0	0	0	27.4061654	0	0.1248597	0
San Diego (SD)	2026	LDA	Aggregate	Aggregate	Electricity	1374039832	1.36E+08	0	0	0	0	3.029239296	2.319191516	0	0	12.11695718	6.626261475	0	0	0	0	0	0	0	0	0
San Diego (SD)	2026	LDA	Aggregate	Aggregate	Plug-in Hybrid	614802792.8	53822611	2.299776446	6.695348489	0.46163487	0.110234988	1.355408145	0.919134801	0.502070042	0.119890607	5.42163258	2.626099431	1.191170717	9.838526315	6.39835884	2.413478218	2.219949567	157.1875059	75.3874798	0.9566799	0.03685641
San Diego (SD)	2026	LDT1	Aggregate	Aggregate	Gasoline	1445461940	1.81E+08	226.2016783	80.38772085	3.527896016	0.548373482	3.186721907	5.12396843	3.836908805	0.596406195	12.74688763	14.6399098	59.60776524	111.8656103	145.355551	39.16184147	112.1003762	2476.539938	1063.29616	5.4910345	0.16980629
San Diego (SD)	2026	LDT1	Aggregate	Aggregate	Diesel	229653.8721	45157.97	0.384492335	0	0.067099795	0	0.000506304	0.000918871	0.07013375	0	0.002025216	0.002625345	0.085401597	0	0	0	0	0.4777764871	0	0.0010762	0
San Diego (SD)	2026	LDT1	Aggregate	Aggregate	Electricity	6137808.849	613984.7	0	0	0	0	0.013531552	0.01036115	0	0	0.054126209	0.029603285	0	0	0	0	0	0	0	0	0
San Diego (SD)	2026	LDT1	Aggregate	Aggregate	Plug-in Hybrid	4519699.972	363247.7	0.015223399	0.045186768	0.002145564	0.000523541	0.009964233	0.006825981	0.002333497	0.000569398	0.039856931	0.019502802	0.007884969	0.06640001	0.02728117	0.009495573	0.0080001542	1.042200535	0.50878854	0.0063359	0.00026299
San Diego (SD)	2026	LDT2	Aggregate	Aggregate	Gasoline	7871658595	9.02E+08	518.7634642	295.6228977	12.86361005	1.843912325	17.3541663	26.63100824	13.99034962	2.005422894	69.41666519	76.08859496	107.2152674	332.5825522	304.301728	81.95795405	225.928097	6922.546788	3182.68417	30.212821	0.81766688
San Diego (SD)	2026	LDT2	Aggregate	Aggregate	Diesel	30987924.88	3506180	1.537763115	0	0.166262322	0	0.068317191	0.10473353	0.173779966	0	0.273268763	0.299238656	0.875918009	0	0	0	0	9.038808534	0	0.1055418	0
San Diego (SD)	2026	LDT2	Aggregate	Aggregate	Electricity	64168598.76	8649121	0	0	0	0	0.141467544	0.108024313	0	0	0.565870178	0.308640895	0	0	0	0	0	0	0	0	0
San Diego (SD)	2026	LDT2	Aggregate	Aggregate	Plug-in Hybrid	91907098.16	7733203	0.324125888	0.961983952	0.053327842	0.012964208	0.202620468	0.138215858	0.057998893	0.014099759	0.810481871	0.39490245	0.167881216	1.413593996	0.63996099	0.221155683	0.197232373	22.17431154	10.8316312	0.1348707	0.00611374
San Diego (SD)	2026	MDV	Aggregate	Aggregate	Gasoline	4577535547	5.27E+08	399.6370446	216.9697347	7.33065564	1.095297791	10.09181383	15.74091796	7.972745555	1.1912133165	40.36725534	44.97405131	81.82320187	252.8822694	225.244102	57.65506157	170.0121005	4465.65917	2027.85962	21.344091	0.58749787
San Diego (SD)	2026	MDV	Aggregate	Aggregate	Diesel	76596204.76	8957931	6.957300892	0	0.561661831	0	0.168866988	0.269916145	0.587057687	0	0.675467951	0.771189985	1.92302444	0	0	0	0	36.28791007	0	0.3494928	0
San Diego (SD)	2026	MDV	Aggregate	Aggregate	Electricity	68935655.15	9300200	0	0	0	0	0.151977105	0.116060989	0	0	0.607908419	0.331602826	0	0	0	0	0	0	0	0	0
San Diego (SD)	2026	MDV	Aggregate	Aggregate	Plug-in Hybrid	58944611.35	4877869	0.210106312	0.606790209	0.03895773	0.0092572	0.129950624	0.088587078	0.042370086	0.01006805	0.519802494	0.253105938	0.108824702	0.891652084	0.4529991	0.16461649	0.14648814	14.37064588	6.83226343	0.0874204	0.00476339
San Diego (SD)	2026	HHDT	Aggregate	Aggregate	Diesel	592931220.8	72255060	1188.111564	234.5174373	16.98854718	5.771192352	18.05256176	17.7566939	0	23.08476941	51.57874787	10.25085137	0	0	0	0	0	47.57564861	0	9.7635891	0

Region	Calendar Year	Vehicle Category	Model Year	Speed	Fuel	Total VMT	Trips	CO2_RUNEX	CO2_STREX	CH4_RUNEX	CH4_STREX	N2O_RUNEX	N2O_STREX
San Diego (SD)	2026	LDA	Aggregate	Aggregate	Gasoline	16102600607	1.86E+09	5050059.853	136613.8423	42.59266185	126.9354997	74.93858564	63.63803331
San Diego (SD)	2026	LDA	Aggregate	Aggregate	Diesel	47783453.21	6750523	13177.09331	0	0.081366139	0	2.076056417	0
San Diego (SD)	2026	LDA	Aggregate	Aggregate	Plug-in Hybrid	614802792.8	53822611	96771.00646	3728.13506	0.376340606	2.418147647	0.415301032	1.207798296
San Diego (SD)	2026	LDT1	Aggregate	Aggregate	Gasoline	1445461940	1.81E+08	555434.4013	17176.40896	13.37861313	21.49274345	16.48508915	7.888094543
San Diego (SD)	2026	LDT1	Aggregate	Aggregate	Diesel	229653.8721	45157.97	113.5800776	0	0.003986741	0	0.017894587	0
San Diego (SD)	2026	LDT1	Aggregate	Aggregate	Plug-in Hybrid	4519699.972	363247.7	640.8942658	26.60188579	0.002484935	0.016287116	0.002735845	0.00811986
San Diego (SD)	2026	LDT2	Aggregate	Aggregate	Gasoline	7871658595	9.02E+08	3056116.315	82709.42559	28.12117918	73.40705184	48.33971706	34.98406135
San Diego (SD)	2026	LDT2	Aggregate	Aggregate	Diesel	30987924.88	3506180	11138.37691	0	0.040684717	0	1.754855818	0
San Diego (SD)	2026	LDT2	Aggregate	Aggregate	Plug-in Hybrid	91907098.16	7733203	13642.57447	618.4228638	0.052909172	0.346734684	0.058253244	0.172861499
San Diego (SD)	2026	MDV	Aggregate	Aggregate	Gasoline	4577535547	5.27E+08	2159018.025	59427.14946	20.28172112	51.86444996	33.46959501	22.25835911
San Diego (SD)	2026	MDV	Aggregate	Aggregate	Diesel	76596204.76	8957931	36883.8037	0	0.08932081	0	5.811058294	0
San Diego (SD)	2026	MDV	Aggregate	Aggregate	Plug-in Hybrid	58944611.35	4877869	8842.832742	481.831177	0.034407009	0.219412592	0.03799418	0.109710072
San Diego (SD)	2026	HHDT	Aggregate	Aggregate	Diesel	592931220.8	72255060	1031067.119	0	0.476125496	0	162.4450445	0

Region	Calendar Year	Vehicle Category	Model Year	Speed	Fuel	Total VMT	N2O_RUNEX
San Diego (SD)	2026	LDA	Aggregate	5	Gasoline	269598327.2	2.207458083
San Diego (SD)	2026	LDA	Aggregate	5	Plug-in Hybrid	9253410.095	0.024334913
San Diego (SD)	2026	LDT1	Aggregate	5	Gasoline	24200694.69	0.499917589
San Diego (SD)	2026	LDT1	Aggregate	5	Plug-in Hybrid	67343.40891	0.000160309
San Diego (SD)	2026	LDT2	Aggregate	5	Gasoline	131791506.3	1.433367555
San Diego (SD)	2026	LDT2	Aggregate	5	Plug-in Hybrid	1375318.887	0.003413398
San Diego (SD)	2026	MDV	Aggregate	5	Gasoline	76639541.4	0.992891886
San Diego (SD)	2026	MDV	Aggregate	5	Plug-in Hybrid	882964.3503	0.002226301
San Diego (SD)	2026	HHDT	Aggregate	5	Diesel	734093.3545	0.430931313

EMFAC Output

Start Exhaust and Evaporative Emission Rates from EMFAC Project Level

Source: EMFAC2021 (v1.0.2) Emission Rates

Region Type: County

Region: San Diego

Calendar Year: 2026

Season: Annual

Vehicle Classification: EMFAC2007 Categories

Units: mph for speed, min for time, g/veh-mile for RUNEX, g/veh-start for STREX and HOTSOAK rate, g/veh-hour for IDLEX and RUNLOSS

calendar_year	season_month	sub_area	vehicle_class	fuel	temperature	relative_humidity	process	speed_time	pollutant	emission_rate
2026	Annual	San Diego (SD)	HHDT	Dsl			IDLEX		CH4	0.109901274
2026	Annual	San Diego (SD)	LDA	Gas	60		74 RUNEX	5	CH4	0.012533862
2026	Annual	San Diego (SD)	LDA	Gas	60		STREX	5	CH4	0.006070594
2026	Annual	San Diego (SD)	LDA	Phe	60		74 RUNEX	5	CH4	0.003952784
2026	Annual	San Diego (SD)	LDA	Phe	60		STREX	5	CH4	0.002736359
2026	Annual	San Diego (SD)	LDT1	Gas	60		74 RUNEX	5	CH4	0.039231543
2026	Annual	San Diego (SD)	LDT1	Gas	60		STREX	5	CH4	0.011736633
2026	Annual	San Diego (SD)	LDT1	Phe	60		74 RUNEX	5	CH4	0.003559226
2026	Annual	San Diego (SD)	LDT1	Phe	60		STREX	5	CH4	0.00245521
2026	Annual	San Diego (SD)	LDT2	Gas	60		74 RUNEX	5	CH4	0.016460601
2026	Annual	San Diego (SD)	LDT2	Gas	60		STREX	5	CH4	0.007850369
2026	Annual	San Diego (SD)	LDT2	Phe	60		74 RUNEX	5	CH4	0.003726646
2026	Annual	San Diego (SD)	LDT2	Phe	60		STREX	5	CH4	0.002567751
2026	Annual	San Diego (SD)	MDV	Gas	60		74 RUNEX	5	CH4	0.020396987
2026	Annual	San Diego (SD)	MDV	Gas	60		STREX	5	CH4	0.009544995
2026	Annual	San Diego (SD)	MDV	Phe	60		74 RUNEX	5	CH4	0.00376659
2026	Annual	San Diego (SD)	MDV	Phe	60		STREX	5	CH4	0.002599879
2026	Annual	San Diego (SD)	HHDT	Dsl			IDLEX		CO	34.50240076
2026	Annual	San Diego (SD)	HHDT	Dsl	60		74 RUNEX	5	CO	1.050130624
2026	Annual	San Diego (SD)	LDA	Gas	60		74 RUNEX	5	CO	1.173946169
2026	Annual	San Diego (SD)	LDA	Gas	60		STREX	5	CO	0.236903706
2026	Annual	San Diego (SD)	LDA	Phe	60		74 RUNEX	5	CO	0.906879237
2026	Annual	San Diego (SD)	LDA	Phe	60		STREX	5	CO	0.11408312
2026	Annual	San Diego (SD)	LDT1	Gas	60		74 RUNEX	5	CO	2.861890421
2026	Annual	San Diego (SD)	LDT1	Gas	60		STREX	5	CO	0.471575454
2026	Annual	San Diego (SD)	LDT1	Phe	60		74 RUNEX	5	CO	0.816585837
2026	Annual	San Diego (SD)	LDT1	Phe	60		STREX	5	CO	0.102361572
2026	Annual	San Diego (SD)	LDT2	Gas	60		74 RUNEX	5	CO	1.414336504
2026	Annual	San Diego (SD)	LDT2	Gas	60		STREX	5	CO	0.263281311
2026	Annual	San Diego (SD)	LDT2	Phe	60		74 RUNEX	5	CO	0.854996667
2026	Annual	San Diego (SD)	LDT2	Phe	60		STREX	5	CO	0.107053585
2026	Annual	San Diego (SD)	MDV	Gas	60		74 RUNEX	5	CO	1.571975268
2026	Annual	San Diego (SD)	MDV	Gas	60		STREX	5	CO	0.286754077
2026	Annual	San Diego (SD)	MDV	Phe	60		74 RUNEX	5	CO	0.86416114
2026	Annual	San Diego (SD)	MDV	Phe	60		STREX	5	CO	0.108393042
2026	Annual	San Diego (SD)	HHDT	Dsl			IDLEX		CO2	5333.359693
2026	Annual	San Diego (SD)	LDA	Gas	60		74 RUNEX	5	CO2	621.1404012
2026	Annual	San Diego (SD)	LDA	Gas	60		STREX	5	CO2	9.514482883
2026	Annual	San Diego (SD)	LDA	Phe	60		74 RUNEX	5	CO2	380.1268686
2026	Annual	San Diego (SD)	LDA	Phe	60		STREX	5	CO2	4.280239843
2026	Annual	San Diego (SD)	LDT1	Gas	60		74 RUNEX	5	CO2	759.1279901
2026	Annual	San Diego (SD)	LDT1	Gas	60		STREX	5	CO2	11.02310839
2026	Annual	San Diego (SD)	LDT1	Phe	60		74 RUNEX	5	CO2	342.27955
2026	Annual	San Diego (SD)	LDT1	Phe	60		STREX	5	CO2	4.069767096
2026	Annual	San Diego (SD)	LDT2	Gas	60		74 RUNEX	5	CO2	770.5867781
2026	Annual	San Diego (SD)	LDT2	Gas	60		STREX	5	CO2	11.95873914
2026	Annual	San Diego (SD)	LDT2	Phe	60		74 RUNEX	5	CO2	358.3798067
2026	Annual	San Diego (SD)	LDT2	Phe	60		STREX	5	CO2	4.663607149
2026	Annual	San Diego (SD)	MDV	Gas	60		74 RUNEX	5	CO2	937.6419201
2026	Annual	San Diego (SD)	MDV	Gas	60		STREX	5	CO2	14.72953923
2026	Annual	San Diego (SD)	MDV	Phe	60		74 RUNEX	5	CO2	362.2211807
2026	Annual	San Diego (SD)	MDV	Phe	60		STREX	5	CO2	5.873423383
2026	Annual	San Diego (SD)	HHDT	Dsl			IDLEX		NOx	27.96920041
2026	Annual	San Diego (SD)	HHDT	Dsl			STREX	5	NOx	0.035327257
2026	Annual	San Diego (SD)	LDA	Gas	60		74 RUNEX	5	NOx	0.058152472
2026	Annual	San Diego (SD)	LDA	Gas	60		STREX	5	NOx	0.040924605
2026	Annual	San Diego (SD)	LDA	Phe	60		74 RUNEX	5	NOx	0.011524297

EMFAC Output

2026 Annual	San Diego (SD)	LDA	Phe	60	STREX	5 NOx	0.010425071
2026 Annual	San Diego (SD)	LDT1	Gas	60	74 RUNEX	5 NOx	0.252453099
2026 Annual	San Diego (SD)	LDT1	Gas	60	STREX	5 NOx	0.083525124
2026 Annual	San Diego (SD)	LDT1	Phe	60	74 RUNEX	5 NOx	0.010376881
2026 Annual	San Diego (SD)	LDT1	Phe	60	STREX	5 NOx	0.00935394
2026 Annual	San Diego (SD)	LDT2	Gas	60	74 RUNEX	5 NOx	0.103575515
2026 Annual	San Diego (SD)	LDT2	Gas	60	STREX	5 NOx	0.052627387
2026 Annual	San Diego (SD)	LDT2	Phe	60	74 RUNEX	5 NOx	0.010864992
2026 Annual	San Diego (SD)	LDT2	Phe	60	STREX	5 NOx	0.009782702
2026 Annual	San Diego (SD)	MDV	Gas	60	74 RUNEX	5 NOx	0.136937197
2026 Annual	San Diego (SD)	MDV	Gas	60	STREX	5 NOx	0.066332251
2026 Annual	San Diego (SD)	MDV	Phe	60	74 RUNEX	5 NOx	0.010981451
2026 Annual	San Diego (SD)	MDV	Phe	60	STREX	5 NOx	0.009905104
2026 Annual	San Diego (SD)	HHDT	Dsl		IDLEX	PM10	0.014144564
2026 Annual	San Diego (SD)	LDA	Gas	60	74 RUNEX	5 PM10	0.008638846
2026 Annual	San Diego (SD)	LDA	Gas	60	STREX	5 PM10	0.000157595
2026 Annual	San Diego (SD)	LDA	Phe	60	74 RUNEX	5 PM10	0.004128682
2026 Annual	San Diego (SD)	LDA	Phe	60	STREX	5 PM10	6.94E-05
2026 Annual	San Diego (SD)	LDT1	Gas	60	74 RUNEX	5 PM10	0.012905548
2026 Annual	San Diego (SD)	LDT1	Gas	60	STREX	5 PM10	0.000261588
2026 Annual	San Diego (SD)	LDT1	Phe	60	74 RUNEX	5 PM10	0.002610242
2026 Annual	San Diego (SD)	LDT1	Phe	60	STREX	5 PM10	4.38E-05
2026 Annual	San Diego (SD)	LDT2	Gas	60	74 RUNEX	5 PM10	0.008939991
2026 Annual	San Diego (SD)	LDT2	Gas	60	STREX	5 PM10	0.000155426
2026 Annual	San Diego (SD)	LDT2	Phe	60	74 RUNEX	5 PM10	0.003190463
2026 Annual	San Diego (SD)	LDT2	Phe	60	STREX	5 PM10	5.33E-05
2026 Annual	San Diego (SD)	MDV	Gas	60	74 RUNEX	5 PM10	0.008744834
2026 Annual	San Diego (SD)	MDV	Gas	60	STREX	5 PM10	0.000161608
2026 Annual	San Diego (SD)	MDV	Phe	60	74 RUNEX	5 PM10	0.003634112
2026 Annual	San Diego (SD)	MDV	Phe	60	STREX	5 PM10	6.11E-05
2026 Annual	San Diego (SD)	HHDT	Dsl		IDLEX	PM2_5	0.013532676
2026 Annual	San Diego (SD)	LDA	Gas	60	74 RUNEX	5 PM2_5	0.0079431
2026 Annual	San Diego (SD)	LDA	Gas	60	STREX	5 PM2_5	0.000144903
2026 Annual	San Diego (SD)	LDA	Phe	60	74 RUNEX	5 PM2_5	0.003796171
2026 Annual	San Diego (SD)	LDA	Phe	60	STREX	5 PM2_5	6.39E-05
2026 Annual	San Diego (SD)	LDT1	Gas	60	74 RUNEX	5 PM2_5	0.011866175
2026 Annual	San Diego (SD)	LDT1	Gas	60	STREX	5 PM2_5	0.00024052
2026 Annual	San Diego (SD)	LDT1	Phe	60	74 RUNEX	5 PM2_5	0.002400021
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2026 Annual	San Diego (SD)	MDV	Phe	60	STREX	5 PM2_5	5.62E-05
2026 Annual	San Diego (SD)	HHDT	Dsl		IDLEX	ROG	2.366144288
2026 Annual	San Diego (SD)	LDA	Gas		HOTSOAK	ROG	0.085505923
2026 Annual	San Diego (SD)	LDA	Gas	60	74 RUNEX	5 ROG	0.047414361
2026 Annual	San Diego (SD)	LDA	Gas		RUNLOSS	ROG	0.868915465
2026 Annual	San Diego (SD)	LDA	Gas	60	STREX	5 ROG	0.02494223
2026 Annual	San Diego (SD)	LDA	Phe		HOTSOAK	ROG	0.016230818
2026 Annual	San Diego (SD)	LDA	Phe	60	74 RUNEX	5 ROG	0.012431288
2026 Annual	San Diego (SD)	LDA	Phe		RUNLOSS	ROG	0.251319054
2026 Annual	San Diego (SD)	LDA	Phe	60	STREX	5 ROG	0.011097447
2026 Annual	San Diego (SD)	LDT1	Gas		HOTSOAK	ROG	0.195829523
2026 Annual	San Diego (SD)	LDT1	Gas	60	74 RUNEX	5 ROG	0.191459032
2026 Annual	San Diego (SD)	LDT1	Gas		RUNLOSS	ROG	2.202810811
2026 Annual	San Diego (SD)	LDT1	Gas	60	STREX	5 ROG	0.054847527
2026 Annual	San Diego (SD)	LDT1	Phe		HOTSOAK	ROG	0.008489765
2026 Annual	San Diego (SD)	LDT1	Phe	60	74 RUNEX	5 ROG	0.011193568
2026 Annual	San Diego (SD)	LDT1	Phe		RUNLOSS	ROG	0.150972663
2026 Annual	San Diego (SD)	LDT1	Phe	60	STREX	5 ROG	0.009957232
2026 Annual	San Diego (SD)	LDT2	Gas		HOTSOAK	ROG	0.082465332
2026 Annual	San Diego (SD)	LDT2	Gas	60	74 RUNEX	5 ROG	0.066159722
2026 Annual	San Diego (SD)	LDT2	Gas		RUNLOSS	ROG	0.893317032

EMFAC Output

2026 Annual	San Diego (SD)	LDT2	Gas	60	STREX	5 ROG	0.033115917
2026 Annual	San Diego (SD)	LDT2	Phe		HOTSOAK	ROG	0.009713602
2026 Annual	San Diego (SD)	LDT2	Phe	60	74 RUNEX	5 ROG	0.011720094
2026 Annual	San Diego (SD)	LDT2	Phe		RUNLOSS	ROG	0.166307385
2026 Annual	San Diego (SD)	LDT2	Phe	60	STREX	5 ROG	0.010413648
2026 Annual	San Diego (SD)	MDV	Gas		HOTSOAK	ROG	0.09919328
2026 Annual	San Diego (SD)	MDV	Gas	60	74 RUNEX	5 ROG	0.086793972
2026 Annual	San Diego (SD)	MDV	Gas		RUNLOSS	ROG	1.149422545
2026 Annual	San Diego (SD)	MDV	Gas	60	STREX	5 ROG	0.042684224
2026 Annual	San Diego (SD)	MDV	Phe		HOTSOAK	ROG	0.011606065
2026 Annual	San Diego (SD)	MDV	Phe	60	74 RUNEX	5 ROG	0.011845719
2026 Annual	San Diego (SD)	MDV	Phe		RUNLOSS	ROG	0.192683128
2026 Annual	San Diego (SD)	MDV	Phe	60	STREX	5 ROG	0.010543944
2026 Annual	San Diego (SD)	HHDT	Dsl		IDLEX	SOx	0.050882745
2026 Annual	San Diego (SD)	LDA	Gas	60	74 RUNEX	5 SOx	0.00621912
2026 Annual	San Diego (SD)	LDA	Gas	60	STREX	5 SOx	9.92E-05
2026 Annual	San Diego (SD)	LDA	Phe	60	74 RUNEX	5 SOx	0.00380826
2026 Annual	San Diego (SD)	LDA	Phe	60	STREX	5 SOx	4.47E-05
2026 Annual	San Diego (SD)	LDT1	Gas	60	74 RUNEX	5 SOx	0.007629343
2026 Annual	San Diego (SD)	LDT1	Gas	60	STREX	5 SOx	0.000118697
2026 Annual	San Diego (SD)	LDT1	Phe	60	74 RUNEX	5 SOx	0.00342909
2026 Annual	San Diego (SD)	LDT1	Phe	60	STREX	5 SOx	4.24E-05
2026 Annual	San Diego (SD)	LDT2	Gas	60	74 RUNEX	5 SOx	0.007715094
2026 Annual	San Diego (SD)	LDT2	Gas	60	STREX	5 SOx	0.000124272
2026 Annual	San Diego (SD)	LDT2	Phe	60	74 RUNEX	5 SOx	0.003590389
2026 Annual	San Diego (SD)	LDT2	Phe	60	STREX	5 SOx	4.84E-05
2026 Annual	San Diego (SD)	MDV	Gas	60	74 RUNEX	5 SOx	0.00938554
2026 Annual	San Diego (SD)	MDV	Gas	60	STREX	5 SOx	0.000152574
2026 Annual	San Diego (SD)	MDV	Phe	60	74 RUNEX	5 SOx	0.003628873
2026 Annual	San Diego (SD)	MDV	Phe	60	STREX	5 SOx	6.05E-05

Appendix C

Gas Station Organic Gases Calculations

Gasoline Dispensing Facilities Organic Gases Emissions

Source	TOG Factor (lb/kgal)
Phase I Bulk Transfer Losses	0.15
Phase I Pressure Driven Losses	0.024
Phase II Fueling (ORVR Vehicles)	0.021
Phase II Spillage	0.24
Phase II Hose Permeation	0.009
Total	0.444

Throughput/year (kgal)	36,500
TOG/year (pounds)	16,206
TOG/day (pounds)	44.40
ROG/day (pounds)	44.40

Notes:

1. Emissions Factors from CARB's *Revised Emission Factors for Gasoline Marketing Operations at California Gasoline Dispensing Facilities*, December 3, 2013.
2. ROG is approximately equivalent to TOG for gasoline vapor because gasoline vapor contains negligible amounts of organic gases which are not ROGs, such as ethane and methane.

Appendix D

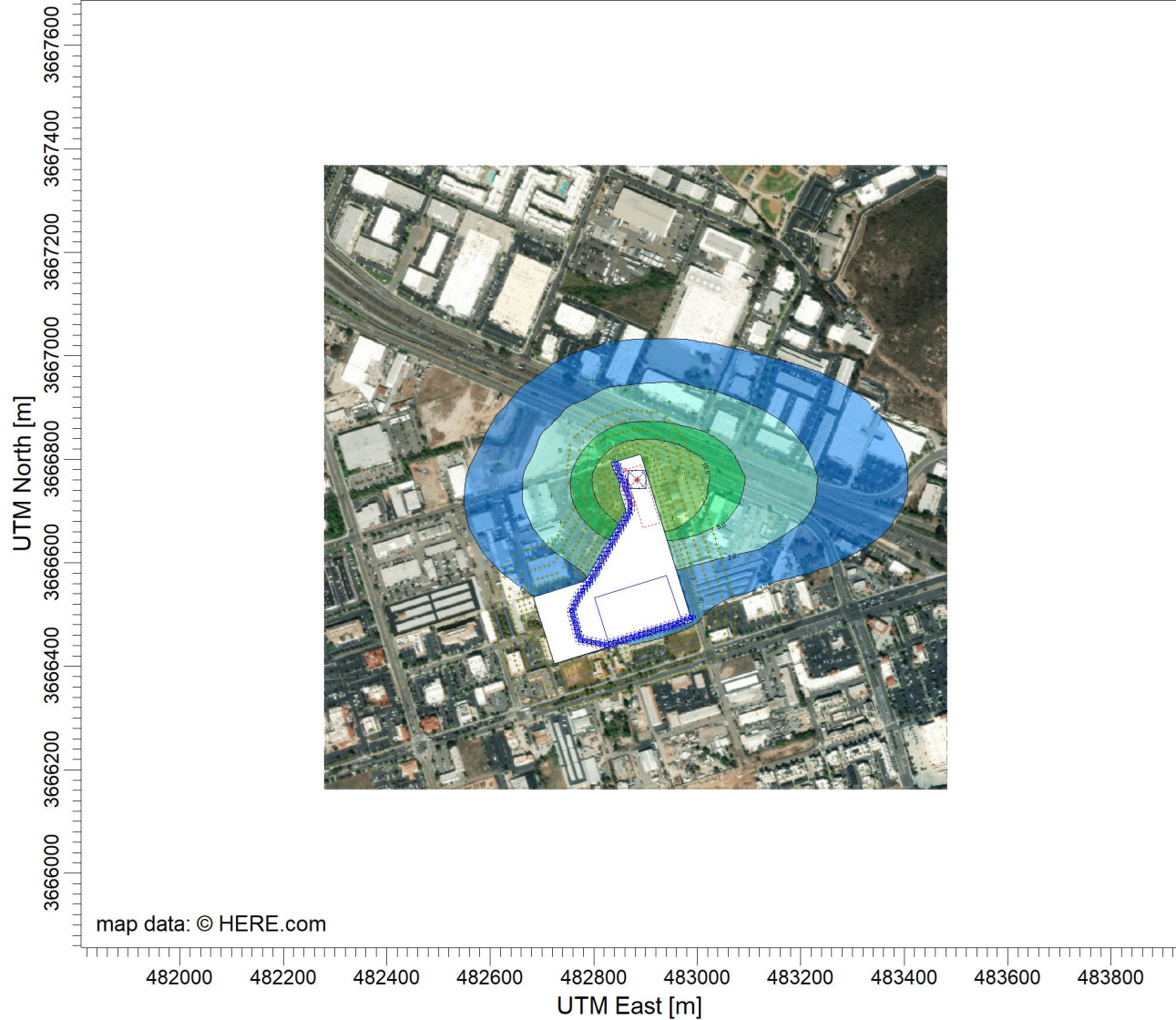
HRA Modeling Input/Output

Residential Cancer Risk Results

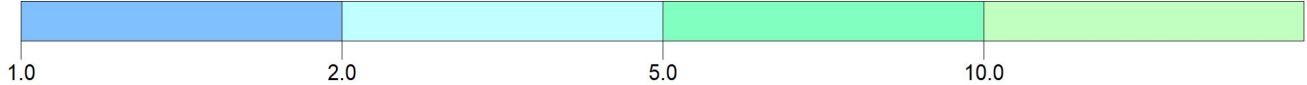
*HARP - HRACalc v22118 9/21/2024 8:14:40 AM - Cancer Risk

REC	GRP	NETID	X	Y	RISK_SUM	SCENARIO
620	ALL	ER1/MEIR	482861.83	3666350.29	5.06E-07	30YrCancerDerived_InhSoilDermMMilk_FAH16to70
621	ALL	ER2	483224.34	3666331.62	3.12E-07	30YrCancerDerived_InhSoilDermMMilk_FAH16to70
622	ALL	ER3	482751.12	3667224.23	3.61E-07	30YrCancerDerived_InhSoilDermMMilk_FAH16to70
626	ALL	FR1	482704.58	3666456.52	7.31E-07	30YrCancerDerived_InhSoilDermMMilk_FAH16to70
627	ALL	FR2	482758.92	3666411.68	6.66E-07	30YrCancerDerived_InhSoilDermMMilk_FAH16to70
628	ALL	FR3	482909.41	3666459.5	1.12E-06	30YrCancerDerived_InhSoilDermMMilk_FAH16to70
629	ALL	FR4	482615	3666791	1.32E-06	30YrCancerDerived_InhSoilDermMMilk_FAH16to70
1492	ALL	PMI	482904.96	3666762.42	1.76E-04	30YrCancerDerived_InhSoilDermMMilk_FAH16to70

PROJECT TITLE:
San Marcos Costco Business Center Fuel Facility Project
Residential Cancer risk



PLOT FILE OF PERIOD VALUES FOR SOURCE GROUP: ALL ug/m³
Max: 176.1 [ug/m³] at (482904.96, 3666762.42)



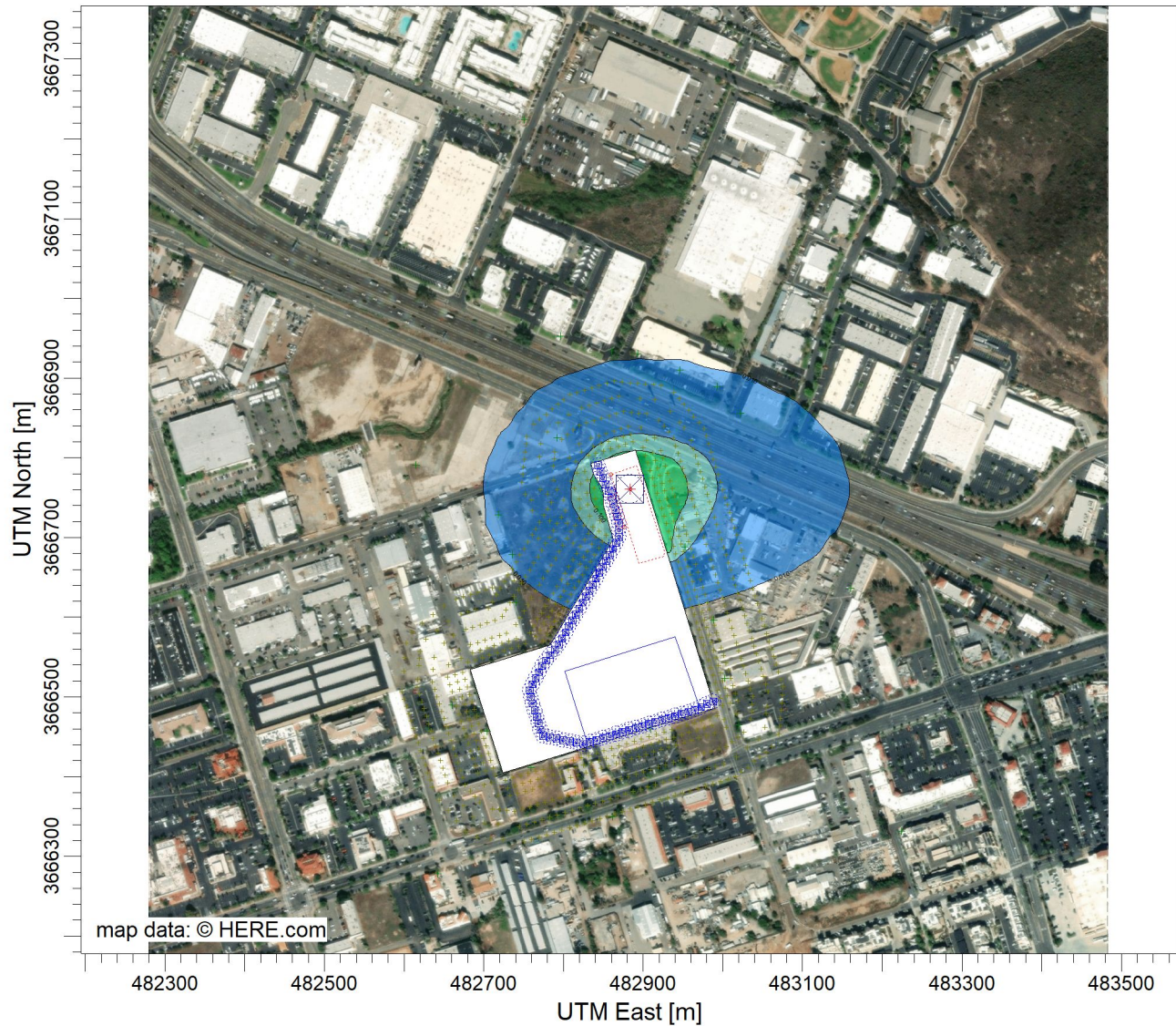
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Residential Non-Cancer Chronic Risk Results

*HARP - HRACalc v22118 9/21/2024 8:19:57 AM - Chronic Risk

REC	GRP	NETID	X	Y	SCENARIO	MAXHI
620	ALL	ER1/MEIR	482861.83	3666350.29	NonCancerChronicDerived_InhSoilDermMMilk	1.84E-03
621	ALL	ER2	483224.34	3666331.62	NonCancerChronicDerived_InhSoilDermMMilk	1.17E-03
622	ALL	ER3	482751.12	3667224.23	NonCancerChronicDerived_InhSoilDermMMilk	1.42E-03
626	ALL	FR1	482704.58	3666456.52	NonCancerChronicDerived_InhSoilDermMMilk	2.55E-03
627	ALL	FR2	482758.92	3666411.68	NonCancerChronicDerived_InhSoilDermMMilk	2.26E-03
628	ALL	FR3	482909.41	3666459.5	NonCancerChronicDerived_InhSoilDermMMilk	3.16E-03
629	ALL	FR4	482615	3666791	NonCancerChronicDerived_InhSoilDermMMilk	4.85E-03
1492	ALL	PMI	482904.96	3666762.42	NonCancerChronicDerived_InhSoilDermMMilk	6.45E-01

PROJECT TITLE:
San Marcos Costco Business Center Fuel Facility Project
Residential Non-Cancer Chronic Risk



PLOT FILE OF PERIOD VALUES FOR SOURCE GROUP: ALL

ug/m³

Max: 0.645 [ug/m³] at (482904.96, 3666762.42)



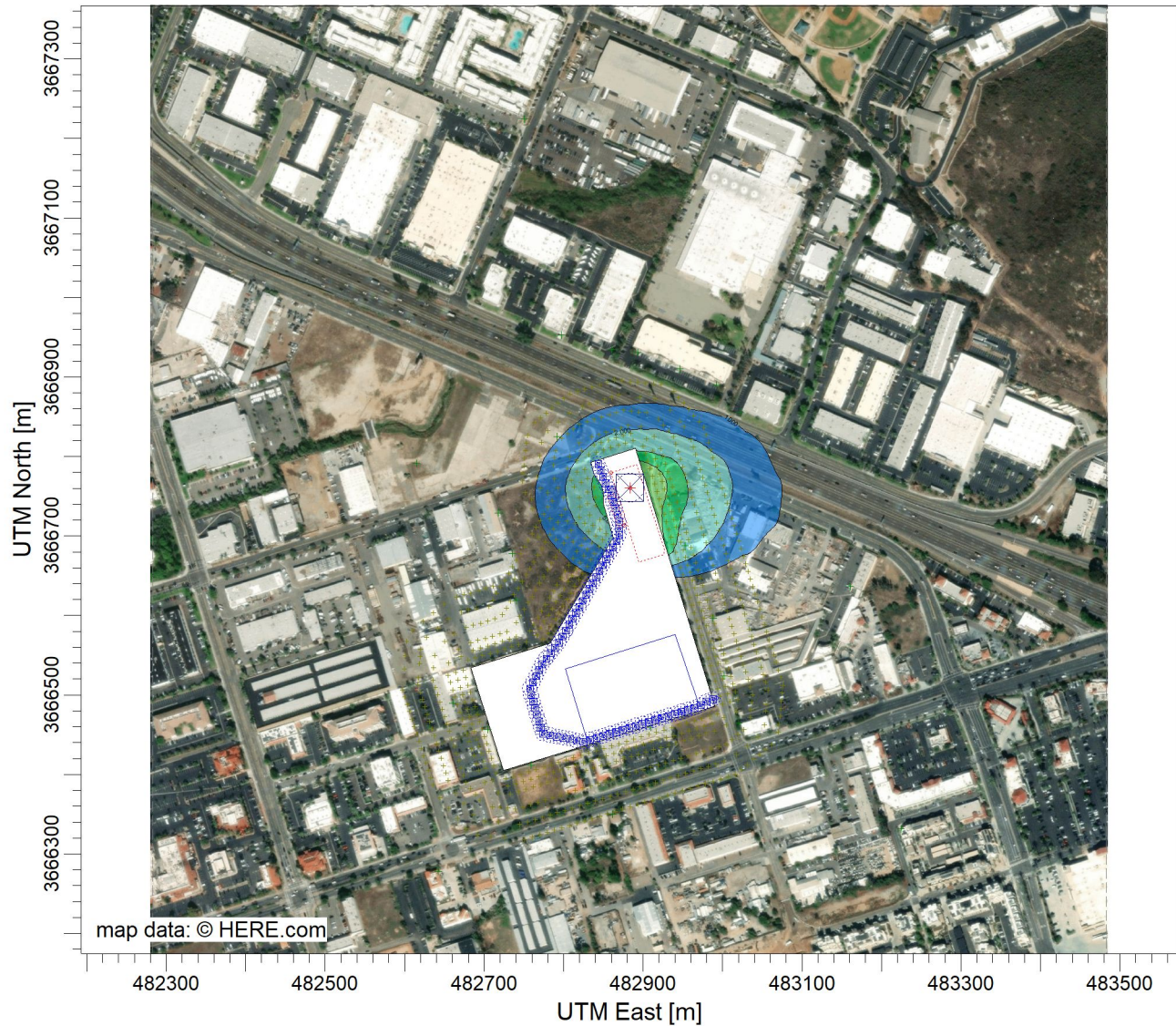
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Off-Site Worker Cancer Risk Results

*HARP - HRACalc v22118 9/21/2024 8:25:29 AM - Cancer Risk

REC	GRP	NETID	X	Y	RISK_SUM	SCENARIO
606	ALL	C1	483020.21	3666464.64	1.39E-07	25YrCancerDerived_InhSoilDerm
607	ALL	C2	483002.08	3666523.65	2.01E-07	25YrCancerDerived_InhSoilDerm
608	ALL	C3	482988.1	3666596.67	3.63E-07	25YrCancerDerived_InhSoilDerm
609	ALL	C4/MEIW	482952.54	3666687.92	3.42E-06	25YrCancerDerived_InhSoilDerm
610	ALL	C5	483021.84	3666856.24	7.83E-07	25YrCancerDerived_InhSoilDerm
611	ALL	C6	482992.58	3666889.68	5.84E-07	25YrCancerDerived_InhSoilDerm
612	ALL	C7	482945.93	3666909.93	5.07E-07	25YrCancerDerived_InhSoilDerm
613	ALL	C8	482892.91	3666930.61	4.08E-07	25YrCancerDerived_InhSoilDerm
614	ALL	C9	482860.57	3666934.35	3.81E-07	25YrCancerDerived_InhSoilDerm
615	ALL	C10	482796.89	3666952.67	2.74E-07	25YrCancerDerived_InhSoilDerm
616	ALL	C11	482717.9	3666728.73	5.60E-07	25YrCancerDerived_InhSoilDerm
617	ALL	C12	482735.72	3666678.34	5.54E-07	25YrCancerDerived_InhSoilDerm
618	ALL	C13	482740.56	3666618.93	3.76E-07	25YrCancerDerived_InhSoilDerm
619	ALL	C14	482792	3666825	9.43E-07	25YrCancerDerived_InhSoilDerm

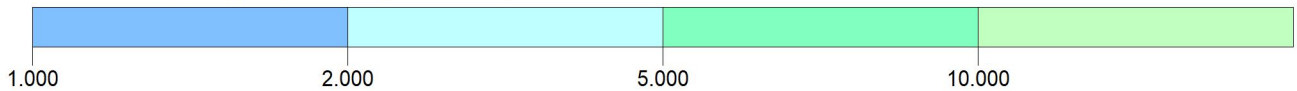
PROJECT TITLE:
San Marcos Costco Business Center Fuel Facility Project
Off-Site Worker Cancer Risk



PLOT FILE OF PERIOD VALUES FOR SOURCE GROUP: ALL

ug/m³

Max: 30.752 [ug/m³] at (482904.96, 3666762.42)



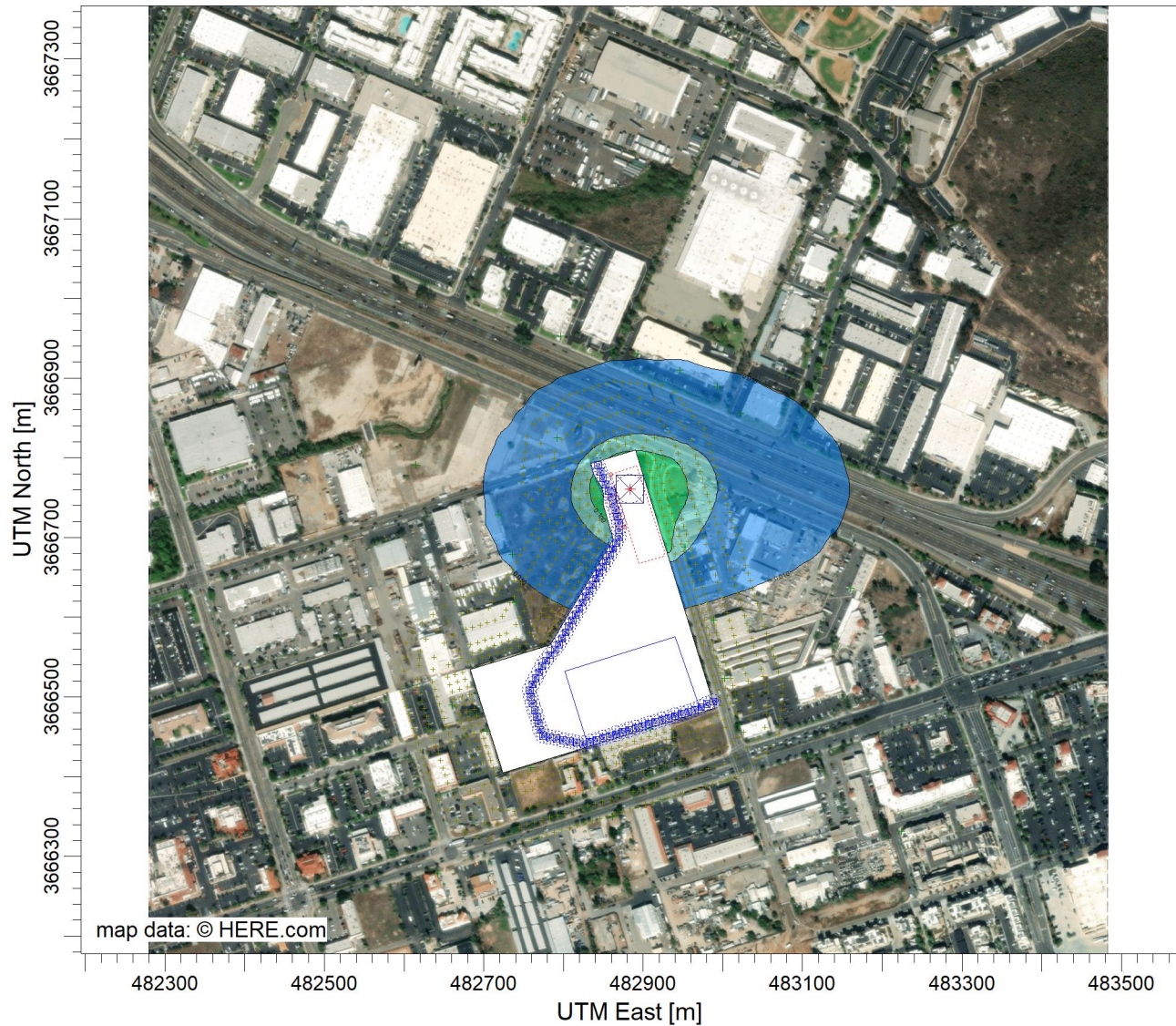
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	MAX: 30.752 ug/m³	DATE: 9/21/2024	PROJECT NO.:

Off-Site Worker Non-Cancer Chronic Risk Results

*HARP - HRACalc v22118 9/21/2024 8:31:50 AM - Chronic Risk

REC	GRP	NETID	X	Y	SCENARIO	MAXHI
606	ALL	C1	483020.21	3666464.64	NonCancerChronicDerived_InhSoilDerm	2.80E-03
607	ALL	C2	483002.08	3666523.65	NonCancerChronicDerived_InhSoilDerm	4.08E-03
608	ALL	C3	482988.1	3666596.67	NonCancerChronicDerived_InhSoilDerm	7.56E-03
609	ALL	C4/MEIW	482952.54	3666687.92	NonCancerChronicDerived_InhSoilDerm	5.69E-02
610	ALL	C5	483021.84	3666856.24	NonCancerChronicDerived_InhSoilDerm	1.63E-02
611	ALL	C6	482992.58	3666889.68	NonCancerChronicDerived_InhSoilDerm	1.25E-02
612	ALL	C7	482945.93	3666909.93	NonCancerChronicDerived_InhSoilDerm	1.11E-02
613	ALL	C8	482892.91	3666930.61	NonCancerChronicDerived_InhSoilDerm	9.15E-03
614	ALL	C9	482860.57	3666934.35	NonCancerChronicDerived_InhSoilDerm	8.55E-03
615	ALL	C10	482796.89	3666952.67	NonCancerChronicDerived_InhSoilDerm	6.11E-03
616	ALL	C11	482717.9	3666728.73	NonCancerChronicDerived_InhSoilDerm	1.15E-02
617	ALL	C12	482735.72	3666678.34	NonCancerChronicDerived_InhSoilDerm	1.12E-02
618	ALL	C13	482740.56	3666618.93	NonCancerChronicDerived_InhSoilDerm	7.58E-03
619	ALL	C14	482792	3666825	NonCancerChronicDerived_InhSoilDerm	2.09E-02

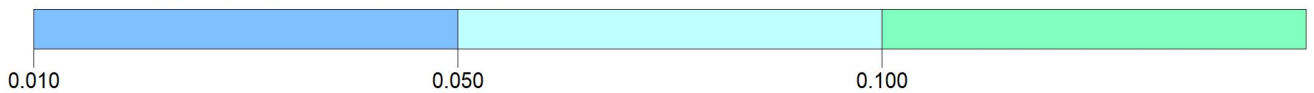
PROJECT TITLE:
San Marcos Costco Business Center Fuel Facility Project
Off-Site Worker Non-Cancer Chronic Risk



PLOT FILE OF PERIOD VALUES FOR SOURCE GROUP: ALL

ug/m³

Max: 0.645 [ug/m³] at (482904.96, 3666762.42)



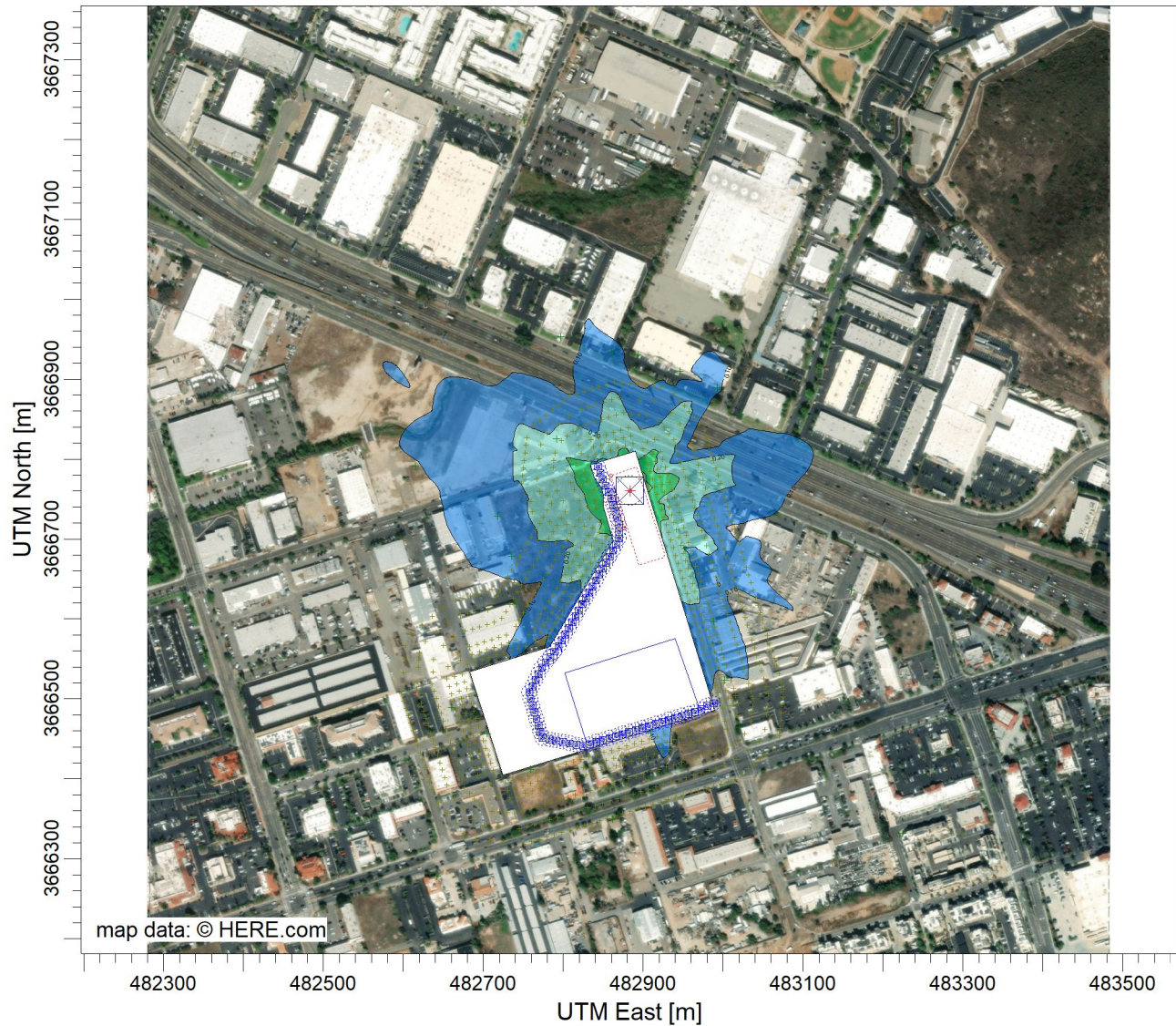
COMMENTS: Risk in Hazard Index	SOURCES: 15	COMPANY NAME:	
	RECEPTORS: 1566	MODELER:	
	OUTPUT TYPE: Concentration	SCALE: 1:8,648 0 0.3 km	
	MAX: 0.645 ug/m³	DATE: 9/21/2024	PROJECT NO.:

Acute Risk Results

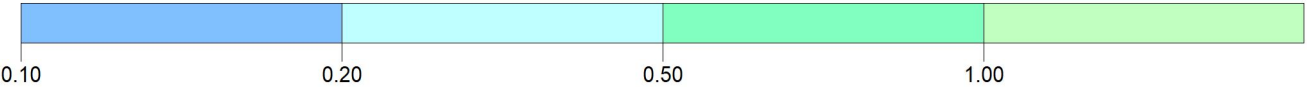
*HARP - HRACalc v22118 9/21/2024 8:00:07 AM - Acute Risk

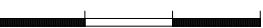
REC	GRP	NETID	X	Y	SCENARIO	MAXHI
606	ALL	C1	483020.21	3666464.64	NonCancerAcute	6.72E-02
607	ALL	C2	483002.08	3666523.65	NonCancerAcute	9.22E-02
608	ALL	C3	482988.1	3666596.67	NonCancerAcute	1.59E-01
609	ALL	C4	482952.54	3666687.92	NonCancerAcute	1.86E-01
610	ALL	C5	483021.84	3666856.24	NonCancerAcute	4.50E-02
611	ALL	C6	482992.58	3666889.68	NonCancerAcute	1.10E-01
612	ALL	C7	482945.93	3666909.93	NonCancerAcute	7.61E-02
613	ALL	C8	482892.91	3666930.61	NonCancerAcute	7.41E-02
614	ALL	C9	482860.57	3666934.35	NonCancerAcute	1.28E-01
615	ALL	C10	482796.89	3666952.67	NonCancerAcute	6.39E-02
616	ALL	C11	482717.9	3666728.73	NonCancerAcute	1.48E-01
617	ALL	C12	482735.72	3666678.34	NonCancerAcute	1.46E-01
618	ALL	C13	482740.56	3666618.93	NonCancerAcute	7.68E-02
619	ALL	C14	482792	3666825	NonCancerAcute	2.20E-01
620	ALL	ER1	482861.83	3666350.29	NonCancerAcute	4.58E-02
621	ALL	ER2	483224.34	3666331.62	NonCancerAcute	2.67E-02
622	ALL	ER3	482751.12	3667224.23	NonCancerAcute	3.17E-02
623	ALL	D1	483160.31	3666636	NonCancerAcute	3.76E-02
624	ALL	D2	482660.48	3666489.72	NonCancerAcute	5.51E-02
625	ALL	D3	482642.2	3666278.18	NonCancerAcute	3.80E-02
626	ALL	FR1	482704.58	3666456.52	NonCancerAcute	4.31E-02
627	ALL	FR2	482758.92	3666411.68	NonCancerAcute	4.33E-02
628	ALL	FR3	482909.41	3666459.5	NonCancerAcute	1.02E-01
629	ALL	FR4	482615	3666791	NonCancerAcute	9.18E-02
874	ALL	MEIW - Acute	482935.8	3666730.15	NonCancerAcute	4.47E-01

PROJECT TITLE:
San Marcos Costco Business Center Fuel Facility Project
Acute Risk



PLOT FILE OF HIGH 1ST HIGH 1-HR VALUES FOR SOURCE GROUP: ALL ug/m³
Max: 1.18 [ug/m³] at (482904.96, 3666762.42)



COMMENTS: Risk in Hazard Index	SOURCES: 15	COMPANY NAME:	
	RECEPTORS: 1566	MODELER:	
	OUTPUT TYPE: Concentration	SCALE: 1:8,623 0  0.3 km	
	MAX: 1.18 ug/m³	DATE: 9/21/2024	PROJECT NO.:

Daycare Cancer Risk Results

*HARP - HRACalc v22118 9/21/2024 8:38:57 AM - Cancer Risk

REC	GRP	NETID	X	Y	RISK_SUM	SCENARIO
623	ALL	D1	483160.31	3666636	2.23E-06	13YrCancerDerived_InhSoilDermMMilk
624	ALL	D2	482660.48	3666489.72	9.45E-07	13YrCancerDerived_InhSoilDermMMilk
625	ALL	D3	482642.2	3666278.18	4.07E-07	13YrCancerDerived_InhSoilDermMMilk

Daycare Non-Cancer Chronic Risk Results

*HARP - HRACalc v22118 9/21/2024 8:42:41 AM - Chronic Risk

REC	GRP	NETID	X	Y	SCENARIO	MAXHI
623	ALL	D1	483160.31	3666636	NonCancerChronicDerived_InhSoilDermMMilk	5.72E-03
624	ALL	D2	482660.48	3666489.72	NonCancerChronicDerived_InhSoilDermMMilk	2.67E-03
625	ALL	D3	482642.2	3666278.18	NonCancerChronicDerived_InhSoilDermMMilk	1.20E-03



I:\PROJECTS\CostcoWholesale_03605\00004_CostcoFuelFacility\Map\AQ_GHG\Figures.aprx 03605.00004.0018/23/2024 -RK



Source: Aerial (NearMap, 2023)

Gasoline Dispensing Facility TAC Emissions

Gasoline TAC Content (% Weight in Vapor)

Substance	Chronic Health ¹	Acute Health ²
Benzene	0.457%	0.549%
Ethyl Benzene	0.107%	-
Hexane	1.82%	-
Naphthalene	0.000445%	-
Propylene (propene)	0.003594%	-
Toluene	1.100%	1.35%
Xylenes	0.409%	0.509%

ORVR Vehicles and Gasoline Throughput

Percent ORVR Vehicles (2026) ³	91.0%
Project Throughput (gal/year)	36,500,000
Throughput (gal/hour) Loading ⁴	8,800
Throughput (gal/hour) Breathing ⁵	4,164
Throughput (gal/hour) Refueling ⁶	8,300
Throughput (gal/hour) Spillage ⁶	8,300
Throughput (gal/hour) Permeation ⁶	8,300

TAC Inventory Chronic Health Effects (Combined Summer and Winter Gasoline Formulation)

Source	TOG	Benzene		Ethyl Benzene		n-Hexane		Naphthalene		Propylene (propene)		Toluene		Xylenes	
	lb/1000 gal	lb/year	lb/hr	lb/year	lb/hr	lb/year	lb/hr	lb/year	lb/hr	lb/year	lb/hr	lb/year	lb/hr	lb/year	lb/hr
Loading	0.150	25.0208	0.0000E+00	5.8583	0.0000E+00	99.6450	0.0000E+00	0.0244	0.0000E+00	0.1968	0.0000E+00	60.2250	0.0000E+00	22.3928	0.0000E+00
Breathing	0.024	4.0033	0.0000E+00	0.9373	0.0000E+00	15.9432	0.0000E+00	0.0039	0.0000E+00	0.0315	0.0000E+00	9.6360	0.0000E+00	3.5828	0.0000E+00
Refueling Non-ORVR	0.420	6.3052	0.0000E+00	1.4763	0.0000E+00	25.1105	0.0000E+00	0.0061	0.0000E+00	0.0496	0.0000E+00	15.1767	0.0000E+00	5.6430	0.0000E+00
Refueling ORVR	0.021	3.1876	0.0000E+00	0.7463	0.0000E+00	12.6948	0.0000E+00	0.0031	0.0000E+00	0.0251	0.0000E+00	7.6727	0.0000E+00	2.8528	0.0000E+00
Refueling Total	0.057	9.4929	0.0000E+00	2.2226	0.0000E+00	37.8053	0.0000E+00	0.0092	0.0000E+00	0.0747	0.0000E+00	22.8494	0.0000E+00	8.4958	0.0000E+00
Spillage	0.240	40.0332	0.0000E+00	9.3732	0.0000E+00	159.4320	0.0000E+00	0.0390	0.0000E+00	0.3148	0.0000E+00	96.3600	0.0000E+00	35.8284	0.0000E+00
Hose Permeation	0.009	1.5012	0.0000E+00	0.3515	0.0000E+00	5.9787	0.0000E+00	0.0015	0.0000E+00	0.0118	0.0000E+00	3.6135	0.0000E+00	1.3436	0.0000E+00

TAC Inventory Acute Health Effects (Summer Gasoline Formulation)

Source	TOG	Benzene		Toluene		Xylenes	
	lb/1000 gal	lb/year	lb/hr	lb/year	lb/hr	lb/year	lb/hr
Loading	0.150	0.0000	7.2468E-03	0.0000	1.7820E-02	0.0000	6.7188E-03
Breathing	0.024	0.0000	5.4862E-04	0.0000	1.3491E-03	0.0000	5.0865E-04
Refueling Non-ORVR	0.420	0.0000	1.7224E-03	0.0000	4.2355E-03	0.0000	1.5969E-03
Refueling ORVR	0.021	0.0000	8.7079E-04	0.0000	2.1413E-03	0.0000	8.0734E-04
Refueling Total	-	0.0000	2.5932E-03	0.0000	6.3768E-03	0.0000	2.4043E-03
Spillage	0.240	0.0000	1.0936E-02	0.0000	2.6892E-02	0.0000	1.0139E-02
Hose Permeation	0.009	0.0000	4.1010E-04	0.0000	1.0085E-03	0.0000	3.8022E-04

Source: Unless another source is indicated, all methods and data are from the California Air Resource Board (CARB) Gasoline Service Station Industrywide Risk Assessment Technical Guidance (2022).

Notes:

1. Chronic health effects (cancer and non-cancer) are determined assuming TAC content for combined summer and winter gasoline formulations.
2. Acute health effect are determined assuming TAC content for summer gasoline formulation only. Only benzene, toluene, and xylenes have Acute RELs.
3. Percent gasoline dispensed to ORVR vehicles from CARB Revised Emission Factors for Phase II Vehicle Fueling at California Gasoline Dispensing Facilities, Attachment 1 (2013).
4. Maximum hourly throughput for Phase I loading operations based on delivery of 8,800 gallons (one maximum gross weight truckload) in one hour.
5. Maximum hourly throughput for underground storage tank breathing based on annual average throughput (8,766 hours per year).

On-Site Vehicle Emissions

Average Annual Emissions (Chronic Risks)

				ROG Emissions				PM2.5 Emissions			
Source	Chemical	Trips/Yr	Idle Time (min/yr)	Idle Exhaust (lb/yr)	Run Loss (lb/yr)	Hot Soak (lb/yr)	Start Exhaust (lb/yr)	Idle Exhaust (lb/yr)	Start Exhaust (lb/yr)	Total (lb/yr)	
Gas Station Queue	1,3-Butadiene	2,158,063	1,295,176	1.7487E-02	0	0	9.6642E-01	0	0	9.8391E-01	
	Acetaldehyde	2,158,063	1,295,176	9.3511E-02	0	0	1.5876E+00	0	0	1.6811E+00	
	Acrolein	2,158,063	1,295,176	2.4176E-04	0	0	8.4437E-03	0	0	8.6855E-03	
	Benzene	2,158,063	1,295,176	2.9394E-01	6.6780E-01	6.2467E+00	3.9380E+00	0	0	1.1147E+01	
	Ethyl Benzene	2,158,063	1,295,176	7.7024E-02	4.3227E-01	4.0436E+00	2.1044E+00	0	0	6.6573E+00	
	Formaldehyde	2,158,063	1,295,176	1.6763E-01	0	0	2.4342E+00	0	0	2.6019E+00	
	Hexane	2,158,063	1,295,176	5.9923E-02	4.9130E-01	4.5957E+00	1.6463E+00	0	0	6.7932E+00	
	Methanol	2,158,063	1,295,176	2.9522E-03	2.3128E+00	2.1634E+01	4.0165E-02	0	0	2.3990E+01	
	Methyl Ethyl Ketone	2,158,063	1,295,176	1.0325E-02	0	0	1.4818E-01	0	0	1.5851E-01	
	Methyl Tert-Butyl Ether	2,158,063	1,295,176	2.1684E-02	0	0	5.1718E-02	0	0	7.3402E-02	
	Naphthalene	2,158,063	1,295,176	2.1306E-02	0	0	7.1331E-02	1.2491E-04	1.1832E-04	9.2880E-02	
	Propylene (propene)	2,158,063	1,295,176	1.6781E-01	8.2762E-03	7.7417E-02	6.5102E+00	0	0	6.7637E+00	
	Styrene	2,158,063	1,295,176	1.3060E-02	9.3834E-04	8.7774E-03	4.1470E-01	0	0	4.3748E-01	
	Toluene	2,158,063	1,295,176	3.4346E-01	2.9534E+00	2.7627E+01	1.1443E+01	0	0	4.2366E+01	
		2,158,063	1,295,176	3.6970E-01	2.2064E+00	2.0639E+01	1.0694E+01	0	0	3.3909E+01	
	PAH (7 Chemicals)										
	Benzo(a)anthracene	2,158,063	1,295,176	4.2012E-05	0	0	7.9125E-04	3.5247E-04	3.3523E-04	1.5210E-03	
	Benzo(a)pyrene	2,158,063	1,295,176	2.2873E-06	0	0	4.3079E-05	8.8407E-04	8.3808E-04	1.7675E-03	
	Benzo(b)fluoranthene	2,158,063	1,295,176	3.1198E-05	0	0	5.8758E-04	4.3090E-04	4.0918E-04	1.4589E-03	
	Benzo(k)fluoranthene	2,158,063	1,295,176	3.1198E-05	0	0	5.8758E-04	4.3090E-04	4.0918E-04	1.4589E-03	
	Chrysene	2,158,063	1,295,176	4.7069E-05	0	0	8.8649E-04	2.9824E-04	2.8311E-04	1.5149E-03	
	Dibenzo(a,h)anthracene	2,158,063	1,295,176	0	0	0	0	2.0625E-05	1.9649E-05	4.0274E-05	
	Indeno(1,2,3-c,d)pyrene	2,158,063	1,295,176	0	0	0	0	8.9859E-04	8.5216E-04	1.7508E-03	
Source	Chemical	Trips/Yr	Miles/Trip	PM Run Exhaust (lb/yr)	ROG Run Exhaust (lb/yr)	Total (lb/yr)					
Fuel Delivery Truck On-Site Circulation	DPM	1,825	0.381	1.3120E-01	0	1.3120E-01					
	Acetaldehyde	1,825	0.381	0	3.1784E-02	3.1784E-02					
	Acrolein	1,825	0.381	0	2.7439E-03	2.7439E-03					
	Ethyl Benzene	1,825	0.381	0	8.5367E-03	8.5367E-03					
	Formaldehyde	1,825	0.381	0	2.0275E-02	2.0275E-02					
	Hexane	1,825	0.381	0	6.8598E-04	6.8598E-04					
	Toluene	1,825	0.381	0	1.3948E-02	1.3948E-02					
	Xylenes (mixed isomers)	1,825	0.381	0	6.4635E-02	6.4635E-02					
	PAH (3 Chemicals)										
	Naphthalene	1,825	0.381	0	4.4513E-04	4.4513E-04					
	Benzo(a)anthracene	1,825	0.381	0	5.2744E-07	5.2744E-07					
	Chrysene	1,825	0.381	0	1.9131E-07	1.9131E-07					
Source	Chemical	Trips/Yr	Minutes /Trip	PM Idle Exhaust (lb/yr)	ROG Idle Exhaust (lb/yr)	Total (lb/yr)					
Fuel Delivery Truck Idling	DPM	1,825	5	4.7425E-03	0	4.7425E-03					
	Acetaldehyde	1,825	5	0	3.3082E-02	3.3082E-02					
	Acrolein	1,825	5	0	2.8560E-03	2.8560E-03					
	Ethyl Benzene	1,825	5	0	8.8854E-03	8.8854E-03					
	Formaldehyde	1,825	5	0	2.1103E-02	2.1103E-02					
	Hexane	1,825	5	0	7.1400E-04	7.1400E-04					
	Toluene	1,825	5	0	1.4518E-02	1.4518E-02					
	Xylenes (mixed isomers)	1,825	5	0	6.7275E-02	6.7275E-02					
	PAH (2 Chemicals)										
	Naphthalene	1,825	5	0	4.6331E-04	4.6331E-04					
	Benzo(a)anthracene	1,825	5	0	1.5264E-05	1.5264E-05					
	Chrysene	1,825	5	0	1.9913E-07	1.9913E-07					

On-Site Vehicle Emissions

Max Hourly Emissions (Acute Risks)

			ROG Emissions					
Source	Chemical	Trips/Hour	Idle Time (min/hr)	Idle Exhaust (lb/hr)	Run Loss (lb/hr)	Hot Soak (lb/hr)	Start Exhaust (lb/hr)	Total (lb/hr)
Gas Station Queue	1,3-Butadiene	511	528	7.6983E-06	0	0	2.4631E-04	2.5401E-04
	Acetaldehyde	511	528	2.8548E-05	0	0	3.3008E-04	3.5863E-04
	Acrolein	511	528	4.4974E-08	0	0	2.4041E-06	2.4490E-06
	Benzene	511	528	1.2341E-04	2.7224E-04	1.4791E-03	9.8381E-04	2.8586E-03
	Formaldehyde	511	528	6.8143E-05	0.0000E+00	0.0000E+00	5.3501E-04	6.0315E-04
	Methanol	511	528	6.4891E-07	9.4285E-04	5.1228E-03	0.0000E+00	6.0663E-03
	Methyl Ethyl Ketone	511	528	4.7784E-06	0	0	2.9104E-05	3.3882E-05
	Styrene	511	528	6.9309E-06	3.8253E-07	2.0784E-06	9.8182E-05	1.0757E-04
	Toluene	511	528	1.5078E-04	1.2040E-03	6.5417E-03	2.7844E-03	1.0681E-02
	Xylenes (mixed isomers)	511	528	1.6092E-04	8.9946E-04	4.8870E-03	2.5156E-03	8.4630E-03
Source	Chemical	Trips/Hr	Miles/Trip	PM Run Exhaust (lb/hr)	ROG Run Exhaust (lb/hr)	Total (lb/hr)		
Fuel Delivery Truck On-Site Circulation	Acetaldehyde	1	0.381	0	1.7416E-05	1.7416E-05		
	Acrolein	1	0.381	0	1.5035E-06	1.5035E-06		
	Formaldehyde	1	0.381	0	1.1109E-05	1.1109E-05		
	Toluene	1	0.381	0	7.6429E-06	7.6429E-06		
	Xylenes (mixed isomers)	1	0.381	0	3.5416E-05	3.5416E-05		
Source	Chemical	Trips/Yr	Idle Time (min/hr)	PM Idle Exhaust (lb/hr)	ROG Idle Exhaust (lb/hr)	Total (lb/hr)		
Fuel Delivery Truck Idling	Acetaldehyde	1	5	0	1.8127E-05	1.8127E-05		
	Acrolein	1	5	0	1.5649E-06	1.5649E-06		
	Formaldehyde	1	5	0	1.1563E-05	1.1563E-05		
	Toluene	1	5	0	7.9551E-06	7.9551E-06		
	Xylenes (mixed isomers)	1	5	0	3.6863E-05	3.6863E-05		

- Notes:
1. Only Chemical which have a CARB/OEHHA approved cancer risk intensity factor or non-cancer choric or acute risk Reference Exposure Limit are included.
 2. Vehicle trips are for vehicles entering the project site, from the project Local Transportation Analysis (Kittelson 2024).
 3. Vehicle idling time from the traffic engineer (Kittelson 2024).
 4. Fuel delivery truck trips calculated based on 36.5 million gallons per year throughput and 8,800 gallons maximum load per truck.
 5. Fuel delivery truck idling assumed to be the maximum 5 minute allowable per CARB Airborne Toxic Control Measure Title 13, CCR, section 2485.

On-Site Vehicle Emission Factors

grams per pound	453.5924
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Fleet Mix Calculations

CalEEMod Default Fleet Mix for San Diego County

HHD	LDA	LDT1	LDT2	LHD1	LHD2	MCY	MDV	MH	MHD	OBUS	SBUS	UBUS
0.65%	50.42%	4.95%	22.39%	2.84%	0.71%	2.75%	13.63%	0.54%	0.86%	0.07%	0.10%	0.04%

Customer Fleet Mix

LDA Gasoline	LDA Plug-In Hybrid	LDT1 Gasoline	LDT1 Plug-In Hybrid	LDT2 Gasoline	LDT2 Plug-In Hybrid	MDV Gasoline	MDV Plug-In Hybrid
53.14%	2.03%	5.40%	0.02%	24.22%	0.28%	14.73%	0.19%

Fuel Delivery Truck Fleet Mix

HHD Diesel
100%

Emission Factors

Gas Station Queue								
Vehicle Class	Fuel	Fleet Mix	ROG Idle Exhaust (lb/min)	PM2.5 Idle Exhaust (lb/min)	ROG Run Loss (lb/min)	ROG Hot Soak (lb/trip)	ROG Start Exhaust (lb/trip)	PM2.5 Start Exhaust (lb/trip)
LDA	Gasoline	53.14%	2.3397E-06	3.8772E-07	1.6965E-05	1.0017E-04	2.9219E-05	1.6975E-07
LDA	Plug-In Hybrid	2.03%	2.6051E-08	7.8698E-09	1.8735E-07	7.2596E-07	4.9636E-07	2.8559E-09
LDT1	Gasoline	5.40%	9.6066E-07	5.8867E-08	4.3712E-06	2.3316E-05	6.5302E-06	2.8637E-08
LDT1	Plug-In Hybrid	0.02%	1.9722E-10	4.1832E-11	9.3674E-10	3.1606E-09	3.7069E-09	1.5009E-11
LDT2	Gasoline	24.22%	1.4878E-06	1.8284E-07	7.9483E-06	4.4024E-05	1.7679E-05	7.6292E-08
LDT2	Plug-In Hybrid	0.28%	3.4425E-09	8.5240E-10	1.7277E-08	6.0546E-08	6.4909E-08	3.0569E-10
MDV	Gasoline	14.73%	1.1867E-06	1.0879E-07	6.2206E-06	3.2210E-05	1.3860E-05	4.8250E-08
MDV	Plug-In Hybrid	0.19%	2.3317E-09	6.5066E-10	1.3428E-08	4.8529E-08	4.4088E-08	2.3505E-10
Total			6.0068E-06	7.4763E-07	3.5724E-05	2.0056E-04	6.7898E-05	3.2634E-07
Fuel Delivery Truck Idling								
Vehicle Category	Fuel	Fleet Mix	DPM Idle Exhaust (lb/min)	ROG Idle Exhaust (lb/min)	PM2.5 Idle Exhaust (lb/min)			
HHD	Diesel	100%	5.1972E-07	8.6941E-05	4.9724E-07			
Fuel Delivery Truck Circulation								
Vehicle Category	Fuel	Fleet Mix	DPM Run Exhaust (lb/mile)	ROG Run Exhaust (lb/mile)	PM2.5 Run Exhaust (lb/mile)			
HHD	Diesel	100%	1.8868E-04	1.0962E-03	1.8052E-04			

Notes:

- Fleet mix calculated using the ratio of vehicle categories from CalEEMod 2022.1 defaults for San Diego County in 2026, and the ratio of VMT by fuel and vehicle category from EMFAC2021 for San Diego County in 2026.
 - Fuel delivery trucks assume to circulate on the project site at an average of 5 mph.
- EMFAC only reports idling emissions (IDLEX) for heavy duty diesel trucks; car and light truck idling emissions assume the RUNEX emissions rate for the 0 to 5 mph bin with a correction factor of 2.5 mph applied per EMFAC2021 Volume II - Handbook for Project - Level Analysis.

Speciation Profiles Used in Emissions Calculations

CARB Gasoline Vehicle Exhaust Speciation Profiles

			Start Exhaust		Run Exhaust		Evaporative
CARB Organic Gases Profile Number			OG2301	OG2302	OG2303	OG2304	OG2315
Gasoline Formula/Season			E6/Summer	E6/Winter	E6/Summer	E6/Winter	E10/Summer
Chemical Name	SAROAD	CAS	Weight Fraction	Weight Fraction	Weight Fraction	Weight Fraction	Weight Fraction
1,3-butadiene	43218	106990	7.09925E-03	5.86457E-03	2.42726E-03	1.98716E-03	0
acetaldehyde	43503	75070	9.51349E-03	1.27517E-02	9.00112E-03	1.63991E-02	0
acrolein	43505	107028	6.92900E-05	4.07000E-05	1.41800E-05	5.55900E-05	0
benzene	45201	71432	2.83552E-02	2.47289E-02	3.89099E-02	3.61460E-02	1.44329E-02
ethyl benzene	45203	100414	1.41709E-02	1.46396E-02	1.11910E-02	8.02767E-03	9.34256E-03
formaldehyde	43502	50000	1.54199E-02	1.83433E-02	2.14852E-02	2.16364E-02	0.00000E+00
hexane	43231	110543	1.04499E-02	1.23750E-02	7.77615E-03	7.59503E-03	1.06182E-02
methanol	43301	67561	0	6.71840E-04	2.04600E-04	6.33200E-04	4.99858E-02
methyl ethyl ketone {2-butanone}	43552	78933	8.38830E-04	1.26155E-03	1.50660E-03	1.06671E-03	0
methyl tert-butyl ether	43378	1634044	4.95190E-04	1.46580E-04	4.67993E-03	4.07900E-05	0
naphthalene	98046	91203	6.39940E-04	2.64620E-04	3.68544E-03	1.36460E-03	0
propylene	43205	115071	4.78775E-02	3.94281E-02	2.19704E-02	2.09888E-02	1.78870E-04
styrene	45220	100425	2.82979E-03	2.83079E-03	2.18529E-03	9.43470E-04	2.02800E-05
toluene	45202	108883	8.02509E-02	7.49574E-02	4.75408E-02	3.92225E-02	6.38313E-02
xylene (sum of m-xylene, o-xylene, p-xylene)		1330207	7.25048E-02	7.36726E-02	5.07378E-02	4.28513E-02	4.76855E-02
m-xylene	45205	108383	3.53038E-02	3.61106E-02	2.26715E-02	2.09032E-02	3.50805E-02
o-xylene	45204	95476	1.95345E-02	1.95119E-02	1.61158E-02	1.17489E-02	1.26050E-02
p-xylene	45206	106423	1.76665E-02	1.80501E-02	1.19505E-02	1.01991E-02	0

U.S. EPA MOVES Vehicle Exhaust Speciation Profiles

Toxic Fractions for Gasoline Vehicles Fueled with Ethanol Content < 20%			ROG Weight Fraction	Start PM2.5 Weight Fraction	Run PM2.5 Weight Fraction
Polycyclic Aromatic Hydrocarbons (PAHs)					
Naphthalene		91203	-	1.68E-04	1.29E-04
Benz(a)anthracene		56553	5.40E-06	4.76E-04	3.64E-04
Benzo(a)pyrene		50328	2.94E-07	1.19E-03	9.13E-04
Benzo(b)fluoranthene		205992	4.01E-06	5.81E-04	4.45E-04
Benzo(k)fluoranthene		207089	4.01E-06	5.81E-04	4.45E-04
Chrysene		218019	6.05E-06	4.02E-04	3.08E-04
Dibenzo(a,h)anthracene		53703	0	2.79E-05	2.13E-05
Indeno(1,2,3,c,d)pyrene		193395	0	1.21E-03	9.28E-04
Toxic Fractions of VOC for 2010 and Later Diesel Vehicles			ROG Weight Fraction	PM2.5 Weight Fraction	
acetaldehyde		75070	4.170E-02	-	
acrolein		107028	3.600E-03	-	
ethyl benzene		100414	1.120E-02		
formaldehyde		50000	2.660E-02	-	
hexane		110543	9.000E-04	-	
toluene		108883	1.830E-02	-	
xylene		1330207	8.480E-02	-	
Polycyclic Aromatic Hydrocarbons (PAHs)					
Naphthalene		91203	5.840E-04	1.350E-05	
Benz(a)anthracene		56553	6.920E-07	1.924E-05	
Benzo(a)pyrene		50328	0	0	
Benzo(b)fluoranthene		205992	0	0	
Benzo(g,h,i)perylene		191242	0	0	
Benzo(k)fluoranthene		207089	0	0	
Chrysene		218019	2.510E-07	5.320E-06	
Dibenzo(a,h)anthracene		53703	0	0	
Indeno(1,2,3,c,d)pyrene		193395	0	0	

Speciation profiles sources:

1. CARB Organic Gas Speciation Profiles for Catalyzed Gasoline-Powered Vehicle Start Exhaust—E6 Fuel (OG2301 & OG2302). October 30, 2013. Available at: https://ww3.arb.ca.gov/ei/speciate/profilereference/cate6start_og2301&02.pdf.
2. CARB Organic Gas Speciation Profiles for Catalyzed Gasoline-Powered Vehicle Stabilized Running Exhaust—E6 Fuel (OG2303 & OG2304). December 12, 2013 . Available at: https://ww3.arb.ca.gov/ei/speciate/profilereference/cate6running_og2303&04.pdf.
3. CARB Organic Gas Speciation Profile for Gasoline-Powered Vehicles Hot Soak Evaporations—E10 Summer Fuel (OG2315). January 28, 2015. Available at: <https://ww3.arb.ca.gov/ei/speciate/profilereference/e10shotsoak-og2315.pdf>.
4. USEPA Air Toxic Emissions from Onroad Vehicles in MOVES3. November 2020. Available at: <https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=P1010TJM.pdf>.

EMFAC Output

Running Exhaust Emissions From EMFAC Emissions Inventory

Source: EMFAC2021 (v1.0.2) Emission Rates

Region Type: County

Region: San Diego

Calendar Year: 2026

Season: Annual

Vehicle Classification: EMFAC2007 Categories

Units: miles/day for VMT, tons/day for Emissions, 1000 gallons/day for Fuel Consumption, mph for Speed,

Region	Calendar Year	Vehicle Category	Model Year	Speed	Fuel	Total VMT	PM2.5_RUNEX	PM10_RUNEX	ROG_RUNEX
San Diego	2026	LDA	Aggregate		5 Gasoline	269598327.16	2.3605E+00		1.4245E+01
San Diego	2026	LDA	Aggregate		5 Plug-in Hybrid	9253410.10	4.3073E-02		1.4258E-01
San Diego	2026	LDT1	Aggregate		5 Gasoline	24200694.69	3.1655E-01		5.1659E+00
San Diego	2026	LDT1	Aggregate		5 Plug-in Hybrid	67343.41	2.0019E-04		9.4383E-04
San Diego	2026	LDT2	Aggregate		5 Gasoline	131791506.29	1.1942E+00		9.7171E+00
San Diego	2026	LDT2	Aggregate		5 Plug-in Hybrid	1375318.89	4.9758E-03		2.0095E-02
San Diego	2026	MDV	Aggregate		5 Gasoline	76639541.40	6.7927E-01		7.4097E+00
San Diego	2026	MDV	Aggregate		5 Plug-in Hybrid	882964.35	3.6350E-03		1.3026E-02
San Diego	2026	HHDT	Aggregate		5 Diesel	734093.35	6.6259E-02	6.9255E-02	4.0235E-01

Start Exhaust and Evaporative Emission Rates from EMFAC Project Level

Source: EMFAC2021 (v1.0.2) Emission Rates

Region Type: County

Region: San Diego

Calendar Year: 2026

Season: Annual

Vehicle Classification: EMFAC2007 Categories

Units: min for time, g/veh-start for STREX and HOTSOAK rate, g/veh-hour for RUNLOSS and IDLEX

calendar_year	season_month	sub_area	vehicle_class	fuel	temperature	process	time	pollutant	emission_rate
2026	Annual	San Diego (SD)	LDA	Gas		60 STREX		5 PM2_5	1.4490E-04
2026	Annual	San Diego (SD)	LDA	Phe		60 STREX		5 PM2_5	6.3851E-05
2026	Annual	San Diego (SD)	LDT1	Gas		60 STREX		5 PM2_5	2.4052E-04
2026	Annual	San Diego (SD)	LDT1	Phe		60 STREX		5 PM2_5	4.0316E-05
2026	Annual	San Diego (SD)	LDT2	Gas		60 STREX		5 PM2_5	1.4291E-04
2026	Annual	San Diego (SD)	LDT2	Phe		60 STREX		5 PM2_5	4.9043E-05
2026	Annual	San Diego (SD)	MDV	Gas		60 STREX		5 PM2_5	1.4859E-04
2026	Annual	San Diego (SD)	MDV	Phe		60 STREX		5 PM2_5	5.6213E-05
2026	Annual	San Diego (SD)	LDA	Gas		HOTSOAK		ROG	8.5506E-02
2026	Annual	San Diego (SD)	LDA	Phe		HOTSOAK		ROG	1.6231E-02
2026	Annual	San Diego (SD)	LDT1	Gas		HOTSOAK		ROG	1.9583E-01
2026	Annual	San Diego (SD)	LDT1	Phe		HOTSOAK		ROG	8.4898E-03
2026	Annual	San Diego (SD)	LDT2	Gas		HOTSOAK		ROG	8.2465E-02
2026	Annual	San Diego (SD)	LDT2	Phe		HOTSOAK		ROG	9.7136E-03
2026	Annual	San Diego (SD)	MDV	Gas		HOTSOAK		ROG	9.9193E-02
2026	Annual	San Diego (SD)	MDV	Phe		HOTSOAK		ROG	1.1606E-02
2026	Annual	San Diego (SD)	LDA	Gas		RUNLOSS		ROG	8.6892E-01
2026	Annual	San Diego (SD)	LDA	Phe		RUNLOSS		ROG	2.5132E-01
2026	Annual	San Diego (SD)	LDT1	Gas		RUNLOSS		ROG	2.2028E+00
2026	Annual	San Diego (SD)	LDT1	Phe		RUNLOSS		ROG	1.5097E-01
2026	Annual	San Diego (SD)	LDT2	Gas		RUNLOSS		ROG	8.9332E-01
2026	Annual	San Diego (SD)	LDT2	Phe		RUNLOSS		ROG	1.6631E-01
2026	Annual	San Diego (SD)	MDV	Gas		RUNLOSS		ROG	1.1494E+00
2026	Annual	San Diego (SD)	MDV	Phe		RUNLOSS		ROG	1.9268E-01
2026	Annual	San Diego (SD)	LDA	Gas		60 STREX		5 ROG	2.4942E-02
2026	Annual	San Diego (SD)	LDA	Phe		60 STREX		5 ROG	1.1097E-02
2026	Annual	San Diego (SD)	LDT1	Gas		60 STREX		5 ROG	5.4848E-02
2026	Annual	San Diego (SD)	LDT1	Phe		60 STREX		5 ROG	9.9572E-03
2026	Annual	San Diego (SD)	LDT2	Gas		60 STREX		5 ROG	3.3116E-02
2026	Annual	San Diego (SD)	LDT2	Phe		60 STREX		5 ROG	1.0414E-02
2026	Annual	San Diego (SD)	MDV	Gas		60 STREX		5 ROG	4.2684E-02
2026	Annual	San Diego (SD)	MDV	Phe		60 STREX		5 ROG	1.0544E-02
2026	Annual	San Diego (SD)	HHDT	Dsl		IDLEX		PM10	1.4145E-02
2026	Annual	San Diego (SD)	HHDT	Dsl		IDLEX		PM2_5	1.3533E-02
2026	Annual	San Diego (SD)	HHDT	Dsl		IDLEX		ROG	2.3661E+00

Control Pathway

AERMOD

Dispersion Options

Titles C:\Users\MartinR\Desktop\San Marcos Costco HRA\Dispersion\Dispersion	
Dispersion Options ☒ Regulatory Default ☐ Non-Default Options	Dispersion Coefficient Urban Population: Name (Optional): Roughness Length:
	Output Type ☒ Concentration ☐ Total Deposition (Dry & Wet) ☐ Dry Deposition ☐ Wet Deposition
	Plume Depletion ☐ Dry Removal ☐ Wet Removal
	Output Warnings ☐ No Output Warnings ☐ Non-fatal Warnings for Non-sequential Met Data

Pollutant / Averaging Time / Terrain Options

Pollutant Type OTHER - TOG	Exponential Decay ☒ Half-life of 4 hrs will be used
Averaging Time Options Hours ☒ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 6 ☐ 8 ☐ 12 ☐ 24 ☐ Month ☒ Period ☐ Annual	Terrain Height Options ☐ Flat ☒ Elevated SO: Meters RE: Meters TG: Meters
Flagpole Receptors ☒ Yes ☐ No Default Height = 1.20 m	

Optional Files



Re-Start File



Init File



Multi-Year Analyses



Event Input File



Error Listing File

Detailed Error Listing File

Filename: Dispersion.err

Source Pathway - Source Inputs

AERMOD

Point Sources

Source Type	Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation (Optional)	Release Height [m]	Emission Rate [g/s]	Gas Exit Temp. [K]	Gas Exit Velocity [m/s]	Stack Inside Diameter [m]
POINT	LOAD	482883.40	3666760.56	166.00	3.66	1.00000	291.00	0.00	0.05
		UST Loading							
POINT	BREA	482883.40	3666760.56	166.00	3.66	1.00000	289.00	0.00	0.05
		UST Breathing							
POINT	LOAD_A	482883.40	3666760.56	166.00	3.66	1.00000	291.00	0.49	0.05
		UST Loading Acute Risks							

Volume Sources

Source Type	Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation (Optional)	Release Height [m]	Emission Rate [g/s]	Length of Side [m]	Building Height [m]	Initial Lateral Dim. [m]	Initial Vertical Dim. [m]
VOLUME	FUEL	482883.40	3666760.56	166.00	1.50	1.00000	34.78	Surface-Based	8.09	2.06
		Vehicle Refueling								
VOLUME	SPIL	482883.40	3666760.56	166.00	1.00	1.00000	34.78	Surface-Based	8.09	2.06
		Vehicle Refueling Spillage								
VOLUME	HOSE	482883.40	3666760.56	166.00	1.50	1.00000	34.78	Surface-Based	8.09	2.06
		Hose Permeation								
VOLUME	FUEL_A	482883.40	3666760.56	166.00	1.50	1.00000	34.78	Surface-Based	8.09	2.06
		Vehicle Refueling Acute Risks								
VOLUME	SPIL_A	482883.40	3666760.56	166.00	1.00	1.00000	34.78	Surface-Based	8.09	2.06
		Vehicle Refueling Spillage Acute Risks								
VOLUME	HOSE_A	482883.40	3666760.56	166.00	1.50	1.00000	34.78	Surface-Based	8.09	2.06
		Hose Permeation Acute Risks								

Source Pathway - Source Inputs

AERMOD

Polygon Area Sources

Source Type: AREA POLY

Source: TIDL (Fuel Delivery Truck Idling)

Base Elevation (Optional)	Release Height [m]	Emission Rate [g/ (s-m ²)]	Initial Vertical Dim. [m]	Number of Vertices (or sides)	X Coordinate for Vertices [m]	Y Coordinate for Vertices [m]
166.00	4.00	0.00270		4	482876.41	3666713.16
		0.00270			482863.76	3666753.42
		0.00270			482854.99	3666750.33
		0.00270			482868.28	3666710.97

Source Type: AREA POLY

Source: TIDL_A (Fuel Delivery Truck Idling Acute Risks)

Base Elevation (Optional)	Release Height [m]	Emission Rate [g/ (s-m ²)]	Initial Vertical Dim. [m]	Number of Vertices (or sides)	X Coordinate for Vertices [m]	Y Coordinate for Vertices [m]
166.00	4.00	0.00270	0.00	4	482876.41	3666713.16
		0.00270			482863.76	3666753.42
		0.00270			482854.99	3666750.33
		0.00270			482868.28	3666710.97

Source Type: AREA POLY

Source: CIDL (Car Idling in Queue)

Base Elevation (Optional)	Release Height [m]	Emission Rate [g/ (s-m ²)]	Initial Vertical Dim. [m]	Number of Vertices (or sides)	X Coordinate for Vertices [m]	Y Coordinate for Vertices [m]
166.00	0.50	0.00043		5	482859.71	3666779.23
		0.00043			482895.02	3666667.41
		0.00043			482926.31	3666676.81
		0.00043			482927.09	3666682.46
		0.00043			482891.58	3666789.87

Source Pathway - Source Inputs

AERMOD

Source Type: AREA POLY

Source: CIDL_A (Car Idling in Queue Acute Risks)

Base Elevation (Optional)	Release Height [m]	Emission Rate [g/ (s-m^2)]	Initial Vertical Dim. [m]	Number of Vertices (or sides)	X Coordinate for Vertices [m]	Y Coordinate for Vertices [m]
166.00	0.50	0.00043	0.00	5	482859.71	3666779.23
		0.00043			482895.02	3666667.41
		0.00043			482926.31	3666676.81
		0.00043			482927.09	3666682.46
		0.00043			482891.58	3666789.87

Source Pathway - Source Inputs

AERMOD

Line Volume Sources

Source Type: LINE VOLUME

Source: TRCR (Fuel Delivery Truck Circulation Route)

Length of Side [m]	Emission Rate [g/ s]	Building Height [m]	X Coordinate for Points [m]	Y Coordinate for points [m]	Base Elevation [m]	Release Height [m]
8.60	1.00000		482992.21	3666495.71	165.86	3.40
			482982.04	3666492.52	165.93	3.40
			482968.98	3666485.09	165.48	3.40
			482825.07	3666441.03	165.00	3.40
			482773.40	3666451.33	164.10	3.40
			482757.20	3666507.11	164.00	3.40
			482773.57	3666539.83	164.00	3.40
			482793.59	3666564.76	164.90	3.40
			482870.05	3666699.58	166.00	3.40
			482869.87	3666719.88	166.00	3.40
			482860.45	3666750.07	166.00	3.40
			482851.80	3666768.53	166.00	3.40
			482843.80	3666790.20	166.00	3.40
			482840.19	3666796.52	166.00	3.40

Source Pathway - Source Inputs

AERMOD

Source Type: LINE VOLUME

Source: TRCR_A (Fuel Delivery Truck Circulation Route Acute Risks)

Length of Side [m]	Emission Rate [g/ s]	Building Height [m]	X Coordinate for Points [m]	Y Coordinate for points [m]	Base Elevation [m]	Release Height [m]
8.60	1.00000		482992.21	3666495.71	165.86	3.40
			482982.04	3666492.53	165.93	3.40
			482968.99	3666485.09	165.48	3.40
			482825.07	3666441.03	165.00	3.40
			482773.40	3666451.33	164.10	3.40
			482757.20	3666507.11	164.00	3.40
			482773.57	3666539.83	164.00	3.40
			482793.59	3666564.78	164.90	3.40
			482870.05	3666699.54	166.00	3.40
			482869.86	3666719.89	166.00	3.40
			482860.44	3666750.07	166.00	3.40
			482851.83	3666768.49	166.00	3.40
			482843.80	3666790.21	166.00	3.40
			482840.19	3666796.52	166.00	3.40

Source Pathway - Source Inputs

AERMOD

Volume Sources Generated from Line Sources

Line Source ID	Volume Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation [m]	Release Height [m]	Emission Rate [g/s]	Length of Side [m]	Building Height [m]	Initial Lateral Dimension [m]	Initial Vertical Dimension [m]
TRCR	L0000001	482988.10	3666494.43	165.96	3.40	0.01408	8.60		4.00	3.16
	L0000002	482980.09	3666491.41	165.85	3.40	0.01408	8.60		4.00	3.16
	L0000003	482972.62	3666487.16	165.54	3.40	0.01408	8.60		4.00	3.16
	L0000004	482964.76	3666483.79	165.30	3.40	0.01408	8.60		4.00	3.16
	L0000005	482956.54	3666481.28	165.12	3.40	0.01408	8.60		4.00	3.16
	L0000006	482948.31	3666478.76	165.00	3.40	0.01408	8.60		4.00	3.16
	L0000007	482940.09	3666476.24	165.00	3.40	0.01408	8.60		4.00	3.16
	L0000008	482931.87	3666473.72	165.00	3.40	0.01408	8.60		4.00	3.16
	L0000009	482923.64	3666471.21	165.00	3.40	0.01408	8.60		4.00	3.16
	L0000010	482915.42	3666468.69	165.00	3.40	0.01408	8.60		4.00	3.16
	L0000011	482907.20	3666466.17	165.00	3.40	0.01408	8.60		4.00	3.16
	L0000012	482898.97	3666463.65	165.00	3.40	0.01408	8.60		4.00	3.16
	L0000013	482890.75	3666461.14	165.00	3.40	0.01408	8.60		4.00	3.16
	L0000014	482882.53	3666458.62	165.00	3.40	0.01408	8.60		4.00	3.16
	L0000015	482874.30	3666456.10	165.00	3.40	0.01408	8.60		4.00	3.16
	L0000016	482866.08	3666453.58	165.00	3.40	0.01408	8.60		4.00	3.16
	L0000017	482857.86	3666451.07	165.00	3.40	0.01408	8.60		4.00	3.16
	L0000018	482849.63	3666448.55	165.00	3.40	0.01408	8.60		4.00	3.16
	L0000019	482841.41	3666446.03	165.00	3.40	0.01408	8.60		4.00	3.16
	L0000020	482833.19	3666443.52	165.00	3.40	0.01408	8.60		4.00	3.16
	L0000021	482824.96	3666441.05	165.00	3.40	0.01408	8.60		4.00	3.16
	L0000022	482816.53	3666442.73	165.00	3.40	0.01408	8.60		4.00	3.16
	L0000023	482808.09	3666444.41	165.00	3.40	0.01408	8.60		4.00	3.16
	L0000024	482799.66	3666446.10	165.00	3.40	0.01408	8.60		4.00	3.16

Source Pathway - Source Inputs

AERMOD

Line Source ID	Volume Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation [m]	Release Height [m]	Emission Rate [g/s]	Length of Side [m]	Building Height [m]	Initial Lateral Dimencion [m]	Initial Vertical Dimencion [m]
TRCR	L0000025	482791.22	3666447.78	164.72	3.40	0.01408	8.60		4.00	3.16
	L0000026	482782.79	3666449.46	164.44	3.40	0.01408	8.60		4.00	3.16
	L0000027	482774.36	3666451.14	164.16	3.40	0.01408	8.60		4.00	3.16
	L0000028	482771.27	3666458.65	164.06	3.40	0.01408	8.60		4.00	3.16
	L0000029	482768.87	3666466.91	164.00	3.40	0.01408	8.60		4.00	3.16
	L0000030	482766.48	3666475.17	164.00	3.40	0.01408	8.60		4.00	3.16
	L0000031	482764.08	3666483.43	164.00	3.40	0.01408	8.60		4.00	3.16
	L0000032	482761.68	3666491.69	164.00	3.40	0.01408	8.60		4.00	3.16
	L0000033	482759.28	3666499.95	164.00	3.40	0.01408	8.60		4.00	3.16
	L0000034	482757.72	3666508.13	164.00	3.40	0.01408	8.60		4.00	3.16
	L0000035	482761.56	3666515.82	164.00	3.40	0.01408	8.60		4.00	3.16
	L0000036	482765.41	3666523.51	164.00	3.40	0.01408	8.60		4.00	3.16
	L0000037	482769.26	3666531.20	164.17	3.40	0.01408	8.60		4.00	3.16
	L0000038	482773.10	3666538.90	164.43	3.40	0.01408	8.60		4.00	3.16
	L0000039	482778.30	3666545.72	164.66	3.40	0.01408	8.60		4.00	3.16
	L0000040	482783.69	3666552.43	164.88	3.40	0.01408	8.60		4.00	3.16
	L0000041	482789.07	3666559.13	165.00	3.40	0.01408	8.60		4.00	3.16
	L0000042	482794.27	3666565.96	165.00	3.40	0.01408	8.60		4.00	3.16
	L0000043	482798.51	3666573.44	165.00	3.40	0.01408	8.60		4.00	3.16
	L0000044	482802.75	3666580.93	164.98	3.40	0.01408	8.60		4.00	3.16
	L0000045	482807.00	3666588.41	165.00	3.40	0.01408	8.60		4.00	3.16
	L0000046	482811.24	3666595.89	165.00	3.40	0.01408	8.60		4.00	3.16
	L0000047	482815.48	3666603.37	165.00	3.40	0.01408	8.60		4.00	3.16
	L0000048	482819.73	3666610.85	165.00	3.40	0.01408	8.60		4.00	3.16
	L0000049	482823.97	3666618.33	165.00	3.40	0.01408	8.60		4.00	3.16

Source Pathway - Source Inputs

AERMOD

Line Source ID	Volume Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation [m]	Release Height [m]	Emission Rate [g/s]	Length of Side [m]	Building Height [m]	Initial Lateral Dimencion [m]	Initial Vertical Dimencion [m]
TRCR	L0000050	482828.21	3666625.81	165.00	3.40	0.01408	8.60		4.00	3.16
	L0000051	482832.45	3666633.29	165.06	3.40	0.01408	8.60		4.00	3.16
	L0000052	482836.70	3666640.77	165.20	3.40	0.01408	8.60		4.00	3.16
	L0000053	482840.94	3666648.25	165.43	3.40	0.01408	8.60		4.00	3.16
	L0000054	482845.18	3666655.73	165.68	3.40	0.01408	8.60		4.00	3.16
	L0000055	482849.42	3666663.21	165.86	3.40	0.01408	8.60		4.00	3.16
	L0000056	482853.67	3666670.69	165.97	3.40	0.01408	8.60		4.00	3.16
	L0000057	482857.91	3666678.17	166.00	3.40	0.01408	8.60		4.00	3.16
	L0000058	482862.15	3666685.65	166.00	3.40	0.01408	8.60		4.00	3.16
	L0000059	482866.40	3666693.13	166.00	3.40	0.01408	8.60		4.00	3.16
	L0000060	482870.04	3666700.77	166.00	3.40	0.01408	8.60		4.00	3.16
	L0000061	482869.96	3666709.37	166.00	3.40	0.01408	8.60		4.00	3.16
	L0000062	482869.88	3666717.97	166.00	3.40	0.01408	8.60		4.00	3.16
	L0000063	482867.88	3666726.27	166.00	3.40	0.01408	8.60		4.00	3.16
	L0000064	482865.31	3666734.48	166.00	3.40	0.01408	8.60		4.00	3.16
	L0000065	482862.75	3666742.69	166.00	3.40	0.01408	8.60		4.00	3.16
	L0000066	482860.08	3666750.85	166.00	3.40	0.01408	8.60		4.00	3.16
	L0000067	482856.43	3666758.64	166.00	3.40	0.01408	8.60		4.00	3.16
	L0000068	482852.79	3666766.43	166.00	3.40	0.01408	8.60		4.00	3.16
	L0000069	482849.63	3666774.42	166.00	3.40	0.01408	8.60		4.00	3.16
	L0000070	482846.65	3666782.49	166.00	3.40	0.01408	8.60		4.00	3.16
	L0000071	482843.62	3666790.53	166.00	3.40	0.01408	8.60		4.00	3.16
Line Source ID	Volume Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation [m]	Release Height [m]	Emission Rate [g/s]	Length of Side [m]	Building Height [m]	Initial Lateral Dimencion [m]	Initial Vertical Dimencion [m]
TRCR_A	L0000072	482988.10	3666494.43	165.96	3.40	0.01408	8.60		4.00	3.16

Source Pathway - Source Inputs

AERMOD

Line Source ID	Volume Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation [m]	Release Height [m]	Emission Rate [g/s]	Length of Side [m]	Building Height [m]	Initial Lateral Dimencion [m]	Initial Vertical Dimencion [m]
TRCR_A	L0000073	482980.09	3666491.41	165.85	3.40	0.01408	8.60		4.00	3.16
	L0000074	482972.62	3666487.16	165.54	3.40	0.01408	8.60		4.00	3.16
	L0000075	482964.76	3666483.79	165.30	3.40	0.01408	8.60		4.00	3.16
	L0000076	482956.53	3666481.28	165.12	3.40	0.01408	8.60		4.00	3.16
	L0000077	482948.31	3666478.76	165.00	3.40	0.01408	8.60		4.00	3.16
	L0000078	482940.09	3666476.24	165.00	3.40	0.01408	8.60		4.00	3.16
	L0000079	482931.87	3666473.72	165.00	3.40	0.01408	8.60		4.00	3.16
	L0000080	482923.64	3666471.21	165.00	3.40	0.01408	8.60		4.00	3.16
	L0000081	482915.42	3666468.69	165.00	3.40	0.01408	8.60		4.00	3.16
	L0000082	482907.20	3666466.17	165.00	3.40	0.01408	8.60		4.00	3.16
	L0000083	482898.97	3666463.65	165.00	3.40	0.01408	8.60		4.00	3.16
	L0000084	482890.75	3666461.14	165.00	3.40	0.01408	8.60		4.00	3.16
	L0000085	482882.53	3666458.62	165.00	3.40	0.01408	8.60		4.00	3.16
	L0000086	482874.30	3666456.10	165.00	3.40	0.01408	8.60		4.00	3.16
	L0000087	482866.08	3666453.58	165.00	3.40	0.01408	8.60		4.00	3.16
	L0000088	482857.86	3666451.07	165.00	3.40	0.01408	8.60		4.00	3.16
	L0000089	482849.63	3666448.55	165.00	3.40	0.01408	8.60		4.00	3.16
	L0000090	482841.41	3666446.03	165.00	3.40	0.01408	8.60		4.00	3.16
	L0000091	482833.19	3666443.51	165.00	3.40	0.01408	8.60		4.00	3.16
	L0000092	482824.96	3666441.05	165.00	3.40	0.01408	8.60		4.00	3.16
	L0000093	482816.53	3666442.73	165.00	3.40	0.01408	8.60		4.00	3.16
	L0000094	482808.09	3666444.41	165.00	3.40	0.01408	8.60		4.00	3.16
	L0000095	482799.66	3666446.10	165.00	3.40	0.01408	8.60		4.00	3.16
	L0000096	482791.22	3666447.78	164.72	3.40	0.01408	8.60		4.00	3.16
	L0000097	482782.79	3666449.46	164.44	3.40	0.01408	8.60		4.00	3.16

Source Pathway - Source Inputs

AERMOD

Line Source ID	Volume Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation [m]	Release Height [m]	Emission Rate [g/s]	Length of Side [m]	Building Height [m]	Initial Lateral Dimencion [m]	Initial Vertical Dimencion [m]
TRCR_A	L0000098	482774.36	3666451.14	164.16	3.40	0.01408	8.60		4.00	3.16
	L0000099	482771.27	3666458.65	164.06	3.40	0.01408	8.60		4.00	3.16
	L0000100	482768.87	3666466.91	164.00	3.40	0.01408	8.60		4.00	3.16
	L0000101	482766.48	3666475.17	164.00	3.40	0.01408	8.60		4.00	3.16
	L0000102	482764.08	3666483.43	164.00	3.40	0.01408	8.60		4.00	3.16
	L0000103	482761.68	3666491.69	164.00	3.40	0.01408	8.60		4.00	3.16
	L0000104	482759.28	3666499.95	164.00	3.40	0.01408	8.60		4.00	3.16
	L0000105	482757.72	3666508.13	164.00	3.40	0.01408	8.60		4.00	3.16
	L0000106	482761.56	3666515.82	164.00	3.40	0.01408	8.60		4.00	3.16
	L0000107	482765.41	3666523.51	164.00	3.40	0.01408	8.60		4.00	3.16
	L0000108	482769.25	3666531.21	164.17	3.40	0.01408	8.60		4.00	3.16
	L0000109	482773.10	3666538.90	164.43	3.40	0.01408	8.60		4.00	3.16
	L0000110	482778.30	3666545.72	164.66	3.40	0.01408	8.60		4.00	3.16
	L0000111	482783.68	3666552.43	164.88	3.40	0.01408	8.60		4.00	3.16
	L0000112	482789.06	3666559.14	165.00	3.40	0.01408	8.60		4.00	3.16
	L0000113	482794.26	3666565.97	165.00	3.40	0.01408	8.60		4.00	3.16
	L0000114	482798.51	3666573.45	165.00	3.40	0.01408	8.60		4.00	3.16
	L0000115	482802.75	3666580.93	164.98	3.40	0.01408	8.60		4.00	3.16
	L0000116	482807.00	3666588.41	165.00	3.40	0.01408	8.60		4.00	3.16
	L0000117	482811.24	3666595.89	165.00	3.40	0.01408	8.60		4.00	3.16
	L0000118	482815.48	3666603.37	165.00	3.40	0.01408	8.60		4.00	3.16
	L0000119	482819.73	3666610.85	165.00	3.40	0.01408	8.60		4.00	3.16
	L0000120	482823.97	3666618.33	165.00	3.40	0.01408	8.60		4.00	3.16
	L0000121	482828.22	3666625.81	165.00	3.40	0.01408	8.60		4.00	3.16
	L0000122	482832.46	3666633.29	165.06	3.40	0.01408	8.60		4.00	3.16

Source Pathway - Source Inputs

AERMOD

Line Source ID	Volume Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation [m]	Release Height [m]	Emission Rate [g/s]	Length of Side [m]	Building Height [m]	Initial Lateral Dimension [m]	Initial Vertical Dimension [m]
TRCR_A	L0000123	482836.70	3666640.77	165.20	3.40	0.01408	8.60		4.00	3.16
	L0000124	482840.95	3666648.25	165.43	3.40	0.01408	8.60		4.00	3.16
	L0000125	482845.19	3666655.73	165.68	3.40	0.01408	8.60		4.00	3.16
	L0000126	482849.44	3666663.21	165.86	3.40	0.01408	8.60		4.00	3.16
	L0000127	482853.68	3666670.69	165.97	3.40	0.01408	8.60		4.00	3.16
	L0000128	482857.92	3666678.17	166.00	3.40	0.01408	8.60		4.00	3.16
	L0000129	482862.17	3666685.65	166.00	3.40	0.01408	8.60		4.00	3.16
	L0000130	482866.41	3666693.13	166.00	3.40	0.01408	8.60		4.00	3.16
	L0000131	482870.04	3666700.76	166.00	3.40	0.01408	8.60		4.00	3.16
	L0000132	482869.96	3666709.36	166.00	3.40	0.01408	8.60		4.00	3.16
	L0000133	482869.88	3666717.96	166.00	3.40	0.01408	8.60		4.00	3.16
	L0000134	482867.88	3666726.26	166.00	3.40	0.01408	8.60		4.00	3.16
	L0000135	482865.31	3666734.47	166.00	3.40	0.01408	8.60		4.00	3.16
	L0000136	482862.75	3666742.68	166.00	3.40	0.01408	8.60		4.00	3.16
	L0000137	482860.08	3666750.85	166.00	3.40	0.01408	8.60		4.00	3.16
	L0000138	482856.44	3666758.64	166.00	3.40	0.01408	8.60		4.00	3.16
	L0000139	482852.79	3666766.43	166.00	3.40	0.01408	8.60		4.00	3.16
	L0000140	482849.63	3666774.42	166.00	3.40	0.01408	8.60		4.00	3.16
	L0000141	482846.65	3666782.49	166.00	3.40	0.01408	8.60		4.00	3.16
	L0000142	482843.62	3666790.53	166.00	3.40	0.01408	8.60		4.00	3.16

Source Pathway

AERMOD

Building Downwash Information

Source ID: LOAD						
Heights [m] (10 to 360 deg)						
10-60 deg	0.00	0.00	0.00	0.00	0.00	0.00
70-120 deg	0.00	0.00	0.00	0.00	0.00	0.00
130-180 deg	0.00	0.00	0.00	0.00	0.00	0.00
190-240 deg	0.00	0.00	0.00	0.00	0.00	0.00
250-300 deg	0.00	0.00	0.00	0.00	0.00	0.00
310-360 deg	0.00	0.00	0.00	0.00	0.00	0.00
Widths [m] (10 to 360 deg)						
10-60 deg	0.00	0.00	0.00	0.00	0.00	0.00
70-120 deg	0.00	0.00	0.00	0.00	0.00	0.00
130-180 deg	0.00	0.00	0.00	0.00	0.00	0.00
190-240 deg	0.00	0.00	0.00	0.00	0.00	0.00
250-300 deg	0.00	0.00	0.00	0.00	0.00	0.00
310-360 deg	0.00	0.00	0.00	0.00	0.00	0.00
Lengths [m] (10 to 360 deg)						
10-60 deg	0.00	0.00	0.00	0.00	0.00	0.00
70-120 deg	0.00	0.00	0.00	0.00	0.00	0.00
130-180 deg	0.00	0.00	0.00	0.00	0.00	0.00
190-240 deg	0.00	0.00	0.00	0.00	0.00	0.00
250-300 deg	0.00	0.00	0.00	0.00	0.00	0.00
310-360 deg	0.00	0.00	0.00	0.00	0.00	0.00
Along Flow [m] (10 to 360 deg)						
10-60 deg	0.00	0.00	0.00	0.00	0.00	0.00
70-120 deg	0.00	0.00	0.00	0.00	0.00	0.00
130-180 deg	0.00	0.00	0.00	0.00	0.00	0.00
190-240 deg	0.00	0.00	0.00	0.00	0.00	0.00
250-300 deg	0.00	0.00	0.00	0.00	0.00	0.00
310-360 deg	0.00	0.00	0.00	0.00	0.00	0.00
Across Flow [m] (10 to 360 deg)						
10-60 deg	0.00	0.00	0.00	0.00	0.00	0.00
70-120 deg	0.00	0.00	0.00	0.00	0.00	0.00
130-180 deg	0.00	0.00	0.00	0.00	0.00	0.00
190-240 deg	0.00	0.00	0.00	0.00	0.00	0.00
250-300 deg	0.00	0.00	0.00	0.00	0.00	0.00
310-360 deg	0.00	0.00	0.00	0.00	0.00	0.00

Source ID: BREA						
Heights [m] (10 to 360 deg)						
10-60 deg	0.00	0.00	0.00	0.00	0.00	0.00

Source Pathway

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70-120 deg	0.00	0.00	0.00	0.00	0.00	0.00
130-180 deg	0.00	0.00	0.00	0.00	0.00	0.00
190-240 deg	0.00	0.00	0.00	0.00	0.00	0.00
250-300 deg	0.00	0.00	0.00	0.00	0.00	0.00
310-360 deg	0.00	0.00	0.00	0.00	0.00	0.00
Widths [m] (10 to 360 deg)						
10-60 deg	0.00	0.00	0.00	0.00	0.00	0.00
70-120 deg	0.00	0.00	0.00	0.00	0.00	0.00
130-180 deg	0.00	0.00	0.00	0.00	0.00	0.00
190-240 deg	0.00	0.00	0.00	0.00	0.00	0.00
250-300 deg	0.00	0.00	0.00	0.00	0.00	0.00
310-360 deg	0.00	0.00	0.00	0.00	0.00	0.00
Lengths [m] (10 to 360 deg)						
10-60 deg	0.00	0.00	0.00	0.00	0.00	0.00
70-120 deg	0.00	0.00	0.00	0.00	0.00	0.00
130-180 deg	0.00	0.00	0.00	0.00	0.00	0.00
190-240 deg	0.00	0.00	0.00	0.00	0.00	0.00
250-300 deg	0.00	0.00	0.00	0.00	0.00	0.00
310-360 deg	0.00	0.00	0.00	0.00	0.00	0.00
Along Flow [m] (10 to 360 deg)						
10-60 deg	0.00	0.00	0.00	0.00	0.00	0.00
70-120 deg	0.00	0.00	0.00	0.00	0.00	0.00
130-180 deg	0.00	0.00	0.00	0.00	0.00	0.00
190-240 deg	0.00	0.00	0.00	0.00	0.00	0.00
250-300 deg	0.00	0.00	0.00	0.00	0.00	0.00
310-360 deg	0.00	0.00	0.00	0.00	0.00	0.00
Across Flow [m] (10 to 360 deg)						
10-60 deg	0.00	0.00	0.00	0.00	0.00	0.00
70-120 deg	0.00	0.00	0.00	0.00	0.00	0.00
130-180 deg	0.00	0.00	0.00	0.00	0.00	0.00
190-240 deg	0.00	0.00	0.00	0.00	0.00	0.00
250-300 deg	0.00	0.00	0.00	0.00	0.00	0.00
310-360 deg	0.00	0.00	0.00	0.00	0.00	0.00

Source ID: LOAD_A

Heights [m] (10 to 360 deg)

10-60 deg	0.00	0.00	0.00	0.00	0.00	0.00
70-120 deg	0.00	0.00	0.00	0.00	0.00	0.00
130-180 deg	0.00	0.00	0.00	0.00	0.00	0.00
190-240 deg	0.00	0.00	0.00	0.00	0.00	0.00
250-300 deg	0.00	0.00	0.00	0.00	0.00	0.00
310-360 deg	0.00	0.00	0.00	0.00	0.00	0.00

Source Pathway

AERMOD

Widths [m] (10 to 360 deg)						
10-60 deg	0.00	0.00	0.00	0.00	0.00	0.00
70-120 deg	0.00	0.00	0.00	0.00	0.00	0.00
130-180 deg	0.00	0.00	0.00	0.00	0.00	0.00
190-240 deg	0.00	0.00	0.00	0.00	0.00	0.00
250-300 deg	0.00	0.00	0.00	0.00	0.00	0.00
310-360 deg	0.00	0.00	0.00	0.00	0.00	0.00
Lengths [m] (10 to 360 deg)						
10-60 deg	0.00	0.00	0.00	0.00	0.00	0.00
70-120 deg	0.00	0.00	0.00	0.00	0.00	0.00
130-180 deg	0.00	0.00	0.00	0.00	0.00	0.00
190-240 deg	0.00	0.00	0.00	0.00	0.00	0.00
250-300 deg	0.00	0.00	0.00	0.00	0.00	0.00
310-360 deg	0.00	0.00	0.00	0.00	0.00	0.00
Along Flow [m] (10 to 360 deg)						
10-60 deg	0.00	0.00	0.00	0.00	0.00	0.00
70-120 deg	0.00	0.00	0.00	0.00	0.00	0.00
130-180 deg	0.00	0.00	0.00	0.00	0.00	0.00
190-240 deg	0.00	0.00	0.00	0.00	0.00	0.00
250-300 deg	0.00	0.00	0.00	0.00	0.00	0.00
310-360 deg	0.00	0.00	0.00	0.00	0.00	0.00
Across Flow [m] (10 to 360 deg)						
10-60 deg	0.00	0.00	0.00	0.00	0.00	0.00
70-120 deg	0.00	0.00	0.00	0.00	0.00	0.00
130-180 deg	0.00	0.00	0.00	0.00	0.00	0.00
190-240 deg	0.00	0.00	0.00	0.00	0.00	0.00
250-300 deg	0.00	0.00	0.00	0.00	0.00	0.00
310-360 deg	0.00	0.00	0.00	0.00	0.00	0.00

Emission Rate Units for Output

For Concentration

Unit Factor: 1E6
Emission Unit Label: GRAMS/SEC
Concentration Unit Label: MICROGRAMS/M**3

Variable Emissions

Source Pathway

AERMOD

Hourly Emission Rate Variation

Scenario: Scenario 1.36

Source ID:	FUEL						
1 to 6		0.00	0.00	0.00	0.00	0.00	0.00
7 to 12		1.20	1.20	1.92	1.92	1.92	1.92
13 to 18		1.92	1.92	1.92	1.92	1.92	1.92
19 to 24		1.20	1.20	0.00	0.00	0.00	0.00
Source ID:	HOSE						
1 to 6		0.00	0.00	0.00	0.00	0.00	0.00
7 to 12		1.20	1.20	1.92	1.92	1.92	1.92
13 to 18		1.92	1.92	1.92	1.92	1.92	1.92
19 to 24		1.20	1.20	0.00	0.00	0.00	0.00
Source ID:	SPIL						
1 to 6		0.00	0.00	0.00	0.00	0.00	0.00
7 to 12		1.20	1.20	1.92	1.92	1.92	1.92
13 to 18		1.92	1.92	1.92	1.92	1.92	1.92
19 to 24		1.20	1.20	0.00	0.00	0.00	0.00
Source ID:	CIDL						
1 to 6		0.00	0.00	0.00	0.00	0.00	0.00
7 to 12		1.20	1.20	1.92	1.92	1.92	1.92
13 to 18		1.92	1.92	1.92	1.92	1.92	1.92
19 to 24		1.20	1.20	0.00	0.00	0.00	0.00

Scenario: Scenario 2

Source ID:	LOAD						
1 to 6		0.00	0.00	0.00	0.00	0.00	0.00
7 to 12		1.71	1.71	1.71	1.71	1.71	1.71
13 to 18		1.71	1.71	1.71	1.71	1.71	1.71
19 to 24		1.71	1.71	0.00	0.00	0.00	0.00
Source ID:	TIDL						
1 to 6		0.00	0.00	0.00	0.00	0.00	0.00
7 to 12		1.71	1.71	1.71	1.71	1.71	1.71
13 to 18		1.71	1.71	1.71	1.71	1.71	1.71
19 to 24		1.71	1.71	0.00	0.00	0.00	0.00
Source ID:	TRCR						
1 to 6		0.00	0.00	0.00	0.00	0.00	0.00
7 to 12		1.71	1.71	1.71	1.71	1.71	1.71
13 to 18		1.71	1.71	1.71	1.71	1.71	1.71
19 to 24		1.71	1.71	0.00	0.00	0.00	0.00

Source Pathway

AERMOD

Scenario: Scenario 4

Source ID: CIDL_A							
1 to 6		0.00	0.00	0.00	0.00	0.00	0.00
7 to 12		1.00	1.00	1.00	1.00	1.00	1.00
13 to 18		1.00	1.00	1.00	1.00	1.00	1.00
19 to 24		1.00	1.00	0.00	0.00	0.00	0.00
Source ID: FUEL_A							
1 to 6		0.00	0.00	0.00	0.00	0.00	0.00
7 to 12		1.00	1.00	1.00	1.00	1.00	1.00
13 to 18		1.00	1.00	1.00	1.00	1.00	1.00
19 to 24		1.00	1.00	0.00	0.00	0.00	0.00
Source ID: HOSE_A							
1 to 6		0.00	0.00	0.00	0.00	0.00	0.00
7 to 12		1.00	1.00	1.00	1.00	1.00	1.00
13 to 18		1.00	1.00	1.00	1.00	1.00	1.00
19 to 24		1.00	1.00	0.00	0.00	0.00	0.00
Source ID: LOAD_A							
1 to 6		0.00	0.00	0.00	0.00	0.00	0.00
7 to 12		1.00	1.00	1.00	1.00	1.00	1.00
13 to 18		1.00	1.00	1.00	1.00	1.00	1.00
19 to 24		1.00	1.00	0.00	0.00	0.00	0.00
Source ID: SPIL_A							
1 to 6		0.00	0.00	0.00	0.00	0.00	0.00
7 to 12		1.00	1.00	1.00	1.00	1.00	1.00
13 to 18		1.00	1.00	1.00	1.00	1.00	1.00
19 to 24		1.00	1.00	0.00	0.00	0.00	0.00
Source ID: TIDL_A							
1 to 6		0.00	0.00	0.00	0.00	0.00	0.00
7 to 12		1.00	1.00	1.00	1.00	1.00	1.00
13 to 18		1.00	1.00	1.00	1.00	1.00	1.00
19 to 24		1.00	1.00	0.00	0.00	0.00	0.00
Source ID: TRCR_A							
1 to 6		0.00	0.00	0.00	0.00	0.00	0.00
7 to 12		1.00	1.00	1.00	1.00	1.00	1.00
13 to 18		1.00	1.00	1.00	1.00	1.00	1.00
19 to 24		1.00	1.00	0.00	0.00	0.00	0.00

Receptor Pathway

AERMOD

Receptor Networks

Note: Terrain Elevations and Flagpole Heights for Network Grids are in Page RE2 - 1 (If applicable)
Generated Discrete Receptors for Multi-Tier (Risk) Grid and Receptor Locations for Fenceline Grid are in Page RE3 - 1 (If applicable)

Uniform Cartesian Grid

Receptor Network ID	Grid Origin X Coordinate [m]	Grid Origin Y Coordinate [m]	No. of X-Axis Receptors	No. of Y-Axis Receptors	Spacing for X-Axis [m]	Spacing for Y-Axis [m]
UCART1	482282.70	3666165.23	25	25	50.00	50.00

Discrete Receptors

Discrete Cartesian Receptors

Record Number	X-Coordinate [m]	Y-Coordinate [m]	Group Name (Optional)	Terrain Elevations	Flagpole Heights [m] (Optional)
1	483020.21	3666464.64		165.95	
2	483002.08	3666523.65		166.00	
3	482988.10	3666596.67		166.00	
4	482952.54	3666687.92		166.10	
5	483021.84	3666856.24		168.00	
6	482992.58	3666889.68		168.00	
7	482945.93	3666909.93		167.70	
8	482892.91	3666930.61		167.06	
9	482860.57	3666934.35		167.00	
10	482796.89	3666952.67		166.93	
11	482717.90	3666728.73		165.00	
12	482735.72	3666678.34		165.00	
13	482740.56	3666618.93		165.00	
14	482792.00	3666825.00		166.00	
15	482861.83	3666350.29		165.00	
16	483224.34	3666331.62		166.00	
17	482751.12	3667224.23		168.56	
18	483160.31	3666636.00		167.02	
19	482660.48	3666489.72		164.00	
20	482642.20	3666278.18		162.56	
21	482704.58	3666456.52		164.00	
22	482758.92	3666411.68		164.00	
23	482909.41	3666459.50		165.00	
24	482615.00	3666791.00		164.85	

Receptor Pathway

AERMOD

Plant Boundary Receptors

Cartesian Plant Boundary

Primary

Record Number	X-Coordinate [m]	Y-Coordinate [m]	Group Name (Optional)	Terrain Elevations	Flagpole Heights [m] (Optional)
1	482724.35	3666404.64	FENCEPRI	164.00	
2	482989.89	3666485.90	FENCEPRI	165.78	
3	482890.32	3666810.09	FENCEPRI	166.48	
4	482834.39	3666792.93	FENCEPRI	166.00	
5	482838.44	3666778.00	FENCEPRI	166.00	
6	482847.81	3666763.71	FENCEPRI	166.00	
7	482849.87	3666755.61	FENCEPRI	166.00	
8	482850.03	3666740.85	FENCEPRI	166.00	
9	482862.45	3666698.03	FENCEPRI	166.00	
10	482783.21	3666565.24	FENCEPRI	165.00	
11	482682.91	3666534.11	FENCEPRI	164.03	

Intermediate

Record Number	X-Coordinate [m]	Y-Coordinate [m]	Group Name (Optional)	Terrain Elevations	Flagpole Heights [m] (Optional)
1	482733.83	3666407.54	FENCEINT	164.00	
2	482743.32	3666410.44	FENCEINT	164.00	
3	482752.80	3666413.35	FENCEINT	164.00	
4	482762.28	3666416.25	FENCEINT	164.00	
5	482771.77	3666419.15	FENCEINT	164.03	
6	482781.25	3666422.05	FENCEINT	164.21	
7	482790.74	3666424.96	FENCEINT	164.45	
8	482800.22	3666427.86	FENCEINT	164.73	
9	482809.70	3666430.76	FENCEINT	164.88	
10	482819.19	3666433.66	FENCEINT	164.97	
11	482828.67	3666436.56	FENCEINT	165.00	
12	482838.15	3666439.47	FENCEINT	165.00	
13	482847.64	3666442.37	FENCEINT	165.00	
14	482857.12	3666445.27	FENCEINT	165.00	
15	482866.60	3666448.17	FENCEINT	165.00	
16	482876.09	3666451.07	FENCEINT	165.00	
17	482885.57	3666453.98	FENCEINT	165.00	
18	482895.05	3666456.88	FENCEINT	165.00	
19	482904.54	3666459.78	FENCEINT	165.00	
20	482914.02	3666462.68	FENCEINT	165.00	
21	482923.51	3666465.59	FENCEINT	165.00	

Receptor Pathway

AERMOD

22	482932.99	3666468.49	FENCEINT	165.00	
23	482942.47	3666471.39	FENCEINT	165.00	
24	482951.96	3666474.29	FENCEINT	165.02	
25	482961.44	3666477.19	FENCEINT	165.15	
26	482970.92	3666480.10	FENCEINT	165.34	
27	482980.41	3666483.00	FENCEINT	165.58	
28	482986.96	3666495.44	FENCEINT	165.99	
29	482984.03	3666504.97	FENCEINT	166.00	
30	482981.10	3666514.51	FENCEINT	166.00	
31	482978.18	3666524.04	FENCEINT	166.00	
32	482975.25	3666533.58	FENCEINT	166.00	
33	482972.32	3666543.11	FENCEINT	166.00	
34	482969.39	3666552.65	FENCEINT	166.00	
35	482966.46	3666562.18	FENCEINT	166.00	
36	482963.53	3666571.72	FENCEINT	166.00	
37	482960.60	3666581.25	FENCEINT	166.00	
38	482957.68	3666590.79	FENCEINT	166.00	
39	482954.75	3666600.32	FENCEINT	166.00	
40	482951.82	3666609.86	FENCEINT	166.00	
41	482948.89	3666619.39	FENCEINT	166.00	
42	482945.96	3666628.93	FENCEINT	166.00	
43	482943.03	3666638.46	FENCEINT	166.00	
44	482940.11	3666648.00	FENCEINT	166.00	
45	482937.18	3666657.53	FENCEINT	166.00	
46	482934.25	3666667.07	FENCEINT	166.00	
47	482931.32	3666676.60	FENCEINT	166.00	
48	482928.39	3666686.14	FENCEINT	166.00	
49	482925.46	3666695.67	FENCEINT	166.00	
50	482922.53	3666705.21	FENCEINT	166.00	
51	482919.61	3666714.74	FENCEINT	166.00	
52	482916.68	3666724.28	FENCEINT	166.00	
53	482913.75	3666733.81	FENCEINT	166.00	
54	482910.82	3666743.35	FENCEINT	166.17	
55	482907.89	3666752.88	FENCEINT	166.34	
56	482904.96	3666762.42	FENCEINT	166.45	
57	482902.03	3666771.95	FENCEINT	166.42	
58	482899.11	3666781.49	FENCEINT	166.32	
59	482896.18	3666791.02	FENCEINT	166.22	
60	482893.25	3666800.56	FENCEINT	166.26	
61	482881.00	3666807.23	FENCEINT	166.27	
62	482871.68	3666804.37	FENCEINT	166.11	

Receptor Pathway

AERMOD

63	482862.36	3666801.51	FENCEINT	166.02	
64	482853.03	3666798.65	FENCEINT	166.00	
65	482843.71	3666795.79	FENCEINT	166.00	
66	482836.42	3666785.47	FENCEINT	166.00	
67	482843.13	3666770.86	FENCEINT	166.00	
68	482849.95	3666748.23	FENCEINT	166.00	
69	482852.51	3666732.29	FENCEINT	166.00	
70	482855.00	3666723.72	FENCEINT	166.00	
71	482857.48	3666715.16	FENCEINT	166.00	
72	482859.97	3666706.59	FENCEINT	166.00	
73	482857.50	3666689.73	FENCEINT	166.00	
74	482852.55	3666681.43	FENCEINT	166.00	
75	482847.59	3666673.13	FENCEINT	165.96	
76	482842.64	3666664.83	FENCEINT	165.79	
77	482837.69	3666656.53	FENCEINT	165.53	
78	482832.74	3666648.23	FENCEINT	165.17	
79	482827.78	3666639.93	FENCEINT	165.00	
80	482822.83	3666631.64	FENCEINT	165.00	
81	482817.88	3666623.34	FENCEINT	165.00	
82	482812.93	3666615.04	FENCEINT	165.00	
83	482807.97	3666606.74	FENCEINT	165.00	
84	482803.02	3666598.44	FENCEINT	165.00	
85	482798.07	3666590.14	FENCEINT	165.00	
86	482793.12	3666581.84	FENCEINT	165.00	
87	482788.16	3666573.54	FENCEINT	165.00	
88	482774.09	3666562.41	FENCEINT	165.00	
89	482764.97	3666559.58	FENCEINT	165.00	
90	482755.86	3666556.75	FENCEINT	165.00	
91	482746.74	3666553.92	FENCEINT	164.93	
92	482737.62	3666551.09	FENCEINT	164.84	
93	482728.50	3666548.26	FENCEINT	164.74	
94	482719.38	3666545.43	FENCEINT	164.65	
95	482710.26	3666542.60	FENCEINT	164.55	
96	482701.15	3666539.77	FENCEINT	164.33	
97	482692.03	3666536.94	FENCEINT	164.15	
98	482685.87	3666524.86	FENCEINT	164.00	
99	482688.83	3666515.61	FENCEINT	164.00	
100	482691.79	3666506.37	FENCEINT	164.00	
101	482694.75	3666497.12	FENCEINT	164.00	
102	482697.71	3666487.87	FENCEINT	164.00	
103	482700.67	3666478.62	FENCEINT	164.00	

Receptor Pathway

AERMOD

104	482703.63	3666469.38	FENCEINT	164.00	
105	482706.59	3666460.13	FENCEINT	164.00	
106	482709.55	3666450.88	FENCEINT	164.00	
107	482712.51	3666441.63	FENCEINT	164.00	
108	482715.47	3666432.38	FENCEINT	164.00	
109	482718.43	3666423.14	FENCEINT	164.00	
110	482721.39	3666413.89	FENCEINT	164.00	

Fenceline Grid

Grid Settings

Fenceline Spacing [m]:	10.00
Number of Tired Segments:	2

Segment Number	Distance from Fenceline [m]	Spacing [m]
1	30.00	10.00

Segment Number	Distance from Fenceline [m]	Spacing [m]
2	60.00	20.00

Receptor Groups

Record Number	Group ID	Group Description
1	FENCEPRI	Cartesian plant boundary Primary Receptors
2	FENCEINT	Cartesian plant boundary Intermediate Receptors
3	FENCEGRD	Receptors generated from Fenceline Grid
4	UCART1	Receptors generated from Uniform Cartesian Grid

Meteorology Pathway

AERMOD

Met Input Data

Surface Met Data

Filename: ESC_2010_2012_sigma_v19191.SFC
Format Type: Default AERMET format

Profile Met Data

Filename: ESC_2010_2012_sigma_v19191.PFL
Format Type: Default AERMET format

Wind Speed



Wind Speeds are Vector Mean (Not Scalar Means)

Wind Direction

Rotation Adjustment [deg]:

Potential Temperature Profile

Base Elevation above MSL (for Primary Met Tower): 197.00 [m]

Meteorological Station Data

Stations	Station No.	Year	X Coordinate [m]	Y Coordinate [m]	Station Name
Surface		2010			
Upper Air		2010			
On-Site		2010			

Data Period

Data Period to Process

Start Date: 1/1/2010 Start Hour: 1 End Date: 12/31/2012 End Hour: 24

Wind Speed Categories

Stability Category	Wind Speed [m/s]	Stability Category	Wind Speed [m/s]
A	1.54	D	8.23
B	3.09	E	10.8
C	5.14	F	No Upper Bound

Output Pathway

AERMOD

Tabular Printed Outputs

Short Term Averaging Period	RECTABLE Highest Values Table										MAXTABLE Maximum Values Table	DAYTABLE Daily Values Table
	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th		
1												No

Contour Plot Files (PLOTFILE)

Path for PLOTFILES: Dispersion.AD

Averaging Period	Source Group ID	High Value	File Name
1 Period	ALL	1st	01H1GALL.PLT
	ALL	N/A	PE00GALL.PLT

PROJECT INFORMATION

HARP Version: 22118

Project Name: RISK

HARP Database: NA

EMISSION INVENTORY

No. of Pollutants:114

No. of Background Pollutants: 0

Emissions

ScrID	StkID	ProID	PolID	PolAbbrev	Multi	Annual Ems (lbs/yr)	MaxHr Ems (lbs/hr)	MWAF
LOAD	0		0	71432 Benzene	1	25.02075		0 1
LOAD	0		0	100414 Ethyl Benzene	1	5.85825		0 1
LOAD	0		0	110543 Hexane	1	99.645		0 1
LOAD	0		0	91203 Naphthalene	1	0.02436375		0 1
LOAD	0		0	115071 Propylene	1	0.1967715		0 1
LOAD	0		0	108883 Toluene	1	60.225		0 1
LOAD	0		0	1330207 Xylenes	1	22.39275		0 1
BREA	0		0	71432 Benzene	1	4.00332		0 1
BREA	0		0	100414 Ethyl Benzene	1	0.93732		0 1
BREA	0		0	110543 Hexane	1	15.9432		0 1
BREA	0		0	91203 Naphthalene	1	0.0038982		0 1
BREA	0		0	115071 Propylene	1	0.03148344		0 1
BREA	0		0	108883 Toluene	1	9.636		0 1
BREA	0		0	1330207 Xylenes	1	3.58284		0 1
FUEL	0		0	71432 Benzene	1	9.49287255		0 1
FUEL	0		0	100414 Ethyl Benzene	1	2.22262005		0 1
FUEL	0		0	110543 Hexane	1	37.805313		0 1
FUEL	0		0	91203 Naphthalene	1	0.009243607		0 1
FUEL	0		0	115071 Propylene	1	0.074655107		0 1
FUEL	0		0	108883 Toluene	1	22.849365		0 1
FUEL	0		0	1330207 Xylenes	1	8.49580935		0 1
SPIL	0		0	71432 Benzene	1	40.0332		0 1
SPIL	0		0	100414 Ethyl Benzene	1	9.3732		0 1
SPIL	0		0	110543 Hexane	1	159.432		0 1
SPIL	0		0	91203 Naphthalene	1	0.038982		0 1
SPIL	0		0	115071 Propylene	1	0.3148344		0 1
SPIL	0		0	108883 Toluene	1	96.36		0 1
SPIL	0		0	1330207 Xylenes	1	35.8284		0 1
HOSE	0		0	71432 Benzene	1	1.501245		0 1
HOSE	0		0	100414 Ethyl Benzene	1	0.351495		0 1
HOSE	0		0	110543 Hexane	1	5.9787		0 1
HOSE	0		0	91203 Naphthalene	1	0.001461825		0 1
HOSE	0		0	115071 Propylene	1	0.01180629		0 1
HOSE	0		0	108883 Toluene	1	3.6135		0 1
HOSE	0		0	1330207 Xylenes	1	1.343565		0 1
LOAD_A	0		0	71432 Benzene	1	0	0.0072468	1
LOAD_A	0		0	108883 Toluene	1	0	0.01782	1
LOAD_A	0		0	1330207 Xylenes	1	0	0.0067188	1
BREA_A	0		0	71432 Benzene	1	0	0.000548624	1
BREA_A	0		0	108883 Toluene	1	0	0.001349076	1
BREA_A	0		0	1330207 Xylenes	1	0	0.000508652	1
FUEL_A	0		0	71432 Benzene	1	0	0.002593218	1
FUEL_A	0		0	108883 Toluene	1	0	0.006376766	1
FUEL_A	0		0	1330207 Xylenes	1	0	0.002404277	1
SPIL_A	0		0	71432 Benzene	1	0	0.01093608	1
SPIL_A	0		0	108883 Toluene	1	0	0.026892	1
SPIL_A	0		0	1330207 Xylenes	1	0	0.01013928	1
HOSE_A	0		0	71432 Benzene	1	0	0.000410103	1

HOSE_A	0	0	108883 Toluene	1	0	0.00100845	1
HOSE_A	0	0	1330207 Xylenes	1	0	0.000380223	1
CIDL	0	0	106990 1,3-Butadiene	1	0.983910559	0	1
CIDL	0	0	75070 Acetaldehyde	1	1.681089245	0	1
CIDL	0	0	107028 Acrolein	1	0.008685464	0	1
CIDL	0	0	71432 Benzene	1	11.14651289	0	1
CIDL	0	0	100414 Ethyl Benzene	1	6.657326156	0	1
CIDL	0	0	50000 Formaldehyde	1	2.601850564	0	1
CIDL	0	0	110543 Hexane	1	6.793184558	0	1
CIDL	0	0	67561 Methanol	1	23.99039859	0	1
CIDL	0	0	78933 MEK	1	0.158508379	0	1
CIDL	0	0	1634044 Me t-ButylEther	1	0.073401914	0	1
CIDL	0	0	91203 Naphthalene	1	0.092879929	0	1
CIDL	0	0	115071 Propylene	1	6.763749846	0	1
CIDL	0	0	100425 Styrene	1	0.437477831	0	1
CIDL	0	0	108883 Toluene	1	42.36638988	0	1
CIDL	0	0	1330207 Xylenes	1	33.90874071	0	1
CIDL	0	0	56553 B[a]anthracene	1	0.001520957	0	1
CIDL	0	0	50328 B[a]P	1	0.00176751	0	1
CIDL	0	0	205992 B[b]fluoranthene	1	0.00145885	0	1
CIDL	0	0	207089 B[k]fluoranthene	1	0.00145885	0	1
CIDL	0	0	218019 Chrysene	1	0.001514916	0	1
CIDL	0	0	53703 D[a,h]anthracene	1	4.03E-05	0	1
CIDL	0	0	193395 In[1,2,3-cd]pyr	1	0.001750753	0	1
CIDL_A	0	0	106990 1,3-Butadiene	1	0	0.000254012	1
CIDL_A	0	0	75070 Acetaldehyde	1	0	0.000358626	1
CIDL_A	0	0	107028 Acrolein	1	0	2.45E-06	1
CIDL_A	0	0	71432 Benzene	1	0	0.002858596	1
CIDL_A	0	0	50000 Formaldehyde	1	0	0.000603149	1
CIDL_A	0	0	67561 Methanol	1	0	0.006066253	1
CIDL_A	0	0	78933 MEK	1	0	3.39E-05	1
CIDL_A	0	0	100425 Styrene	1	0	0.000107574	1
CIDL_A	0	0	108883 Toluene	1	0	0.010680859	1
CIDL_A	0	0	1330207 Xylenes	1	0	0.008463005	1
TRCR	0	0	9901 DieselExhPM	1	0.13119585	0	1
TRCR	0	0	75070 Acetaldehyde	1	0.031783867	0	1
TRCR	0	0	107028 Acrolein	1	0.002743931	0	1
TRCR	0	0	100414 Ethyl Benzene	1	0.008536674	0	1
TRCR	0	0	50000 Formaldehyde	1	0.020274601	0	1
TRCR	0	0	110543 Hexane	1	0.000685983	0	1
TRCR	0	0	108883 Toluene	1	0.013948316	0	1
TRCR	0	0	1330207 Xylenes	1	0.064634818	0	1
TRCR	0	0	91203 Naphthalene	1	0.000445127	0	1
TRCR	0	0	56553 B[a]anthracene	1	5.27E-07	0	1
TRCR	0	0	218019 Chrysene	1	1.91E-07	0	1
TRCR_A	0	0	75070 Acetaldehyde	1	0	1.74E-05	1
TRCR_A	0	0	107028 Acrolein	1	0	1.50E-06	1
TRCR_A	0	0	50000 Formaldehyde	1	0	1.11E-05	1
TRCR_A	0	0	108883 Toluene	1	0	7.64E-06	1
TRCR_A	0	0	1330207 Xylenes	1	0	3.54E-05	1
TIDL	0	0	9901 DieselExhPM	1	0.004742479	0	1
TIDL	0	0	75070 Acetaldehyde	1	0.033082105	0	1
TIDL	0	0	107028 Acrolein	1	0.002856009	0	1
TIDL	0	0	100414 Ethyl Benzene	1	0.008885361	0	1
TIDL	0	0	50000 Formaldehyde	1	0.021102734	0	1
TIDL	0	0	110543 Hexane	1	0.000714002	0	1
TIDL	0	0	108883 Toluene	1	0.014518046	0	1
TIDL	0	0	1330207 Xylenes	1	0.06727488	0	1
TIDL	0	0	91203 Naphthalene	1	0.000463308	0	1
TIDL	0	0	56553 B[a]anthracene	1	1.53E-05	0	1

TIDL	0	0	218019 Chrysene	1	1.99E-07	0	1
TIDL_A	0	0	75070 Acetaldehyde	1	0	1.81E-05	1
TIDL_A	0	0	107028 Acrolein	1	0	1.56E-06	1
TIDL_A	0	0	50000 Formaldehyde	1	0	1.16E-05	1
TIDL_A	0	0	108883 Toluene	1	0	7.96E-06	1
TIDL_A	0	0	1330207 Xylenes	1	0	3.69E-05	1

POLLUTANT HEALTH INFORMATION

Health Database: C:\HARP2ables\HEALTH17320.mdb

TH17320.mdb

Official: True

PolID	PolAbbrev	InhCancer	OralCancer	AcuteREL	InhChronicREL	OralChronicREL	InhChronic8HREL
71432	Benzene	0.1			27	3	3
100414	Ethyl Benzene	0.008	7			2000	
110543	Hexane					7000	
91203	Naphthalene	0.12				9	
115071	Propylene					3000	
108883	Toluene			5000	420		830
1330207	Xylenes			22000	700		
106990	1,3-Butadiene	0.6		660	2		9
75070	Acetaldehyde	0.01		470	140		300
107028	Acrolein			2.5	0.35		0.7
50000	Formaldehyde	0.021		55	9		9
67561	Methanol			28000	4000		
78933	MEK			13000			
1634044	Me t-ButylEther	0.001	8		8000		
100425	Styrene			21000	900		
56553	B[a]anthracene	0.39	1.2				
50328	B[a]P	3.9	12				
205992	B[b]fluoranthene	0.39	1.2				
207089	B[k]fluoranthene	0.39	1.2				
218019	Chrysene	0.039	0.12				
53703	D[a,h]anthracene	4.1	4.1				
193395	In[1,2,3-cd]pyr	0.39	1.2				
9901	DieselExhPM	1.1			5		

Appendix E

Energy Use Calculations

San Marcos Costco Business Center Fuel Facility Project
Construction Fuel Energy Use

Off-Road Construction Equipment Energy Use (Diesel)

Phase/Activity	Equipment	Fuel	HP	Load Factor	Equipment Count	Hours/Day	Work Days	Gallons /HP-Hr	Gallons /Hour	Gallons /Day	Total Gallons	Total MBtu
Demolition/site Preparation	Tractor/Loader/Backhoe	Diesel	84	0.37	2	8.0	10	0.0564883	1.75566	28.090	280.9	39
	Excavators	Diesel	300	0.38	2	8.0	10	0.0504612	5.75257	92.041	920.4	128
	Excavators	Diesel	70	0.38	1	8.0	10	0.0560979	1.49220	11.938	119.4	17
	Excavators	Diesel	24	0.38	1	8.0	10	0.0560805	0.51145	4.092	40.9	6
	Rubber Tired Loaders	Diesel	321	0.36	1	8.0	10	0.0503989	5.82409	46.593	465.9	65
	Water Truck	Diesel	376	0.38	1	4.0	10	0.0502339	7.17742	28.710	287.1	40
Subtotal											2,114.6	294
Grading	Tractor/Loader/Backhoe	Diesel	84	0.37	3	8.0	5	0.0564883	1.75566	42.136	210.7	29
	Skid Steer Loaders	Diesel	71	0.37	1	8.0	5	0.0562243	1.47701	11.816	59.1	8
	Roller	Diesel	36	0.38	2	8.0	5	0.0578510	0.79140	12.662	63.3	9
	Water Truck	Diesel	376	0.38	1	4.0	5	0.0502339	7.17742	28.710	143.5	20
Subtotal											476.6	66
Underground Utilities	Tractor/Loader/Backhoe	Diesel	84	0.37	3	8.0	16	0.0564883	1.75566	42.136	674.2	94
	Skid Steer Loaders	Diesel	71	0.37	1	8.0	16	0.0562243	1.47701	11.816	189.1	26
	Roller	Diesel	36	0.38	2	8.0	16	0.0578510	0.79140	12.662	202.6	28
	Water Truck	Diesel	376	0.38	1	4.0	16	0.0502339	7.17742	28.710	459.4	64
Subtotal											1,525.2	212
Building Construction	Forklift	Diesel	82	0.2	4	8.0	25	0.0568647	0.93258	29.843	746.1	104
	Aerial Lift	Diesel	46	0.31	1	8.0	25	0.0564837	0.80546	6.444	161.1	22
Subtotal											907.2	126
Paving	Paver	Diesel	81	0.42	1	8.0	5	0.0568221	1.93309	15.465	77.3	11
	Roller	Diesel	80	0.38	2	8.0	5	0.0564635	1.71649	27.464	137.3	19
	Tractor/Loader/Backhoe	Diesel	84	0.37	1	8.0	5	0.0578510	1.79801	14.384	71.9	10
Subtotal											286.6	40
Architectural Coating	Air Compressor	Diesel	37	0.48	1	6.0	10	0.0177766	0.31571	1.894	18.9	3
Subtotal											18.9	3
CONSTRUCTION OFF-ROAD TOTAL DIESEL											5,329.1	741

On-Road Construction Energy Use

Phase	Trip Type (Fleet Mix)	Trips/Day (1-way)	Distance (miles)	Work Days	Total VMT	gallons diesel/VMT	Total diesel gallons	gallons gas/VMT	Total gasoline gallons	Total MBtu
Demolition/site Preparation	Worker (LDA, LDT1, LDT2)	20	11.97	10	2,394	0.0000922	0.22	0.03764931	90.1	11
	Hauling (HHDT)	91.6	20	10	1,832	0.1679647	307.7	0.00000007	0.0	43
Grading	Worker (LDA, LDT1, LDT2)	17.5	11.97	5	1,047	0.0000922	0.1	0.03764931	39.4	5
	Hauling (HHDT)	56	20	5	1,120	0.1679647	188.1	0.00000007	0.0	26
Underground Utilities	Worker (LDA, LDT1, LDT2)	17.5	11.97	16	3,352	0.0000922	0.3	0.03764931	126.2	16
Building Construction	Worker (LDA, LDT1, LDT2)	20	11.97	25	5,985	0.0000922	0.6	0.03764931	225.3	28
	Vendor (HHDT, MHDT)	10	7.63	25	1,908	0.1429507	272.7	0.01451436	27.7	41
Paving	Worker (LDA, LDT1, LDT2)	10	11.97	5	599	0.0000922	0.1	0.03764931	22.5	3
	Hauling (HHDT)	72	20	5	1,440	0.1679647	241.9	0.00000007	0.0	34
Architectural Coating	Worker (LDA, LDT1, LDT2)	26	18.5	10	4,810	0.0000922	0.4	0.03764931	181.1	23
Project Construction On-Road Total					24,486		1,012.1		712.4	229

Notes:

1. Off-road equipment types, horsepower, count and hours from project model runs CalEEMod Version 2022.1.
2. Off-road fuel consumption factors from CARB OFFROAD2021 Emissions Web Database.
3. On-road trips and trip distances from project model runs CalEEMod Version 2022.1.
4. On-road fuel consumption factors from CARB EMFAC2021 Emissions Web Database.
4. 1 Gallon of diesel = 0.139 MBtu; 1 gallon of gasoline = 0.124 MBtu.

Project Construction Energy By Year

Year/Activity	Diesel (gallons)	Gasoline (gallons)	Total (MBtu)
2025			
Demolition/site Preparation	2,423	90	348
Grading	665	39	97
Underground Utilities	1,525	126	228
Building Construction	1,180	253	195
Paving	528	23	76
Architectural Coating	19	181	25
2025 Total	6,341	712	970

San Marcos Costco Business Center Fuel Facility Project
Annual Operational Energy Use

Fleet Mix Calculations

CalEEMod Default Fleet Mix for San Diego County

HHD	LDA	LDT1	LDT2	LHD1	LHD2	MCY	MDV	MH	MHD	OBUS	SBUS	UBUS
0.65%	50.42%	4.95%	22.39%	2.84%	0.71%	2.75%	13.63%	0.54%	0.86%	0.07%	0.10%	0.04%

Employee Fleet Mix

LDA Gasoline	LDA Diesel	LDA Electric	LDA Plug-In Hybrid	LDT1 Gasoline	LDT1 Diesel	LDT1 Electric	LDT1 Plug-In Hybrid	LDT2 Gasoline	LDT2 Diesel	LDT2 Electric	LDT2 Plug-In Hybrid	MDV Gasoline	MDV Diesel	MDV Electric	MDV Plug-In Hybrid
48.97%	0.15%	4.18%	1.87%	5.38%	0.00%	0.02%	0.02%	23.93%	0.09%	0.20%	0.28%	14.28%	0.24%	0.22%	0.18%

Customer Fleet Mix

LDA Gasoline	LDA Plug-In Hybrid	LDT1 Gasoline	LDT1 Plug-In Hybrid	LDT2 Gasoline	LDT2 Plug-In Hybrid	MDV Gasoline	MDV Plug-In Hybrid
53.14%	2.03%	5.40%	0.02%	24.22%	0.28%	14.73%	0.19%

Fuel Delivery Truck Fleet Mix

HHD Diesel
100%

Project Change in Annual VMT

Category	VMT (miles)
Customer	-571,225
Employee	42,340
Fuel Delivery Trucks	98,550

Annual Transportation Fuel Use

Vehicle Category and Fuel	VMT (miles)	Gasoline (gallons)	Diesel (gallons)	Electricity (kWh)	Total MMBtu
Employee LDA Gasoline	20,734.9	704.26			87.33
Employee LDA Diesel	61.5		1.52		0.21
Employee LDA Electric	1,769.3			683.10	2.33
Employee LDA Plug-In Hybrid	791.7	13.65		126.05	2.12
Employee LDT1 Gasoline	2,276.6	95.10			11.79
Employee LDT1 Diesel	0.4		0.02		0.00
Employee LDT1 Electric	9.7			3.73	0.01
Employee LDT1 Plug-In Hybrid	7.1	0.11		1.23	0.02
Employee LDT2 Gasoline	10,131.6	426.01			52.83
Employee LDT2 Diesel	39.9		1.28		0.18
Employee LDT2 Electric	82.6			31.89	0.11
Employee LDT2 Plug-In Hybrid	118.3	1.94		19.80	0.31
Employee MDV Gasoline	6,046.4	309.00			38.32
Employee MDV Diesel	101.2		4.35		0.60
Employee MDV Electric	91.1			35.16	0.12
Employee MDV Plug-In Hybrid	77.9	1.30		0.01	0.16
Customer LDA Gasoline	-303,534.4	-10,309.61			-1,278.39
Customer LDA Plug-In Hybrid	-11,589.0	-199.76			-24.77
Customer LDT1 Gasoline	-30,849.2	-1,288.66			-159.79
Customer LDT1 Plug-In Hybrid	-96.5	-1.50			-0.19
Customer LDT2 Gasoline	-138,322.8	-487.29			-60.42
Customer LDT2 Plug-In Hybrid	-1,615.0	-157.86			-19.57
Customer MDV Gasoline	-84,134.7	-4,299.65			-533.16
Customer MDV Plug-In Hybrid	-1,083.4	-108.90			-13.50
Fuel Delivery Truck HHD Diesel	98,550.0		16,282.79		2,263.31
Totals		-15,302	16,290	901	369.9

Project Direct Electricity Use

Source	kWh	MMBtu
Gas Pumps & Controls, Lighting	42,880	146.3

Project Water and Wastewater Energy Use

Indoor (Mgal)	Outdoor (Mgal)	Supply (kWh/Mgal)	Treat Water (kWh/Mgal)	Distribute (kWh/Mgal)	Treat Wastewater	kWh	MMBtu
0.00	0.0686	3,044	725	1,537	1,501	364	1.2

Project Total

Energy Type	Quantity	MMBtu
Gasoline (Gallons)	-15,302	-1,897.4
Diesel (Gallons)	16,290	2,264.3
Electricity (kWh)	44,145	150.6
Total		517.5

Notes:

1. Customer and employee annual VMT from the Regional VMT Assessment Memorandum (Kittelson 2024); project would result in a decrease in customer VMT.
2. Fuel delivery truck trips distance (27-miles one-way) from the Costco Project Team
3. Fleet mix calculated using the ratio of vehicle categories from CalEEMod 2022.1 defaults for San Diego County in 2026, and the ratio of VMT by fuel and vehicle category from EMFAC2021 for San Diego County in 2026.
4. Water and electricity use from project model CalEEMod 2022.1.
5. Water/wastewater treatment and delivery energy intensity factors from CalEEMod 2022.1 defaults for San Diego County in 2026.
6. 1 Gallon of diesel = 0.139 MMBtu; 1 gallon of gasoline = 0.124 MMBtu; 1 kWh = 0.00341214 MMBtu.

OFFROAD Output

Model Output: OFFROAD2021 (v1.0.7) Emissions Inventory

Region Type: County

Region: San Diego

Calendar Year: 2025

Scenario: All Adopted Rules - Exhaust

Vehicle Classification: OFFROAD2021 Equipment Types

Units: tons/day for Emissions, gallons/year for Fuel, hours/year for Activity, Horsepower-hours/year for Horsepower-hours

Region	Calendar Year	Vehicle Category	Model Year	Horsepower Bin	Fuel	Fuel Consumption	Horsepower_Hours_hhpy	Gallons/hp-hr
San Diego	2025	Construction and Mining - Excavators	Aggregate	175	Diesel	618150.08	12250017.38	0.0504611598
San Diego	2025	Construction and Mining - Excavators	Aggregate	25	Diesel	4.73	84.28	0.0560804654
San Diego	2025	Construction and Mining - Excavators	Aggregate	50	Diesel	177472.18	3163617.91	0.0560978543
San Diego	2025	Construction and Mining - Off-Highway Trucks	Aggregate	300	Diesel	81977.31	1631912.50	0.0502338903
San Diego	2025	Construction and Mining - Pavers	Aggregate	75	Diesel	14093.78	248033.48	0.0568220810
San Diego	2025	Construction and Mining - Rollers	Aggregate	50	Diesel	69075.78	1194028.30	0.0578510440
San Diego	2025	Construction and Mining - Rollers	Aggregate	75	Diesel	27457.49	486287.02	0.0564635453
San Diego	2025	Construction and Mining - Rubber Tired Loaders	Aggregate	300	Diesel	756532.12	15010891.38	0.0503988804
San Diego	2025	Construction and Mining - Skid Steer Loaders	Aggregate	75	Diesel	478194.62	8505117.98	0.0562243372
San Diego	2025	Construction and Mining - Tractors/Loaders/Backhoes	Aggregate	100	Diesel	737244.89	13051290.98	0.0564882735
San Diego	2025	Industrial - Aerial Lifts	Aggregate	50	Diesel	42037.73	744245.95	0.0564836519
San Diego	2025	Industrial - Forklifts	Aggregate	75	Diesel	186123.16	3273088.01	0.0568646977
San Diego	2025	Portable Equipment - Non-Rental Compressor	Aggregate	50	Diesel	1051.62	59157.67	0.0177766437

EMFAC Output

Source: EMFAC2021 (v1.0.2) Emissions Inventory

Region Type: County

Region: Los Angeles

Calendar Year: 2024, 2027

Season: Annual

Vehicle Classification: EMFAC2007 Categories

Units: miles/day for VMT, 1000 gallons/day for Fuel Consumption

Construction Fleet Fuel Consumption								
Region	Calendar Year	Vehicle Category	Model Year	Speed	Fuel	VMT	Fuel Consumption (1000 Gal.)	Gallons/VMT
2024								
Worker (LDA, LDT1, LDT2)								
San Diego	2025	LDA	Aggregate	Aggregate	Diesel	154640.3509	3.852391775	
San Diego	2025	LDT1	Aggregate	Aggregate	Diesel	785.5598347	0.034897891	
San Diego	2025	LDT2	Aggregate	Aggregate	Diesel	88769.84974	2.911661021	
					Diesel Total	244195.7605	6.798950687	9.22369E-05
San Diego	2025	LDA	Aggregate	Aggregate	Gasoline	46599752.27	1619.328593	
San Diego	2025	LDT1	Aggregate	Aggregate	Gasoline	4295869.365	182.6902753	
San Diego	2025	LDT2	Aggregate	Aggregate	Gasoline	22572000.61	973.1802547	
					Gas Total	73467622.25	2775.199123	0.03764931
					Total VMT	73711818.01		
Vendor (HHDT, MHDT)								
San Diego	2025	HHDT	Aggregate	Aggregate	Diesel	1880530.877	315.9430507	
San Diego	2025	MHDT	Aggregate	Aggregate	Diesel	752420.1333	88.59393965	
					Diesel total	2632951.01	404.5369903	0.142950743
San Diego	2025	HHDT	Aggregate	Aggregate	Gasoline	477.7265269	0.127142395	
San Diego	2025	MHDT	Aggregate	Aggregate	Gasoline	196476.0298	40.94711107	
					Gas Total	196953.7564	41.07425347	0.014514359
					Total VMT	2829904.767		
Hauling (HHDT)								
San Diego	2025	HHDT	Aggregate	Aggregate	Diesel	1880530.877	315.9430507	0.167964703
San Diego	2025	HHDT	Aggregate	Aggregate	Gasoline	477.7265269	0.127142395	6.75927E-08
					Total VMT	1881008.604		

EMFAC Output

Source: EMFAC2021 (v1.0.2) Emissions Inventory

Region Type: Sub-Area

Region: San Diego (SD)

Calendar Year: 2026

Season: Annual

Vehicle Classification: EMFAC2007 Categories

Units: miles/year for VMT, kWh/year for Energy Consumption, 1000 gallons/year for Fuel Consumption

Region	Calendar Year	Vehicle Category	Model Year	Speed	Fuel	Total VMT	Energy Consumption	Fuel Consumption
San Diego (SD)	2026	LDA	Aggregate	Aggregate	Gasoline	16102600607	0	546928.2606
San Diego (SD)	2026	LDA	Aggregate	Aggregate	Diesel	47783453.21	0	1177.104526
San Diego (SD)	2026	LDA	Aggregate	Aggregate	Electricity	1374039832	530492780.7	0
San Diego (SD)	2026	LDA	Aggregate	Aggregate	Plug-in Hybrid	614802792.8	97891842.15	10597.5089
San Diego (SD)	2026	LDT1	Aggregate	Aggregate	Gasoline	1445461940	0	60381.09448
San Diego (SD)	2026	LDT1	Aggregate	Aggregate	Diesel	229653.8721	0	10.14606334
San Diego (SD)	2026	LDT1	Aggregate	Aggregate	Electricity	6137808.849	2369700.797	0
San Diego (SD)	2026	LDT1	Aggregate	Aggregate	Plug-in Hybrid	4519699.972	783911.2561	70.38663517
San Diego (SD)	2026	LDT2	Aggregate	Aggregate	Gasoline	7871658595	0	330985.2524
San Diego (SD)	2026	LDT2	Aggregate	Aggregate	Diesel	30987924.88	0	994.9867972
San Diego (SD)	2026	LDT2	Aggregate	Aggregate	Electricity	64168598.76	24774375.25	0
San Diego (SD)	2026	LDT2	Aggregate	Aggregate	Plug-in Hybrid	91907098.16	15384760.05	1503.80435
San Diego (SD)	2026	MDV	Aggregate	Aggregate	Gasoline	4577535547	0	233932.2718
San Diego (SD)	2026	MDV	Aggregate	Aggregate	Diesel	76596204.76	0	3294.815574
San Diego (SD)	2026	MDV	Aggregate	Aggregate	Electricity	68935655.15	26614852.46	0
San Diego (SD)	2026	MDV	Aggregate	Aggregate	Plug-in Hybrid	58944611.35	9781950.61	983.2741594
San Diego (SD)	2026	HHD	Aggregate	Aggregate	Diesel	592931220.8	0	97966.23267