Appendix B

Air Quality and GHG
Supporting Information

Appendix B – Air Quality and GHG Supporting Information

AIR QUALITY IMPACT ASSESSMENT

Air Products > Carson Pipeline Project

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LIST OF ABBREVIATIONS AND ACRONYMS

AQIA – Air Quality Impacts Assessment

AQMP – Air Quality Management Plan

ASVs – Automatic Shut-Off Valves

C&D – Construction and Demolition

CAA – Clean Air Act (Federal)

CAAQS – California Ambient Air Quality Standards

CAFE – Corporate Average Fuel Economy

CARB – California Air Resources Board

CAT – Climate Action Team

CAP – Climate Action Plan

CCAA – California Clean Air Act

CCR – California Code of Regulations

CEQA – California Environmental Quality Act

CH_4 – Methane

CO – Carbon Monoxide

CO_2 – Carbon Dioxide

CO_2e – Carbon Dioxide Equivalent

CUP – Conditional Use Permit

DM – Disposal Module

°F – degrees Fahrenheit

GHG – Greenhouse Gas

GWP – Global Warming Potential

H_2S – Hydrogen Sulfide

HFCs – Hydrofluorocarbons

HRA – Health Risk Assessment

IPCC – Intergovernmental Panel on Climate Change

LCFS – Low Carbon Fuel Standard

MAOP – Maximum Allowable Operating Pressure

MEI – Maximally Exposed Individual

MMT – Million Metric Tons

MT – Metric Tons

NAAQS – National Ambient Air Quality Standards

NESHAP – National Emission Standard for Hazardous Air Pollutants

NF_3 – Nitrogen Triflouride

N_2O – Nitrous Oxide

NOx – Nitrogen Oxides

NO_2 – Nitrogen Dioxide

NSPS – New Source Performance Standard

O_3 – Ozone

Pb – Lead

PFCs – Perfluorocarbons

$PM_{2.5}$ – Particulate Matter with an Aerodynamic Diameter of Less than 2.5 Microns (Fine PM)

PM_{10} – Particulate Matter with an Aerodynamic Diameter of Less than 10 Microns (Respirable PM)

psig – Pounds per Square Inch Gauge

RACT – Reasonably Available Control Technology

ROG – Reactive Organic Gasses

SCAB – South Coast Air Basin

SCAQMD – South Coast Air Quality Management District

SIP – State Implementation Plan

SF_6 – Sulfur Hexafluoride

SO_2 – Sulfur Dioxide

tpd – tons per day

U.S. EPA – United States Environmental Protection Agency

VOC – Volatile Organic Compounds

1. EXECUTIVE SUMMARY

Trinity Consultants, Inc. has prepared an air quality and greenhouse gases (GHGs) impact assessment—collectively referred to as an Air Quality Impact Assessment (AQIA)—for modifications to an existing pipeline, and construction of a new 0.5 mile pipeline, between the cities of Carson and Paramount to allow for the transport of hydrogen gas through the pipeline (proposed Project). Construction is estimated to begin in September 2019 and require approximately 5 months to complete. Operations will begin immediately after construction is complete.

The existing 11.5 mile pipeline crosses the cities of Carson, Los Angeles, Long Beach, Lakewood, Bellflower, and Paramount as well as an unincorporated part of Los Angeles County and land owned or controlled by the Port of Los Angeles and the Joint Ports Authority. The proposed Project would lie within the same areas and add 0.5 miles of new pipeline in the City of Carson.

The proposed Project construction activities would include:

(1) Pipeline Spread – Construct a new 0.5 mile pipeline extension in Carson, CA to connect to 11.5 miles of existing pipeline for the transportation of hydrogen gas to the World Energy Paramount Bio-fuels Facility. The pipeline would replace hydrogen gas brought in by truck that is currently utilized at the World Energy Bio-fuels Facility as part of the bio-fuel refinement process.

(2) ASV and Pipeline Connections – Ten manual valves would be removed and replaced by welded piping. Two automatic shut-off valves (ASVs) would be installed, one at the Dominquez pumping station and another at an existing valve box located along South Street near Orizaba Avenue in Lakewood.

(3) World Energy Paramount Bio-fuels Facility Connection – Modification of the pipeline connection at the World Energy Paramount Bio-fuels Facility.

During the proposed Project's construction phase, air emissions will occur during the site preparation for the pipeline spread, as well as repaving, unit construction of the proposed valves and ASVs, unit construction of the World Energy Paramount Bio-fuels Facility connection, and from motor vehicles (e.g., construction worker vehicles and material delivery trucks). Upon operation, air emissions from the proposed Project will be more than offset by the reduction in fossil fuel use and associated mobile source emissions. Extending the existing pipeline to connect the existing Air Products' hydrogen facility in the City of Carson to the World Energy Bio-fuels Facility in the City of Paramount will decrease the number of trucks currently used to deliver liquefied hydrogen to the Bio-fuels Facility. None of the hydrogen delivery trucks originate from the Air Products' hydrogen facility in the City of Carson because the Carson facility does not currently produce liquid hydrogen and does not supply the World Energy Bio-fuels Facility with hydrogen. Therefore, once the proposed Project is operating, mobile emissions associated with transporting the hydrogen from other hydrogen delivery vehicles will decrease. Operational emissions from stationary sources are assumed to be negligible because the proposed Project will operate by transporting hydrogen through 12 miles of underground piping. Emissions from the Project's three sets of construction activities were quantified and found to be below the thresholds of significance adopted by the South Coast Air Quality Management District (SCAQMD).

2.1. INTRODUCTION

This AQIA was prepared pursuant to the South Coast Air Quality Management District's (SCAQMD's) CEQA Air Quality Handbook and updated supplemental information on significance thresholds and analysis (SCAQMD 1993 and 2018), the *California Environmental Quality Act* (CEQA)[1] and the California Natural Resources Agency's *CEQA Guidelines*.[2]

2.2. GENERAL PROJECT BACKGROUND

The Carson to Paramount Hydrogen Pipeline Project (proposed Project) will be constructed and operated by Air Products and Chemicals, Inc. (Air Products). The proposed pipeline will extend from Air Products' existing hydrogen facility in the City of Carson to the World Energy Bio-fuels Facility in the City of Paramount, California. The existing pipeline segments to be utilized as part of this proposed Project are owned by Paramount Pipeline Company, LLC (PPC), a subsidiary of World Energy. World Energy uses hydrogen to produce renewable transportation fuels (diesel and jet fuel).

Figure 2-1 shows the Site Location and Figure 2-2 shows the Location of the Proposed Pipeline Spread.

[1] Public Resources Code §§ 21000-21177
[2] California Code of Regulations (CCR) Title 14, Division 6, Chapter 3, §§ 15000 – 15387

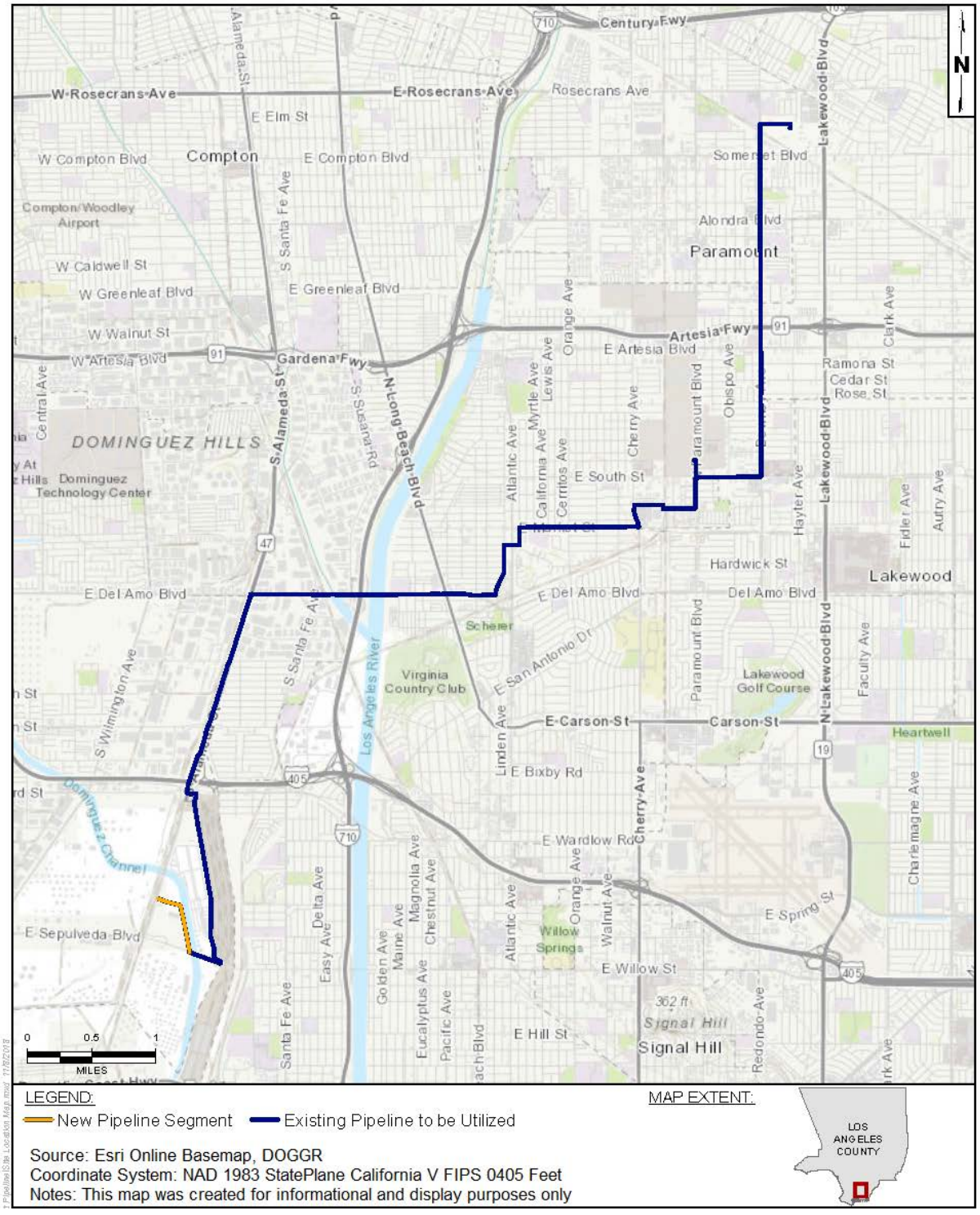

Figure 2-1: Site Location

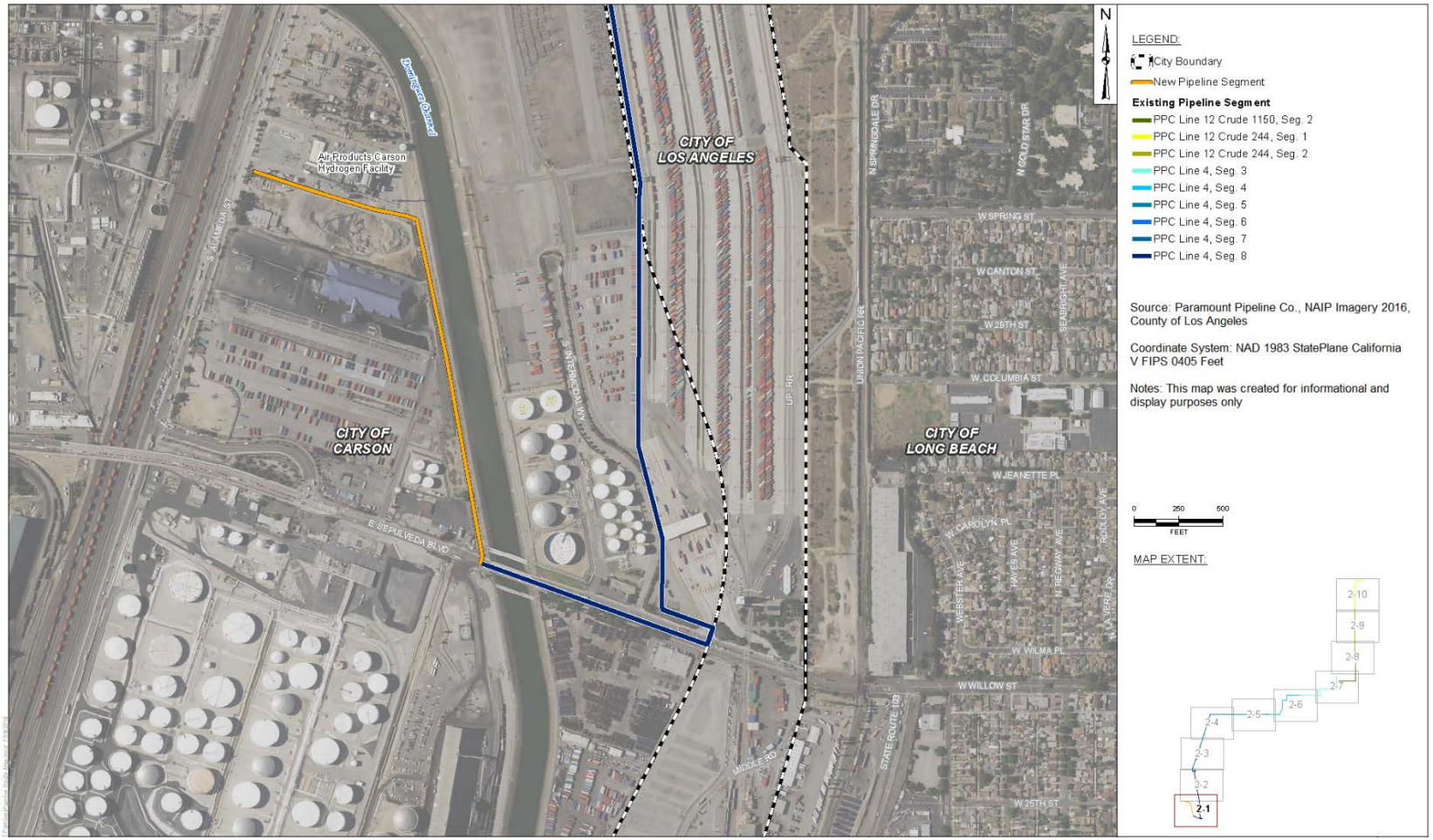

Figure 2-2: Location of the New Proposed Pipeline

2.3. PROJECT DESCRIPTION

Construction is estimated to begin in September 2019 and require approximately 5 months to complete. Operations will begin immediately after construction is complete.

2.3.1. Pipeline Spread

The proposed construction of 0.5 miles of pipeline would be built within the City of Carson as part of the proposed Project. The proposed pipeline spread would connect to 11.5 miles of existing pipeline for transportation of hydrogen gas to the World Energy Paramount Bio-fuels Facility. The pipeline spread would allow for the replacement of liquid hydrogen brought in by truck from other sources that is currently utilized at the World Energy Bio-fuels Facility as part of the bio-fuel refinement process.

The pipeline spread would be installed using trenching and/or horizontal boring techniques. The pipeline spread would be constructed underground from the Air Products Carson Hydrogen Plant to join with the PPC Line 3B on Sepulveda Boulevard. The pipeline spread would cross the Dominguez Channel using an existing pipe bridge on the south side of Sepulveda Boulevard.

The operating pressure would be 260 psig but the pipeline would be designed for a Maximum Allowable Operating Pressure (MAOP) of 300 psig. When not in operation, the pressure would be maintained at 260 psig at the Carson supply end and at 105-120 psig at the World Energy end of the pipeline.

2.3.2. ASV and Pipeline Connections

The proposed Project includes replacing manual valves with ASVs and new pipe connections to connect segments of existing pipelines together. There are actuated valves within the Carson Site and the supply side at the World Energy Bio-fuels Facility. Ten manual valves would be removed and replaced by welded piping. Two ASVs would be installed, one at the Dominguez pumping station and another at an existing valve box located along South Street near Orizaba Avenue in Lakewood and tie into PPC Line 12 crude 244.

2.3.3. World Energy Paramount Bio-fuels Facility Connection

The proposed new 0.5 mile pipeline will connect with 11.5 miles of existing pipeline that terminate at the World Energy Paramount Bio-fuels Facility. Construction will occur at the World Energy Paramount Bio-fuels Facility to modify the existing pipeline connection.

3.1. INTRODUCTION

The proposed Project consists of the construction of a 0.5 mile pipeline (pipeline spread) and modifications along the 11.5 miles of existing hydrogen pipeline and at the World Energy Paramount Bio-fuels Facility connection. The pipeline spread would be constructed entirely within the City of Carson. The existing pipeline initiates in the City of Carson, traverses the City of Los Angeles, Los Angeles County, City of Long Beach, City of Lakewood, and City of Bellflower, and terminates in the City of Paramount. The proposed Project lies entirely within the South Coast Air Basin (SCAB) and is under the jurisdiction of the South Coast Air Quality Management District (SCAQMD).

3.2. ENVIRONMENTAL SETTING

3.2.1. Climate and Meteorology

The SCAB consists of 6,700 square miles and is bounded by the Pacific Ocean on the West, the San Bernardino, San Gabriel, and San Jacinto Mountains on the North, and the County of San Diego on the South. The intervening terrain is relatively flat.

The SCAB has hot summers tempered by cool ocean breezes and sparse winter rainfall. A temperature inversion, a warm layer of air that traps the cool marine air layer underneath it and prevents vertical mixing, is the prime factor that allows contaminants to accumulate in the SCAB. The mild climatological pattern is interrupted infrequently by periods of extremely hot weather, winter storms, and Santa Ana winds. Local winds are the result of temperature differences between the relatively stable ocean air and the uneven heating and cooling that takes place in the Basin due to a wide variation in topography. Temperature also has a major effect on vertical mixing height and affects chemical and photochemical reaction times. The annual average temperatures vary little throughout the Basin, averaging 75^{o}F. The coastal areas show little variation in temperature on a year round basis due to the moderating effect of the marine influence. On average, August is the warmest month while January is the coolest month. Most of the annual rainfall in the Basin falls between November and April. Annual average rainfall varies from nine inches in Riverside to 14 inches in downtown Los Angeles.

Wind flow patterns play an important role in the transport of air pollutants in the Basin. The winds flow from offshore and blow eastward during the daytime hours. In summer, the sea breeze starts in mid-morning, peaks at 10-15 miles per hour and subsides after sundown. There is a calm period until about midnight. At that time, the land breeze begins from the northwest, typically becoming calm again about sunrise. In winter, the same general wind flow patterns exist except that summer wind speeds average slightly higher than winter wind speeds. This pattern of low wind speeds is a major factor that allows the pollutants to accumulate in the Basin. The normal wind patterns in the Basin are interrupted by the unstable air accompanying the passing storms during the winter and infrequent strong northeasterly Santa Ana wind flows from the mountains and deserts north of the Basin.

The climate of the area is not unique but the high concentration of mobile and stationary sources of air contaminants in the western portion of the SCAB, in addition to the mountains, which surround the perimeter of the SCAB, contribute to poor air quality in the region. Figure 3-1 depicts the SCAB jurisdictional boundaries.

Source: CARB, 2011

Figure 3-1: South Coast Air Basin Boundaries

3.2.2. Regional Air Quality

National Ambient Air Quality Standards (NAAQS) are established by the U.S. Environmental Protection Agency (U.S. EPA) for criteria pollutants, which are: ozone (O_3), particulate matter less than 10 micrometers in aerodynamic diameter (PM_{10}), particulate matter less than 2.5 micrometers in aerodynamic diameter ($PM_{2.5}$), carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), and lead (Pb). These standards set maximum concentrations over different averaging periods—primarily to protect public human health and secondarily to protect public welfare (protect against decreased visibility as well as damage to animals, crops, vegetation, and buildings).

California Ambient Air Quality Standards (CAAQS) are established by the State of California and are in some cases more stringent than the NAAQS and include other pollutants in addition to the criteria pollutants. Pollutants covered by the CAAQS include O_3, PM_{10}, $PM_{2.5}$, CO, NO_2, SO_2, Pb, sulfates, hydrogen sulfide (H_2S), and vinyl chloride.

Air quality standards at the state and national level prescribe both a maximum allowable concentration of the pollutant and an averaging time for the measurement. The pollutant concentrations and exposure times are based on reviews of scientific studies that examine the impacts of pollutant exposure on human health, crops, animals, vegetation, and building materials. Some adverse effects result from short-term, high-concentration (acute) exposures while others may be caused from longer-term (chronic) exposures to more mildly-elevated concentrations. Some pollutants are known to cause harm from both acute and chronic exposures and have two air quality standards as a result. Table 3-1 summarizes the current CAAQS and NAAQS as well was

SCAQMD's attainment status. Table 3-2 contains a summary of human health and environmental effects of the for the key criteria pollutants.

Table 3-1: Summary of Ambient Air Quality Standards and SCAQMD Attainment Status

Pollutant	Averaging Time	California Standard	Attainment Status (California)	Primary National Standard	Attainment Status (National)
O_3	1-hour	0.09 ppm	N	0.12 ppm	N
	8-hour	0.070 ppm	N	0.070 ppm	N
PM_{10}	24-hour	50 µg/m^3	N	150 µg/m^3	A
	Annual	20 µg/m^3	N	-	-
$PM_{2.5}$	24-hour	-	-	35 µg/m^3	N
	Annual	12 µg/m^3	N	12.0 µg/m^3	N
CO	1-hour	20 ppm	A	35 ppm	A
	8-hour	9 ppm	A	9 ppm	A
NO_2	24-hour	0.18 ppm	A	0.10 ppm	U/A
	Annual	0.030 ppm	A	0.053 ppm	A
SO_2	1-hour	-	-	75 ppb	-
	24-hour	-	-	0.14 ppm	U/A
	Annual	-	-	0.03 ppm	U/A
Pb	Rolling 3-Month Average	-	-	0.15 µg/m^3	N
H_2S	1-hour	0.03 ppm/ 42 µg/m^3	A	-	-
Sulfates	24-hour	25 µg/m^3	A	-	-
Vinyl Chloride	24-hour	0.01 ppm/ 26 µg/m^3	A	-	-

Source: CARB, 2018.
Notes: N = Nonattainment, A = Attainment, U = Unclassified

Table 3-2: Summary of Health and Environmental Effects of the Key Criteria Pollutants

Pollutant	Health Effects	Environmental Effects	Examples of Sources
O_3	➢ Respiratory symptoms ➢ Worsening of lung disease leading to premature death ➢ Damage to lung tissue	➢ Crop, forest, and ecosystem damage ➢ Damage to a variety of materials, including rubber, plastics, fabrics, paint and metals	Formed by chemical reactions of air pollutants in the presence of sunlight; common sources are motor vehicles, industries, and consumer products

Pollutant	Health Effects	Environmental Effects	Examples of Sources
PM_{10}	➢ Premature death & hospitalization, primarily for worsening of respiratory disease	Reduced visibility and material soiling	Cars and trucks (especially diesel), fireplaces, wood stoves, windblown dust from roadways, agriculture, and construction activities
$PM_{2.5}$	➢ Premature death ➢ Hospitalization for worsening of cardiovascular disease ➢ Hospitalization for respiratory disease ➢ Asthma-related emergency room visits ➢ Increased symptoms, increased inhaler usage	Reduced visibility and material soiling	Cars and trucks (especially diesel), fireplaces, wood stoves, windblown dust from roadways, agriculture, and construction activities
CO	➢ Chest pain in patients with heart disease ➢ Headache ➢ Light-headedness ➢ Reduced mental alertness	None	Any source that burns fuel such as cars, trucks, construction and farming equipment, and residential heaters and stoves
NO_2	➢ Lung irritation ➢ Enhanced allergic responses	Reacts to form acid precipitation and deposition	Any source that burns fuel such as cars, trucks, construction and farming equipment, and residential heaters and stoves
SO_2	➢ Worsening of asthma: increased symptoms, increased medication usage, and emergency room visits	Reacts to form acid precipitation and deposition	Coal and oil burning power plants, refineries, and diesel engines
Pb	➢ Impaired mental functioning in children ➢ Learning disabilities in children ➢ Brain and kidney damage	Soil and water pollutant	Metal smelters, resource recovery, leaded gasoline, lead paint

Source: CARB, 2018.

3.2.2.1. Ozone (O_3)

Ozone, or smog, is not emitted directly into the environment, but is formed in the atmosphere by complex chemical reactions between reactive organic gasses (ROG) and nitrogen oxides (NO_X) in the presence of sunlight. Ozone formation is greatest on warm, windless, sunny days. The main sources of NO_X and ROG—often referred to as ozone precursors—are combustion processes (including motor vehicle engines); the evaporation of solvents, paints, and fuels; and biogenic sources. Mobile sources are the single largest source of O_3 precursors in the SCAB. Tailpipe emissions of ROG are highest during cold starts, hard acceleration, stop-and-go conditions, and slow speeds. ROG emission rates from on-highway vehicles decline (on a grams per mile basis) as speeds increase up

to about 50 miles per hour (mph), then increase again at high speeds and high engine loads. ROG emissions associated with evaporation of unburned fuel depend on vehicle and ambient temperature cycles. Nitrogen oxides emissions exhibit a different curve; emissions decrease as the vehicle approaches 30 mph and then begin to increase with increasing speeds.

Ozone levels typically build up during the day and peak in the afternoon hours. Short term exposure can irritate the eyes and cause constriction of the airways. Besides causing shortness of breath, O_3 can aggravate existing respiratory diseases such as asthma, bronchitis and emphysema. Chronic exposure to high O_3 levels can permanently damage lung tissue. Ozone can also damage plants and trees, and materials such as rubber and fabrics.

3.2.2.2. Respirable and Fine Particulate Matter (PM_{10} and $PM_{2.5}$)

Particulate matter refers to a wide range of solid and/or liquid particles in the atmosphere, including smoke, dust, aerosols, and metallic oxides. Respirable particulate matter with an aerodynamic diameter of 10 micrometers or less is referred to as PM_{10}. $PM_{2.5}$ includes a subgroup of fine particles that have an aerodynamic diameter of 2.5 micrometers or less. Some particulate matter, such as pollen, is naturally occurring. For directly emitted $PM_{2.5}$ in the SCAB in 2012, mobile sources represent 34 percent of the emissions with another 13 percent due to vehicle-related entrained road dust (SCAQMD, 2016). Extended exposure to particulate matter can increase the risk of chronic respiratory disease. PM_{10} is of concern because it bypasses the body's natural filtration system more easily than larger particles, and can lodge deep in the lungs, which is why U.S. EPA and the state of California developed PM_{10} standards to apply only to these small particles. $PM_{2.5}$ poses an increased health risk because the fine particles can deposit deep in the lungs and contain substances that are particularly harmful to human health. Wood burning in fireplaces and stoves is another large source of fine particulates, especially during the winter season.

3.2.2.3. Carbon Monoxide (CO)

Carbon monoxide is an odorless, colorless gas. It is formed by the incomplete combustion of fuels. In the SCAB in 2012, total mobile source emissions account for almost 95 percent of the CO emissions (SCAQMD, 2016). Emissions are highest during cold starts, hard acceleration, stop-and-go driving, and when a vehicle is moving at low speeds. New findings indicate that CO emissions per mile are lowest at about 45 mph for the average light-duty motor vehicle and begin to increase again at higher speeds. When inhaled at high concentrations, CO combines with hemoglobin in the blood and reduces the oxygen-carrying capacity of the blood. This results in reduced oxygen reaching the brain, heart and other body tissues. This condition is especially critical for people with cardiovascular diseases, chronic lung disease or anemia, as well as fetuses. Even healthy people exposed to high CO concentrations can experience headaches, dizziness, fatigue, unconsciousness, and even death.

3.2.2.4. Nitrogen Dioxide (NO_2)

Nitrogen dioxide is a reddish-brown gas that is a by-product of combustion processes. Automobiles and industrial operations are the main sources of NO_2. Aside from its contribution to ozone formation, nitrogen dioxide can increase the risk of acute and chronic respiratory disease and reduce visibility. NO_2 may be visible as a coloring component of a brown cloud on high pollution days, especially in conjunction with high ozone levels. In the SCAB in 2012, total mobile source emissions accounted for 88% of the NOx emissions.

3.2.2.5. Sulfur Dioxide (SO_2)

Sulfur dioxide is a colorless acid gas with a pungent odor. It has potential to damage materials and it can have health effects at high concentrations. It is produced by the combustion of sulfur-containing

fuels, such as oil, coal and diesel. SO_2 can irritate lung tissue and increase the risk of acute and chronic respiratory disease. Stationary sources emit the majority of the SOx emissions in the SCAB with point sources contributing less than 50 percent of the SOx emissions in 2012 (SCAQMD, 2012).

3.2.2.6. Lead (Pb)

Lead is a metal found naturally in the environment as well as in manufactured products. The major sources of lead emissions have historically been mobile and industrial sources. As a result of the phase-out of leaded gasoline, metal processing is currently the primary source of lead emissions. The highest levels of lead in air are generally found near lead smelters. Other stationary sources include waste incinerators, utilities, and lead-acid battery manufacturers. Several decades ago, mobile sources were the main contributor to lead concentrations in the ambient air due to leaded gasoline. In the early 1970s, the U.S. EPA set national regulations to gradually reduce the lead content in gasoline. In 1975, unleaded gasoline was introduced for motor vehicles equipped with catalytic converters. The U.S. EPA banned the use of leaded gasoline in highway vehicles in December 1995. As a result of the U.S. EPA's regulatory efforts, emissions of lead from the transportation sector, and levels of lead in the air have decreased dramatically.

3.2.3. Local Air Quality

The SCAQMD and neighboring air districts operate a regional air quality monitoring network that regularly measures the concentrations of the five major criteria air pollutants for which state or federal ambient air quality standards exist. Air quality conditions in California have improved significantly since the California Air Resources Board (CARB) was established in 1967, resulting in a reduction in ambient air quality concentrations and the number of days that the standards are exceeded. Nonetheless, exceedances of federal and state standards for O_3, and the state standard for PM_{10}, continue to occur.

Table 3-3 presents a summary of the most recent five years of monitoring data near the proposed Project area. The proposed Project is located in the SCAQMD's Receptor Area 4 which contains South Coastal Los Angeles County 1 Monitoring Station Number 072, South Coastal Los Angeles County 2 Monitoring Station Number 077, and South Coastal Los Angeles County 3 Monitoring Station Number 033. Where monitoring data is available from more than one monitoring station, the data from the monitoring station which recorded more days exceeding a federal or state standard is presented. Where monitoring data is available from more than one monitoring station and the number of days exceeding federal or state standards is equal among the data sets, the data set with a higher maximum concentration is presented.

Table 3-3: Existing Air Quality Monitoring Data in Proposed Project Area

Constituent		2013	2014	2015	2016	2017
Ozone:	1-Hour (ppm)	0.092	0.087	0.087	0.079	0.082
	Days Exceeding Federal Standard	0	0	0	0	0
	Days Exceeding State Standard	0	0	0	0	0
	8-Hour (ppm)	0.070	0.072	0.066	0.059	0.068
	Days Exceeding Federal Standard	0	0	0	0	0
	Days Exceeding State Standard	0	1	0	0	0
CO[(a)]:	1-Hour (ppm)	--	4	3.3	3.3	3.9
	8-Hour (ppm)	2.6	2.6	2.2	2.2	2.6
NO_2[(b)]:	1-Hour (ppm)	0.0813	0.1359	0.1018	0.0756	0.0895
	Annual (ppm)	0.0215	0.0207	0.0198	0.0185	0.0179
PM10[(c)]:	24-Hour ($\mu g/m^3$)	54	59	80	75	79

Constituent		2013	2014	2015	2016	2017
	Days (Percent) of Samples Exceeding Federal Standard	0 (0)	0 (0)	0 (0)	0	0 (0)
	Days (Percent) of Samples Exceeding State Standard	1 (2)	2 (3)	6 (10)	8 (14)	9 (16)
	Annual Arithmetic Mean (µg/m^3)	27.3	26.6	31.5	31.9	33.3
PM2.5[(d)]:	24-Hour (µg/m^3)	47.2	52.2	48.3	29.37	56.30
	Days (Percent) of Samples Exceeding Federal Standard	2 (0.6)	2 (0.6)	4 (1.2)	0 (0)	5 (1.4)
	Annual Arithmetic Mean (µg/m^3)	11.34	11.42	10.81	10.36	11.02
SO_2[(e)]:	1-Hour (ppm)	0.0218	0.0147	0.0375	0.0178	0.0197
Lead[(f)]:	30-Day (µg/m^3)	0.012	0.012	0.010	0.008	0.010
	Quarter (µg/m^3)	0.009	0.01	0.01	0.01	0.01
Sulfate[(g)]:	24-Hour (µg/m^3)	4.8	4.5	6.3	7.4	3.8

Source: SCAQMD Air Quality Data Annual Summaries 2013-2017.

Notes: ppm = Parts per Million, by volume; - - = Pollutant not monitored; AAM = Annual Arithmetic Mean

a) The federal 8-hour standard (8-hour average CO > 9 ppm) and state 8-hour standard (8-hour average CO > 9.0 ppm) were not exceeded. The federal and state 1-hour standards (35 ppm and 20 ppm) were not exceeded either.

b) The NO_2 federal 1-hour standard is 100 ppb and the annual standard is 0.0534 ppm (53.4 ppb). The state 1-hour and annual standards are 0.18 ppm (180 ppb) and 0.030 ppm (30 ppb).

c) State annual average (AAM) PM10 standard is > 20 µg/m^3. Federal annual PM10 standard (AAM > 50 µg/m^3) was revoked in 2006.

d) U.S. EPA has revised the annual PM2.5 standard from annual average (AAM) > 15.0 µg/m^3 to > 12.0 µg/m^3, effective December 14, 2012. Federal and state standards are annual average (AAM) > 12.0 µg/m^3. These standards were not exceeded.

e) The federal SO_2 1-hour standard (75 ppb (0.075 ppm)) and the state SO_2 1-hour standard (250 ppb (0.25 ppm)) were not exceeded.

f) Federal lead standard is 3-months rolling average > 0.15 µg/m^3. State lead standard is monthly average ≥ 1.5 µg/m^3. These standards were not exceeded.

g) State sulfate standard is 24-hour ≥ 25 µg/m^3. There is no federal standard for sulfate. The state standard was not exceeded.

Table 3-4: Ambient Air Quality Toxic Air Contaminants – North Long Beach 2013

Pollutant	Peak 24-hour Concentration	Pollutant	Peak 24-hour Concentration
VOCs	**ppbv**	**VOCs**	**ppbv**
Acetaldehyde	1.8	Ethylene Dichloride	--
Acetone	8.3	Formaldehyde	3.8
Acetonitrile	0.8	Methyl Bromide	0.05
Acrolein	1.1	Methyl Chloroform	0.005
Benzene	0.82	Methyl Ethyl Ketone	0.3
1,3-Butadiene	0.29	Methyl tertiary-Butyl Ether	--
Carbon Disulfide	--	Methylene Chloride	2.6
Carbon Tetrachloride	0.09	Perchloroethylene	0.06
Chlorobenzne	--	Styrene	0.1
Chloroform	0.05	Toluene	1.7
meta-Dichlorobenzene	--	Trichloroethylene	0.08
ortho-Dichlorobenzene	--	Trichlorofluoromethane	--
para-Dichlorobenzene	--	Trichlorotrifluoroethane	--
Dichlorodifluoromethane	--	meta-Xylene	--
cis-1,3-Dichloropropene	0.05	meta/para-Xylene	1.1
trans-1,3 Dichloropropene	0.05	ortho-Xylene	0.4
Ethyl Benzene	0.3	para-Xylene	--
Ethylene Dibromide	--		

Pollutant	Peak 24-hour Concentration	Pollutant	Peak 24-hour Concentration
Polycyclic Aromatic Hydrocarbons	**ng/m³**	**Polycyclic Aromatic Hydrocarbons**	**ng/m³**
Benzo(a)pyrene-10	--	Benzo(k)fluoranthene-10	--
Benzo(b)fluoranthene-10	--	Dibenz(a,h)anthracene-10	--
Benzo(g,h,i)perylene-10	--	Indeno(1,2,3-cd)pyrene-10	--
Metals	**ng/m³**	**Metals**	**ng/m³**
Aluminum	--	Molybdenum	5.4
Antimony	12	Nickel	5
Arsenic	0.75	Phosphorus	--
Barium	--	Potassium	--
Beryllium	0.3	Platinum	0.15
Bromine	--	Rubidium	--
Cadmium	0.75	Selenium	0.75
Calcium	--	Silicon	--
Chlorine	--	Strontium	14
Chromium	9	Sulfur	2,300
Cobalt	0.75	Tin	5.4
Copper	46	Titanium	87
Hexavalent Chromium	0.07	Uranium	--
Iron	1400	Vanadium	12
Lead	9.1	Yttrium	--
Manganese	30	Zinc	90
Mercury	--	Zirconium	4.3

Source: CARB, 2013. Annual Toxics Summaries by Monitoring Site, North Long Beach.
Notes: ppbv = parts per billion by volume. -- = no data available in the last 6 years.

3.2.4. Sensitive Land Uses in the Proposed Project Area

For the purposes of this AQIA, sensitive receptors are considered locations with people who are more sensitive to the effects of air pollutants. The reasons for increased sensitivity include preexisting health problems, proximity to emissions sources, or duration of exposure to air pollutants. Schools, hospitals, and convalescent homes are considered to be sensitive receptors because children, elderly people, and the infirm are more susceptible to respiratory distress and other air quality-related health problems than the general public. Residential areas are also considered sensitive to poor air quality because people usually stay home for extended periods of time which results in greater exposure to ambient air quality. Recreational uses, such as a parks and hiking trails, are also considered sensitive due to the greater exposure to ambient concentrations of pollutants because vigorous exercise associated with some forms of recreation places a high demand on the human respiratory system. Table 3-5 lists the nearest sensitive receptors within a two-mile distance of the proposed 0.5 mile of pipeline.

Table 3-5: Sensitive Receptors within a Two-Mile Distance of the Proposed 0.5 Mile of Pipeline

Name of Sensitive Receptor	Address of Sensitive Receptor	Distance Between Proposed Pipeline Spread Area and Sensitive Receptor [miles]
Stephens Middle School	1830 W Columbia St., Long Beach, CA 90810	0.47

Name of Sensitive Receptor	Address of Sensitive Receptor	Distance Between Proposed Pipeline Spread Area and Sensitive Receptor [miles]
Elizabeth Hudson Elementary	2335 Webster Ave, Long Beach, CA 90810	0.59
Cabrillo High School	2001 Santa Fe Ave, Long Beach, CA 90810	0.72
Reid Senior High School	2153 W Hill St., Long Beach, CA 90810	0.82
St. Lucy Catholic School	2320 Cota Ave, Long Beach, CA 90810	0.83
James A Garfield Elementary	2240 Baltic Ave, Long Beach, CA 90810	1.02
Long Beach Japanese Language School	1766 Seabright Ave, Long Beach, CA 90813	1.30
Wilmington Park Elementary School	1140 Mahar Ave, Wilmington, CA 90744	1.62
Holy Family School	Holy Family School, Wilmington, CA 90744	1.66
Lafayette Elementary School	2445 Chestnut Ave, Long Beach, CA 90806	1.85
Comprehensive Child Development, Inc.	2545 Pacific Ave, Long Beach, CA 90806	1.98
Broad Avenue Elementary School	24815 Broad Ave, Wilmington, CA 90744	1.99

3.2.5. Greenhouse Gasses

Greenhouse gasses (GHGs) comprise a set of compounds whose presence in the atmosphere is associated with the differential absorption of incoming solar radiation and outgoing radiation from the surface of the earth. In theory, GHGs in the atmosphere affect the global energy balance of the atmosphere-ocean-land system, and thereby affect climate change. More specifically, GHGs absorb strongly the long-wave radiation emitted by the earth, and hence are capable of warming the atmosphere. Regulated GHGs in California are carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), sulfur hexafluoride (SF_6), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and nitrogen trifluoride (NF_3). Other GHGs, such as water vapor, are not regulated.

In order to attempt to quantify the impact of specific GHGs, each gas is assigned a global warming potential (GWP). Individual GHG compounds have varying global warming potential and atmospheric lifetimes. The GWP of a GHG is a measure of how much a given mass of a GHG is estimated to contribute to global warming, relative to CO_2, which is assigned a GWP of 1.0.

The GWP is used determine the CO_2 equivalent (CO_2e) mass of each GHG. The calculation of the CO_2e is the accepted methodology for comparing GHG emissions since it normalizes various GHG emissions to a consistent reference gas, CO_2. For example, CH_4's GWP of 25 indicates that the global warming effect of CH_4 is 25 times greater than that of CO_2 on a molecule per molecule basis. Carbon dioxide equivalent is the mass emissions of an individual GHG multiplied by its GWP.

The physical properties and sources of GHGs are described below in Table 3-6.

Table 3-6: Global Warming Potentials, Properties, and Sources of Greenhouse Gases

Constituent	Global Warming Potential	Description and Physical Properties	Sources
Carbon Dioxide (CO_2)	1	CO_2 is an odorless, colorless, naturally-occurring GHG.	CO_2 is emitted from natural and anthropocentric (human) sources. Natural sources include decomposition of dead organic matter; respiration of bacteria, plants, animals, and fungus; evaporation from oceans; and volcanic out gassing. Anthropogenic sources are from burning coal, oil, natural gas, and wood.
Methane (CH_4)	25	CH_4 is an organic, colorless, naturally-occurring, flammable gas. Its atmospheric concentration is less than $CO_2$and its lifetime in the atmosphere is brief (10-12 years) compared to other GHGs.	CH_4 has both natural and anthropogenic sources. It is released as part of the biological processes in low oxygen environments, such as in swamplands or in rice production (at the roots of the plants). Over the last 50 years, human activities such as growing rice, raising cattle, using natural gas, and mining coal have added to the atmospheric concentration of CH_4. Other anthropogenic sources include fossil-fuel and biomass combustion, as well as landfilling and wastewater treatment.
Nitrous Oxide (N_2O)	298	N_2O, commonly referred to as "laughing gas," is a colorless, nonflammable GHG. It is a powerful oxidizer and breaks down readily in the atmosphere.	Nitrous oxide is produced by microbial processes in soil and water, including those reactions that occur in fertilizer containing nitrogen. In addition to agricultural sources, some industrial processes (fossil fuel-fired power plants, nylon production, nitric acid production, and vehicle emissions) also contribute to its atmospheric load. It is used as an aerosol spray propellant, e.g., in whipped cream bottles. It is also used in potato chip bags to keep chips fresh. It is used in rocket engines and in race cars.
Hydrofluorocarbons (HFCs)	92 - 14,900	HFCs are synthetic man-made chemicals that form one of the GHGs with the highest global warming potential	HFCs are man-made for applications such as automobile air conditioners and refrigerants.

Constituent	Global Warming Potential	Description and Physical Properties	Sources
Perfluorocarbons (PFCs)	6,288 - 17,700	PFCs colorless, non-flammable, dense gasses that have stable molecular structures and do not break down through the chemical processes in the lower atmosphere. Because of this, PFCs have very long lifetimes, between 10,000 and 50,000 years.	The two main sources of PFCs are primary aluminum production and semiconductor manufacture.
Sulfur Hexafluoride (SF_6)	22,800	SF_6 is an inorganic, odorless, colorless, nontoxic, nonflammable gas.	SF_6 is used for insulation in electric power transmission and distribution equipment, in the magnesium industry, in semiconductor manufacturing, and as a tracer gas for leak detection.
Nitrogen Triflouride (NF_3)	17,200	NF_3 is an inorganic, colorless, odorless, nonflammable gas.	NF_3 is used primarily in the plasma etching of silicon wafers

Source: CARB, 2016b.

There is growing concern about GHG emissions and their adverse impacts on the world's climate and on our environment. These concerns relate to the change in the average weather of the earth that may be measured by changes in wind patterns, storms, precipitation, and temperature.

Throughout history, climate has been changing due to forces unrelated to human activity, including solar energy input variation, volcanic activity, and changing concentrations of key atmospheric constituents such as CH_4 and CO_2. These climate changes resulted in ice ages and warm interglacial periods, accompanied by large differences in snow and ice cover and associated changes in ecological systems.

Large-scale combustion of fossil fuels (i.e., coal, oil, and natural gas) by humans beginning in the 19th century resulted in significant increases in emissions of the GHG CO_2. The resulting increase in atmospheric levels of CO_2 has been recorded in long-term records at monitoring stations such as Mauna Loa, Hawaii, where measured background ambient CO_2 levels have increased from 285 ppm in 1877 (Stanhill, 1984) to the current level of 410 ppm (NOAA, 2018). Simultaneously, average surface temperatures have been increasing at many locations around the world. Many climate scientists have concluded that it is extremely likely that human influence has been the dominant cause of this change in global average temperature (IPCC, 2013).

3.2.6. GHG Emissions Inventory

An emissions inventory that identifies and quantifies the primary human-generated sources and sinks of GHGs is a tool for addressing climate change. This section summarizes information on

global, national, and state GHG emissions inventories. However, because some GHGs persist for a long time in the atmosphere and accumulate over time, they are generally well mixed and their impact on the atmosphere and climate change cannot be tied to a specific emission point.

- **Global Emissions.** Worldwide emissions of GHGs in 2004 totaled 27 billion metric tons (MT) of CO_2e per year (UNFCCC, 2007). Global estimates are based on country inventories developed as part of the programs of the United Nations Framework Convention on Climate Change (UNFCCC).

- **United States Emissions.** In 2008, the United States emitted approximately 7 billion MT of CO_2e, or approximately 25 tons per year, per person. Of the six major sectors—electric power industry, transportation, industry, agriculture, commercial, and residential—the electric power industry and transportation sectors combined account for approximately 62% of the GHG emissions; the majority of the electric power industry and all of the transportation emissions are generated from direct fossil fuel combustion. Between 1990 and 2006, total United States GHG emissions rose approximately 14.7% (U.S. EPA, 2010).

- **State of California Emissions.** According to CARB emission inventory estimates, California emitted approximately 474 million metric tons (MMT) of CO_2e emissions in 2008 (CARB, 2017a). This large number is due primarily to the sheer size of California compared to other states. By contrast, California has the fourth-lowest per-capita CO_2e emission rate from fossil fuel combustion in the country due to the success of its energy efficiency, renewable energy programs, and commitments that have lowered the state's GHG emissions rate of growth by more than half (CEC, 2007). GHG emissions from the transportation and electricity sectors are approximately 36% and 22% of California inventory, respectively. The industrial sector contributes approximately to be 18%. The remaining sources of GHG emissions are high global warming potential gases at 7%, residential and commercial activities at 9%, agriculture at 6%, and recycling and waste at 2%.

CARB is responsible for developing the California GHG Emission Inventory. This inventory estimates the volume of GHGs emitted to and removed from the atmosphere by human activities within the State of California and supports the AB 32 Climate Change Program. CARB's current GHG emission inventory covers the years 1990–2015 and is based on fuel use, equipment activity, industrial processes, and other relevant data (e.g., housing, landfill activity, and agricultural land area).

CARB staff has projected statewide unregulated GHG emissions for 2020, which represent the emissions that would be expected to occur in the absence of any GHG reduction actions, at 596 MMT of CO_2e. GHG emissions from the transportation and electricity sectors as a whole are expected to increase but remain at approximately 36% and 22% of total CO_2e emissions, respectively (CARB, 2017b).

3.2.7. Effects of Global Climate Change

The Intergovernmental Panel on Climate Change (IPCC) has produced several trajectories of GHGs emission reductions believed to be needed to stabilize global temperatures and climate change impacts. In its Fifth Assessment Report, the IPCC predicted that the global mean temperature change from 1990 to 2100, could range from 1.1 degree Celsius (°C) to 6.4 °C (8 to 10.4 °Fahrenheit). Global average temperatures and sea levels are expected to rise under all scenarios (IPCC, 2014). The IPCC concluded that global climate change was largely the result of human activity, mainly the burning of fossil fuels.

The effects from global climate change may arise from temperature increases, climate sensitive diseases, extreme weather events, and degradation of air quality. There may be direct temperature effects through increases in average temperature leading to more extreme heat waves and less extreme cold spells. Those living in warmer climates are likely to experience more stress and heat-related problems. Heat-related problems include heat rash and heat stroke, drought, etc. In addition, climate-sensitive diseases may increase, such as those spread by mosquitoes and other disease-carrying insects. Such diseases include malaria, dengue fever, yellow fever, and encephalitis. Extreme events such as flooding and hurricanes can displace people and agriculture. Global warming may also contribute to air quality problems from increased frequency of smog and particulate air pollution.

According to the 2006 California Climate Action Team (CAT) Report, several climate change effects can be expected in California over the course of the next century (CalEPA, 2006). These are based on trends established by the IPCC and are summarized below.

- A diminishing Sierra Nevada snowpack, declining by 70% to 90%, and thereby threatening the state's water supply.

- A rise in sea levels, resulting in the displacement of coastal businesses and residences. During the past century, sea levels along California's coast have risen about seven inches. If emissions continue unabated and temperatures rise into the higher anticipated warming range, sea level is expected to rise an additional 22 to 35 inches by the end of the century. Sea level rises of this magnitude would inundate coastal areas with salt water, accelerate coastal erosion, threaten vital levees and inland water systems, and disrupt wetlands and natural habitats. (Note: This condition would not affect the proposed Project area as it is a significant distance away from coastal areas.)

- An increase in temperature and extreme weather events. Climate change is expected to lead to increases in the frequency, intensity, and duration of extreme heat events and heat waves in California. More heat waves can exacerbate chronic disease or heat-related illness.

- Increased risk of large wildfires if rain increases as temperatures rise. Wildfires in the grasslands and chaparral ecosystems of southern California are estimated to increase by approximately 30% toward the end of the 21st century because more winter rain will stimulate the growth of more plant fuel available to burn in the fall. In contrast, a hotter, drier climate could promote up to 90% more northern California fires by the end of the century by drying out and increasing the flammability of forest vegetation.

- Increasing temperatures from 8 to 10.4 °F under the higher emission scenarios, leading to a 25% to 35% increase in the number of days that ozone pollution levels are exceeded in most urban areas.

- Increased vulnerability of forests due to forest fires, pest infestation, and increased temperatures.

- Reductions in the quality and quantity of certain agricultural products. The crops and products likely to be adversely affected include wine grapes, fruit, nuts, and milk.

- Exacerbation of air quality problems. If temperatures rise to the medium warming range, there could be 75% to 85% more days with weather conducive to ozone formation in Los Angeles and the San Joaquin Valley, relative to today's conditions. This is more than twice the increase

expected if rising temperatures remain in the lower warming range. This increase in air quality problems could result in an increase in asthma and other health-related problems.

- A decrease in the health and productivity of California's forests. Climate change can cause an increase in wildfires, an enhanced insect population, and establishment of non-native species.
- Increased electricity demand, particularly in the hot summer months.
- Increased ground-level ozone formation due to higher reaction rates of ozone precursors.

3.3. EXISTING POLICIES AND REGULATIONS – AIR QUALITY

3.3.1. Federal Regulatory Authority

The U.S. EPA has responsibility for enforcing, on a national basis, the requirements of many of the country's environmental laws. California is under the jurisdiction of U.S. EPA Region 9, which has its offices in San Francisco. Region 9 is responsible for the local administration of U.S. EPA programs for California, Arizona, Nevada, Hawaii, and certain Pacific trust territories. U.S. EPA's activities relative to the California air pollution control program focus principally on reviewing California's submittals for the State Implementation Plan (SIP). The SIP is required by the federal Clean Air Act to demonstrate how all areas of the state will meet the national ambient air quality standards within the federally specified deadlines.

The Federal Clean Air Act (CAA) establishes federal requirement for U.S. EPA to develop and adopt air quality standards, the NAAQS (see Table 3.1) and specifies future dates for achieving air quality compliance. The CAA further mandates that states submit and implement SIPs for those areas not meeting these standards. The SIPs must include air pollution control measures that demonstrate how the NAAQS will be met. The 1990 amendment to the CAA requires that areas not meeting NAAQS demonstrate reasonable further progress toward attainment and incorporate sanctions for failure to attain or meet specific attainment milestones. Each state is required to adopt an implementation plan outlining pollution control measures to attain the federal standards in nonattainment areas of the state. CARB is responsible for incorporating air quality management plans for local air basins into a SIP, which is then reviewed and approved by the U.S. EPA.

In addition to the requiring the establishment of NAAQS and the development and maintenance of SIPs, the CAA authorizes U.S. EPA to establish regulations on certain categories of stationary sources of air pollution. Specifically, Section 111 of the CAA authorizes U.S. EPA to establish standards of performance for new and existing sources, commonly referred to New Source Performance Standards (NSPSs).[3]

Similarly, Section 112 of the CAA authorizes U.S. EPA to establish emission standards for listed hazard air pollutants, commonly referred to as National Emission Standards for Hazardous Air Pollutants (NESHAPs). Under this authority, U.S. EPA has established its *NESHAP: National Emission Standards for Closed Vent Systems, Control Devices, Recovery Devices and Routing to a Fuel Gas System or a Process.*

[3] The majority of regulations promulgated under Section 111 of the CAA apply to newly constructed or reconstructed sources after a specified date; however, other regulations apply to affected stationary sources regardless of when construction occurred.

3.3.2. State of California Regulatory Authority

CARB is responsible for ensuring implementation of the California Clean Air Act (CCAA) and for regulating emissions from consumer products and motor vehicles. The CCAA mandates achievement of the maximum degree of emissions reductions possible from vehicular and other mobile sources in order to attain CAAQS by the earliest practical date. CARB established the CAAQS for all pollutants for which the federal government has NAAQS. Additional standards for sulfates, visibility-reducing particles, hydrogen sulfide, and vinyl chloride have been established; however, they are not considered to be a regional air quality problem at this time. Generally, the CAAQS are generally equal or more stringent than the NAAQS.

3.3.3. Local Regulatory Authority

The 1976 Lewis Air Quality Management Act established the SCAQMD and other air districts throughout the state. Significant authority for air quality control within them has been granted to local air districts to regulate stationary source emissions and develop locally-applicable air quality management plans (AQMPs). The AQMP establishes the strategies that will be used to achieve compliance with NAAQS and CAAQS. Air quality management districts, such as the SCAQMD, regulate air emissions from commercial, industrial, and institutional stationary sources. All air pollution control districts have been formally designated as either attainment or nonattainment for each AAQS. Serious nonattainment areas are required to prepare AQMPs that include specified emission reduction strategies in an effort to meet clean air goals. These plans are required to include the following components:

- Application of Best Available Retrofit Control Technology to existing sources;
- Control programs for area sources (e.g., architectural coatings and solvents) and indirect sources (e.g., motor vehicle use generated by residential and commercial development);
- A district permitting system designed to allow no net increase in emissions from any new or modified permitted sources of emissions;
- Implementation of reasonably available transportation control measures and assurance of a substantial reduction in growth rate of vehicle trips and miles traveled;
- Significant use of low-emissions vehicles by fleet operators;
- Sufficient control strategies to achieve annual reduction in emissions for ROGs, NOx, CO, PM_{10}, and $PM_{2.5}$. However, air basins may use alternative emissions reduction strategies that achieve a reduction under certain circumstances.

The SCAQMD works individually and with the other air districts in California to develop plans for attaining the standards by the established deadlines. The proposed Project is located in the areas of the SCAQMD that is included in the Los Angeles-South Coast Air Basin Federal Nonattainment Area established by the U.S. EPA. The CAA requires areas not meeting health standards to develop strategies to achieve those standards by federal deadlines.

Failure to comply with any applicable SCAQMD rules would trigger enforcement action. The hydrogen pipeline is subject to the following SCAQMD prohibitory rules. Other rules may also apply.

- **SCAQMD Rule 401 – Visible Emissions:** Restricts the level of opacity of discharged air contaminants.

- **SCAQMD Rule 402 - Nuisance:** Restricts 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 to 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.

- **SCAQMD Rule 403 – Fugitive Dust:** Limits the amount of particulate matter entrained in the ambient air as a result of anthropogenic fugitive dust sources by requiring actions to prevent, reduce, or mitigate fugitive dust emissions.

- **SCAQMD Rule 1189 – Emissions from Hydrogen Plant Process Vents:** Limits the emissions of VOCs from hydrogen plant process vents.

3.3.4. Toxic Air Contaminants Regulations – Air Quality

The Air Toxics "Hot Spots" Information and Assessment Act of 1987 (AB 2588) seeks to identify and evaluate risk from air toxics sources through reporting of toxic emissions. Under AB 2588, toxic air contaminant (TAC) emissions from individual facilities are quantified and prioritized based on emission levels and the types of pollutant emissions. "High-priority" facilities are required to perform a Health Risk Assessment (HRA) and, if specific thresholds are violated, are required to communicate the results to the public in the form of public notices and meetings. Depending on the risk levels determined, facilities are required to implement varying levels of risk reduction measures. The SCAQMD implements AB 2588 through rule requirements, and is responsible for prioritizing facilities that emit air toxics, reviewing HRAs, and overseeing the implementation of risk reduction measures. Pursuant to the requirements of AB 2588, the SCAQMD publishes an air toxics emissions inventory detailing TAC emissions for facilities within its jurisdiction.

3.3.5. City of Carson – The Carson Municipal Code

The Carson Municipal Code, Article VI, Chapter 8, includes requirements for pipeline franchises used to transport gas. Section 6808 requires that a map showing the accurate as built specifications be submitted to the Public Works Department of the City of Carson within 90 days of any facilities or appurtenances having been laid. The code also contains requirements for insurance, bond filing or providing security, construction and operation standards, fees, notification of breaks or leaks, and emergency equipment, among other requirements.

3.4. EXISTING POLICIES AND REGULATIONS – GHGS

3.4.1. International Regulation – GHG

Intergovernmental Panel on Climate Change (IPCC). In 1988, the United Nations created the IPCC to provide independent scientific information regarding climate change to policymakers. The IPCC does not conduct research itself, but rather compiles information from a variety of sources into reports regarding climate change and its impacts. The IPCC has thereafter periodically released reports on climate change, and in 2014 released its Fifth Assessment Report, which concluded that "[w]arming of the climate system is unequivocal," and that "[a]nthropogenic GHG emissions … are extremely likely to have been the dominant cause of the observed warming since the mid-20th century" (IPCC, 2014).

United Nations Framework Convention on Climate Change. On March 21, 1994, the United States joined a number of countries around the world in signing the United Nations Framework Convention on Climate Change (Convention). Under the Convention, governments gather and share information on GHGs, national policies, and best practices; launch national strategies for addressing GHGs and adapting to expected impacts, including the provision of financial and technological support to developing countries; and cooperate in preparing for adaptation to the impacts of climate change.

Kyoto Protocol. The Kyoto Protocol is an international agreement linked to the Convention (discussed above). The major feature of the Kyoto Protocol is that it sets binding targets for 37 industrialized countries and the European community for reducing GHGs an average of 5% against 1990 levels over the five-year period from 2008–2012. The Convention encouraged industrialized countries to stabilize emissions; however, the Protocol commits them to doing so. Developed countries have contributed more emissions over the last 150 years than underdeveloped countries; therefore, the Protocol places a heavier burden on developed nations under the principle of "common but differentiated responsibilities." The United States has not entered into force of the Kyoto Protocol.

3.4.2. Federal Regulations and Standards – GHG

Corporate Average Fuel Economy (CAFE) Act 1975 - Clean Vehicles. Congress first passed the CAFE law in 1975 to increase the fuel economy of cars and light-duty trucks. The law has become more stringent over time. On October 25, 2010, the U.S. EPA and the U.S. Department of Transportation proposed the first national standards to reduce GHGs and improve fuel efficiency of heavy-duty trucks and buses.

Consolidated Appropriations Act of 2008 - Mandatory Reporting of GHG. The Consolidated Appropriations Act of 2008, passed in December 2007, requires the establishment of mandatory GHG reporting requirements. On September 22, 2009, the U.S. EPA issued the Final Mandatory Reporting of GHGs rule. The rule requires reporting of GHG emissions from large sources and suppliers in the United States, and is intended to collect accurate and timely emissions data to inform future policy decisions. Under the rule, suppliers of fossil fuels or industrial GHGs, manufacturers of vehicles and engines, and facilities that emit 25,000 metric tons or more per year of GHG emissions, are required to submit annual reports to the U.S. EPA.

Federal Regulation of Climate Change. The United States has historically had a voluntary approach to reducing GHG emissions. However, on April 2, 2007, the U.S. Supreme Court ruled that the U.S. EPA has the authority to regulate CO_2 emissions under the CAA. While there currently are no adopted Federal regulations for the control or reduction of GHG emissions, the U.S. EPA commenced several actions in 2009 that are required to implement a regulatory approach to global climate change, as mentioned in the sections above.

3.4.3. State Regulations and Standards – GHG

California AB 1493 - Pavley Regulations and Fuel Efficiency Standards. California AB 1493, enacted on July 22, 2002, required CARB to develop and adopt regulations that reduce GHGs emitted by passenger vehicles and light-duty trucks. The standards were phased in during the 2009 through 2016 model years. The standards have resulted in about a 30% reduction in fuel consumption compared with the 2002 fleet.

Executive Order S-01-07 - Low Carbon Fuel Standard. Executive Order S-01-07, signed on January 18, 2007, mandates that a statewide goal be established to reduce the carbon intensity of

California's transportation fuels by at least 10% by 2020. In response, a Low Carbon Fuel Standard (LCFS) was adopted and the Secretary for Environmental Protection to coordinate the actions of the California Energy Commission, CARB, the University of California, and other agencies were directed to develop and propose protocols for measuring the "life-cycle carbon intensity" of transportation fuels. The Low Carbon Fuel Standard requires producers of petroleum-based fuels to reduce the carbon intensity of their fuels by 10% total reduction by 2020. Petroleum importers, refiners, and wholesalers can either develop their own low carbon fuel products or buy LCFS credits from other companies that develop and sell low carbon alternative fuels, such as biofuels, electricity, natural gas, or hydrogen.

Executive Order S-3-05. Executive Order S-3-05 was signed by the Governor in 2005 proclaiming California is vulnerable to the impacts of climate change. It states that increased temperatures could reduce the Sierra Nevada's snowpack, worsen California's air quality problems, and potentially cause a rise in sea levels. The Executive Order establishes total GHG emission targets including emissions reductions to the 2000 level by 2010, and the 1990 level by 2020, and to 80% below the 1990 level by 2050. The 2050 reduction goal represents what scientists believe is necessary to reach levels that will stabilize the climate. The 2020 goal was established to be an aggressive, but achievable, midterm target.

Assembly Bill 32 (AB 32). California's major initiative for reducing GHG emissions is outlined in AB 32, the California Global Warming Solutions Act of 2006, passed by the Legislature on August 31, 2006. This effort aims at reducing GHG emissions to 1990 levels by 2020. CARB has established the level of GHG emissions in 1990 at 427 MMT CO_2e. The emissions target of 427 MMT requires the reduction of 169 MMT from the state's projected business-as-usual 2020 emissions of 596 MMT. AB 32 requires CARB to prepare a Scoping Plan that outlines the main state strategies for meeting the 2020 deadline and to reduce GHGs that contribute to global climate change.

AB 32 requires the CARB and the Climate Action Team[4] to take the following actions:

- Adopt a list of discrete early action measures by July 1, 2007, that can be implemented before January 1, 2010;
- Establish a statewide GHG emissions cap for 2020 based on 1990 emissions and adopt mandatory reporting rules for significant sources of GHG by January 1, 2008;
- Indicate how emission reductions will be achieved from significant GHG sources via regulations, market mechanisms, and other actions by January 1, 2009; and
- Adopt regulations by January 1, 2011, to achieve the maximum technologically feasible and cost-effective reductions in GHG, including provisions for using both market mechanisms and alternative compliance mechanisms.

In June 2007, CARB approved a list of 37 early action measures, including three discrete early action measures (Low Carbon Fuel Standard, Restrictions on High Global Warming Potential Refrigerants, and Landfill Methane Capture). Discrete early action measures are measures that were required to be adopted as regulations and made effective no later than January 1, 2010, the date established by Health and Safety Code Section 38560.5. CARB adopted additional early action measures in October 2007 that tripled the number of discrete early action measures (CARB, 2007a). These measures

[4] The Climate Action Team is a consortium of representatives from state agencies who have been charged with coordinating and implementing GHG emission reduction programs that fall outside of CARB's jurisdiction.

relate to truck efficiency, port electrification, reduction of perfluorocarbons from the semiconductor industry, reduction of propellants in consumer products, proper tire inflation, and SF_6 reductions from the non-electricity sector. The combination of early action measures is estimated to reduce statewide GHG emissions by nearly 16 MMT of CO_2e (CARB, 2007b).

CARB AB 32 Scoping Plan. CARB adopted the initial Climate Change Scoping Plan (Scoping Plan) in 2008, which outlines actions recommended to obtain that goal. The Scoping Plan calls for an "ambitious but achievable" reduction in California's GHG emissions, cutting approximately 30% from business-as-usual emission levels projected for 2020, or about 10% from today's levels. On a per-capita basis, that means reducing annual emissions of 14 tons of CO_2per person in California down to about 10 tons per person by 2020. The First Update to the Climate Change Scoping Plan was released on May 15, 2014, and built upon the initial Scoping Plan with new recommendations.

The Scoping Plan contains the following 18 strategies to reduce the state's emissions (CARB, 2008):

1. *California Cap-and-Trade Program Linked to Western Climate Initiative.* Implement a broad-based California Cap-and-Trade program to provide a firm limit on emissions. Link the California cap-and-trade program with other Western Climate Initiative Partner programs to create a regional market system to achieve greater environmental and economic benefits for California. Ensure California's program meets all applicable AB 32 requirements for market-based mechanisms.

2. *California Light-Duty Vehicle GHG Standards.* Implement adopted standards and planned second phase of the program. Align zero-emission vehicle, alternative and renewable fuel and vehicle technology programs with long-term climate change goals.

3. *Energy Efficiency.* Maximize energy efficiency building and appliance standards; pursue additional efficiency including new technologies, policy, and implementation mechanisms. Pursue comparable investment in energy efficiency from all retail providers of electricity in California.

4. *Renewable Portfolio Standard.* Achieve 33% renewable energy mix statewide. Renewable energy sources include (but are not limited to) wind, solar, geothermal, small hydroelectric, biomass, anaerobic digestion, and landfill gas.

5. *Low Carbon Fuel Standard.* Develop and adopt the Low Carbon Fuel Standard.

6. *Regional Transportation-Related GHG Targets.* Develop regional GHG emissions reduction targets for passenger vehicles. This measure refers to SB 375.

7. *Vehicle Efficiency Measures.* Implement light-duty vehicle efficiency measures.

8. *Goods Movement.* Implement adopted regulations for the use of shore power for ships at berth. Improve efficiency in goods movement activities.

9. *Million Solar Roofs Program.* Install 3,000 MW of solar-electric capacity under California's existing solar programs.

10. *Medium/Heavy-Duty Vehicles.* Adopt medium- and heavy-duty vehicle efficiency measures.

11. *Industrial Emissions.* Require assessment of large industrial sources to determine whether individual sources within a facility can cost-effectively reduce GHG emissions and provide other pollution reduction co-benefits. Reduce GHG emissions from fugitive emissions from oil and gas extraction and gas transmission. Adopt and implement regulations to control fugitive CH_4 emissions and reduce flaring at refineries.

12. *High Speed Rail.* Support implementation of a high-speed rail system.

13. *Green Building Strategy.* Expand the use of green building practices to reduce the carbon footprint of California's new and existing inventory of buildings.

14. *High Global Warming Potential Gases.* Adopt measures to reduce high global warming potential gases.

15. *Recycling and Waste.* Reduce CH_4 emissions at landfills. Increase waste diversion, composting, and commercial recycling. Move toward zero-waste.

16. *Sustainable Forests.* Preserve forest sequestration and encourage the use of forest biomass for sustainable energy generation.

17. *Water.* Continue efficiency programs and use cleaner energy sources to move and treat water.

18. *Agriculture.* In the near-term, encourage investment in manure digesters and at the five-year Scoping Plan update determine if the program should be made mandatory by 2020.

Senate Bill 1368 (SB 1368). In September 2006, the Governor signed Senate Bill 1368, which calls for the adoption of a GHG performance standard for in-state and imported electricity generators to mitigate climate change. On January 25, 2007, the CPUC adopted an interim GHG emissions performance standard. This standard is a facility-based emissions standard requiring all new long-term commitments for base load generation to serve California consumers with power plants that have emissions no greater than a combined cycle gas turbine plant. The established level is 1,100 pounds of CO_2 per megawatt-hour.

Senate Bill 375 (SB 375). SB 375 was signed into law on October 1, 2008. SB 375 provides emissions-reduction goals around which regions can plan, integrating disjointed planning activities, and provides incentives for local governments and developers to implement "smart growth" planning and development strategies, including reducing the average vehicle miles traveled (VMT) to reduce commuting distances and reduce criteria and GHG air pollutant emissions. SB 375 has three major components:

- Using the regional transportation planning process to achieve reductions in GHG emissions consistent with AB 32's goals;

- Offering CEQA incentives to encourage projects that are consistent with a regional plan that achieves GHG emission reductions; and

- Coordinating the regional housing needs allocation process with the regional transportation process while maintaining local authority over land use decisions.

SB 375 requires each Metropolitan Planning Organization (MPO) to include a Sustainable Communities Strategy (SCS) in the regional transportation plan that demonstrates how the region will meet the GHG emission targets and creates CEQA streamlining incentives for projects that are consistent with the regional SCS. The focus of SB 375 is on location of new residential projects and coordinated transportation planning.

Renewable Electricity Standards. There have been several recent legislative and executive actions covering renewable electricity in California. On September 12, 2002, Governor Gray Davis signed SB 1078, requiring California to generate 20% of its electricity from renewable energy by 2017. SB 107 changed the due date to 2010 instead of 2017. On November 17, 2008, Governor Arnold Schwarzenegger signed Executive Order S-14-08, which established a target for California to increase the state's Renewable Portfolio Standard to 33 percent renewable power by 2020.

Senate Bill 32 (SB 32). SB 32, or California Global Warming Solutions Act of 2006: Emissions Limit, was signed into law on September 8, 2016 to expand upon the GHG emission reductions of AB 32. The bill established a statewide GHG emissions reduction goal of 40% below the 1990 level by 2030. This is an interim target between the 2020 and 2050 GHG emission reduction targets required by Executive Order S-3-05 (signed June 1, 2005). Currently, CARB is in the process of updating the Climate Change Scoping Plan to reflect the 2030 emissions reduction target.

Assembly Bill 398 (AB 398). In July 2017, the Governor signed AB 398 which extended California's cap-and-trade program for 10 years, pushing the program end date from 2020 to 2030. The cap-and-trade program is a market-based approach to controlling and reducing GHG emissions from businesses and organizations.

3.4.4. Regional Policies – Greenhouse Gas

Local Air Quality Management District (SCAQMD) Interim GHG Thresholds. On December 5, 2008, the SCAQMD Governing Board adopted a staff proposal for an interim GHG significance threshold using a tiered approach for stationary source and industrial projects where the SCAQMD is lead agency. The tiers are as follows:

> Tier 1: Determine if CEQA categorical exemptions are applicable. If not move to Tier 2;
>
> Tier 2: Consider whether or not the proposed project is consistent with a locally adopted GHG reduction plan (often called a Climate Action Plan) that has gone through public hearings and CEQA review, that has an approved inventory, includes monitoring, etc. If not move to Tier 3;
>
> Tier 3: If a stationary source/industrial project's GHG emissions are less than or mitigated to less than 10,000 MT of CO_2e per year ($MTCO_2eq/yr$) the project is presumed to be less than significant for GHGs. If the project exceeds 10,000 $MTCO_2eq/yr$; move to Tier 5;
>
> Tier 4: Was not adopted, remains under consideration;
>
> Tier 5: Off-site mitigation for life of project (30 years), if this threshold is to be used, GHG emissions must be mitigated to less than the Tier 3 screening significance threshold. SCAQMD clarified that offsets should have a 30 year project life, should be real, quantifiable, verifiable, and surplus and will be considered in the following prioritized manner: (1) project design features; (2) direct onsite reductions; (3) neighborhood mitigation measure projects; (4) in-district mitigation measures; (5) in-

state mitigation measures; and (6) out of state mitigation measure projects, which may include purchasing offsets if other options are not feasible.

If the proposed project cannot meet any of the Tiers, it is presumed to be significant for GHG emissions.

In addition to establishing interim GHG Thresholds, the SCAQMD has permitting authority for implementing federal EPA Prevention of Significant (PSD) permitting of GHG sources as of January 2013 and has established regulations for GHG reduction programs. The proposed Project is not expected to be subject to GHG PSD permitting.

The City of Carson. The City of Carson completed GHG inventories for municipal operations (October 2009) and for community wide emissions (March 2011). These inventories were prepared by the South Bay Cities Council of Governments (SBCCOG). SBCCOG is a joint powers authority of 16 local governments and the County. The SBCCOG, through its South Bay Environmental Services Center (SBESC), coordinates common environmental issues in the area, including energy efficiency, water conservation, and recycling. The SBESC has various alliances with the Los Angeles County Metropolitan Transportation Authority, West Basin Municipal Water District, Sanitation Districts of Los Angeles County, Southern California Edison, Los Angeles County Energy Program, The Gas Company of Southern California, and the Torrance Water Department. Through these alliances, the SBESC offers home energy-efficiency workshops, rebates and incentive programs to residents and businesses; assists cities in identifying and implementing energy and water savings projects; and promotes vanpooling and recycling programs.

In December 2017, SBCCOG prepared the Climate Action Plan (CAP) for the City of Carson. The CAP describes the city's current GHG emission inventory, as well as future projections and targets. Two strategies to reduce GHG emissions stated in the plan are energy efficiency and the implementation of clean, renewable energy, while reducing the dependence on traditional, GHG emitting power sources.

4.1. SIGNIFICANCE CRITERIA

Appendix G of the California state *CEQA Guidelines* recognizes the following significance thresholds related to air quality and GHG. Based on these significance thresholds, potential impacts to air quality would be significant if the proposed Project would:

a) Conflict with or obstruct implementation of the applicable air quality plan;

b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation;

c) Result in a cumulatively considerable net increase in any criteria pollutant for which the project region is nonattainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursor);

d) Expose sensitive receptors to substantial pollutant concentrations; and/or

e) Create objectionable odors affecting a substantial number of people.

Based on CEQA Guidelines §§ 15064.4 and 15064.7(c), as well as Appendix G, a project would cause adverse impacts associated with GHG emissions if it would:

a) Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment; or

b) Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs.

SCAQMD is in the process of developing a handbook to replace the 1993 SCAQMD CEQA Air Quality Handbook. This analysis follows the methodology presented in the SCAQMD CEQA Air Quality Handbook and the updated supplemental information (SCAQMD, 1993 and 2018). The SCAQMD guidelines further contain numerical thresholds of significance that are designed to implement, in the air district, the above general criteria for air quality impacts and those set forth in Appendix G of the State *CEQA Guidelines*. The SCAQMD thresholds have been developed and adopted as encouraged by CEQA, and only after extensive study.The SCAQMD thresholds (as presented in its *Air Quality Guidelines*) thus serve as a means of translating the general standards set forth in Appendix G into quantitative thresholds against which the proposed Project's air pollutant emissions can be measured (SCAQMD, 1993).

Table 4-1 presents the SCAQMD Thresholds of Significance for criteria pollutants of concern that are applicable to the proposed Project.

Table 4-1: SCAQMD Air Quality Significance Thresholds

Mass Daily Thresholds [a]		
Pollutant	**Construction [b]**	**Operation [c]**
NOx	100 lbs/day	55 lbs/day
VOC	75 lbs/day	55 lbs/day
PM_{10}	150 lbs/day	150 lbs/day
$PM_{2.5}$	55 lbs/day	55 lbs/day
SOx	150 lbs/day	150 lbs/day
CO	550 lbs/day	550 lbs/day
Lead	3 lbs/day	3 lbs/day
Toxic Air Contaminants (TACs), Odor, and GHG Thresholds		
TACs (including carcinogens and non-carcinogens)	Maximum Incremental Cancer Risk ≥ 10 in 1 million Cancer Burden > 0.5 excess cancer cases (in areas ≥ 1 in 1 million) Chronic & Acute Hazard Index ≥ 1.0 (project increment)	
Odor	Project creates an odor nuisance pursuant to SCAQMD Rule 402	
GHG	10,000 MT/yr CO_2eq for industrial facilities	
Ambient Air Quality Standards for Criteria Pollutants [d]		
NO_2 1-hour average annual arithmetic mean	SCAQMD is in attainment; project is significant if it causes or contributes to an exceedance of the following attainment standards: 0.18 ppm (state) 0.03 ppm (state) and 0.0534 ppm (federal)	
PM_{10} 24-hour average annual average	10.4 μg/m^3 (construction)[e] & 2.5 μg/m^3 (operation) 1.0 μg/m^3	
$PM_{2.5}$ 24-hour average	10.4 μg/m^3 (construction)[e] & 2.5 μg/m^3 (operation)	
SO_2 1-hour average 24-hour average	0.25 ppm (state) & 0.075 ppm (federal – 99th percentile) 0.04 ppm (state)	
Sulfate 24-hour average	25 μg/m^3 (state)	
CO 1-hour average 8-hour average	SCAQMD is in attainment; project is significant if it causes or contributes to an exceedance of the following attainment standards: 20 ppm (state) and 35 ppm (federal) 9.0 ppm (state/federal)	
Lead 30-day Average Rolling 3-month average	1.5 μg/m^3 (state) 0.15 μg/m^3 (federal) at or below 0.110 μg/m^3 through December 31, 2016 and at or below 0.100 μg/m^3 on and after January 1, 2017 (SCAQMD Rule 1420.1)	

Source: SCAQMD CEQA Handbook (SCAQMD, 1993), Revision: March 2015

Notes: lbs/day = pounds per day; ppm = parts per million; μg/m^3 = microgram per cubic meter; MT/yr CO2eq = metric tons per year of CO_2 equivalents

a) Construction thresholds apply to both the South Coast Air Basin and Coachella Valley (Salton Sea and Mojave Desert Air Basins).

b) For Coachella Valley, the mass daily thresholds for operation are the same as the construction thresholds.

c) Ambient air quality thresholds for criteria pollutants based on SCAQMD Rule 1303, Table A-2 unless otherwise stated.

d) Ambient air quality threshold based on SCAQMD Rule 403.

4.2. PROJECT EMISSIONS

4.2.1. Construction Emissions

Construction activities are generally analyzed separately from operational impacts because they tend to be short-term and limited to localized impacts. However, ongoing or long-range construction activities that occur over a wide geographic area have the potential to create regional air quality impacts in much the same way as operational sources. Specifically, construction ozone precursor emissions (NOx and volatile organic compounds (VOCs)) as well as particulate matter emissions (PM_{10} and $PM_{2.5}$) have the potential to affect regional air quality if emitted in large enough quantities. Therefore, construction activities must be analyzed for both localized and regional impacts.

Project construction will encompass a variety of activities that emit air pollutants. These activities may be grouped as creating either fugitive emissions or engine exhaust emissions. Fractions of the fugitive emissions from dust are PM_{10} and $PM_{2.5}$ emissions. Engine exhaust emissions include all pollutants, and may be directly emitted at the Project location, or indirectly emitted by vehicles in route to and from the Project, such as construction worker, material haul, and vendor vehicle trips.

Sources of construction emissions from the Project include:

- Dust entrained during trenching for the pipeline spread;
- Off-road construction equipment exhaust;
- Automobiles used by workers to commute to the construction site; and
- Delivery of pipes to the pipeline spread construction area.

Construction emissions were quantified using the California Emissions Estimator Model (CalEEMod) Version 2016.3.2, which was developed by the California Air Pollution Control Officers Association (CAPCOA) and is approved for use in all areas of California (CAPCOA, 2016). CalEEMod quantifies emissions of NOx, CO, VOC, PM_{10}, $PM_{2.5}$, and GHGs from construction activities using emission factors derived from CARB's Emission Factor (EMFAC) and OFFROAD models, for on-highway and off-road vehicles, respectively.

The emissions from delivering the new pipes to the pipeline spread construction site were estimated using EMFAC2017 for a tractor truck (EMFAC truck classification T7 tractor). Approximately 2,640 feet (0.5 miles) of new pipe will be delivered to the construction site in sections. Assuming each section is approximately 12 feet in length and each truck can transport 60 pieces per trip, the Project expects a total of 4 trucks will be needed to deliver all of the new pipe sections. The exact delivery source has not yet been decided but will be within Los Angeles County. The farthest edge of Los Angeles County from the pipeline spread area was used to approximate a travel distance of 85 miles.

The relevant CalEEMod input parameters for proposed Project are summarized in Table 4-2. A full listing of all data and inputs to CalEEMod is found in the CalEEMod output reports, which are contained in the Appendix. Table 4-3 summarizes the construction equipment assumptions for each construction area. The pipeline spread will not require demolition or grading. The equipment listed for the pipeline spread construction is typical equipment required for the installation of pipeline. The construction at the connection sites is expected to primarily be welding the new connections, so minimal land disturbance is expected.

Table 4-2: CalEEMod Inputs for the Proposed Project

CalEEMod Input Parameter	Pipeline Spread	ASV and Pipeline Connections	World Energy Paramount Bio-fuels Facility Connection
Project Location	Los Angeles County	Los Angeles County	Los Angeles County
Land Use Subtype	General Light Industry	General Light Industry	General Light Industry
Lot Acreage	0.18[a]	0.11	0.11
Construction Start Date	September 2, 2019	September 2, 2019	September 2, 2019
Construction Duration	20 weeks	8 weeks	8 weeks
No. of Construction Workers	30 Workers	8 Workers	8 Workers
Fugitive Dust Mitigation	Twice-Daily Watering and Limit Vehicle Speeds to 15 mph in Construction Area	Twice-Daily Watering and Limit Vehicle Speeds to 15 mph in Construction Area	Twice-Daily Watering and Limit Vehicle Speeds to 15 mph in Construction Area

Notes: a) Lot acreage of pipeline spread determined by the 0.5 mile long pipeline and an assumed 1 yard wide trench.

Table 4-3: CalEEMod Construction Equipment Inputs

Equipment	Number	Hours/Day	HP	Load
Pipeline Spread (Site Preparation)				
Cranes	2	6	231	0.29
Rubber Tired Dozers	2	4	247	0.4
Tractors/Loaders/Backhoes	2	4	97	0.37
Trenchers	2	6	78	0.5
Welders	8	4	46	0.45
Pipeline Spread (Paving)				
Cement and Mortar Mixers	4	6	9	0.56
Pavers	1	7	130	0.42
Rollers	1	7	80	0.38
Tractors/Loaders/Backhoes	1	7	97	0.37
ASV and Pipeline Connections				
Cranes	1	4	231	0.29
Tractors/Loaders/Backhoes	1	4	97	0.37
Trenchers	1	4	78	0.5
Welders	4	6	46	0.45
World Energy Paramount Bio-fuels Facility Connections				
Cranes	1	4	231	0.29
Tractors/Loaders/Backhoes	1	4	97	0.37
Trenchers	1	4	78	0.5
Welders	4	6	46	0.45

A summary of the emissions quantified by CalEEMod follows in Tables 4-4 and 4-5. The emission totals shown in Table 4-4 reflect construction emissions before the application of the fugitive dust mitigation measures shown above, and Table 4-5 reflects the inclusion of those measures, which are also listed in Section 4.3.3. These measures may be considered as best management practices for reducing fugitive dust from construction projects. The CalEEMod output reports are included in the Appendix to this AQIA.

Table 4-4: Project Construction Emissions (Before Mitigation)

Activity	Pollutant									
	VOC	NOx	CO	SOx	PM_{10}	$PM_{2.5}$	CO_2	CH_4	N_2O	CO_2e
	Pounds per Day									
Pipeline Spread	4.48	35.92	22.66	0.04	8.33	5.25	3704.36	0.95	0.00	3728.00
Pipe Delivery	0.36	8.45	1.34	0.02	0.30	0.20	2259.20	0.02	0.36	2369.64
ASV & Pipeline Connections	1.79	11.15	9.46	0.02	0.75	0.65	1353.65	0.30	0.00	1361.18
World Energy Paramount Bio-fuels Facility Connections	1.79	11.15	9.46	0.02	0.75	0.65	1353.65	0.30	0.00	1361.18
Maximum Total Daily Emissions	**8.42**	**66.67**	**42.91**	**0.09**	**10.13**	**6.75**	**8670.87**	**1.56**	**0.36**	**8820.00**
Significance Threshold	**75**	**100**	**550**	**150**	**150**	**55**	**-**	**-**	**-**	**-**
Significant Impact?	**No**	**No**	**No**	**No**	**No**	**No**	**-**	**-**	**-**	**-**
	Tons per Year						Metric Tons per Year			
Pipeline Spread	0.19	1.56	0.98	0.002	0.36	0.23	145.57	0.04	0.00	146.50
Pipe Delivery	0.00	0.004	0.00	0.00	0.00	0.00	1.02	0.00	0.00	1.07
ASV & Pipeline Connections	0.04	0.22	0.19	0.00	0.02	0.01	24.48	0.00	0.00	24.62
World Energy Paramount Bio-fuels Facility Connections	0.04	0.22	0.19	0.00	0.02	0.01	24.48	0.00	0.00	24.62
Maximum Total Yearly Emissions	**0.27**	**2.01**	**1.36**	**0.00**	**0.39**	**0.25**	**195.55**	**0.05**	**0.00**	**196.81**
Significance Thresholds	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**10,000**
Significant Impact?	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**No**

*Note: Total may not add up due to rounding.
Source: Trinity Consultants, 2018.

Table 4-5: Project Construction Emissions (With Mitigation)

Activity	Pollutant									
	VOC	NOx	CO	SOx	PM_{10}	$PM_{2.5}$	CO_2	CH_4	N_2O	CO_2e
	Pounds per Day									
Pipeline Spread	4.48	35.92	22.66	0.04	5.02	3.43	3704.36	0.95	0.00	3728.00
Pipe Delivery	0.36	8.45	1.34	0.02	0.30	0.20	2259.20	0.02	0.36	2369.64
ASV & Pipeline Connections	1.79	11.15	9.46	0.02	0.75	0.65	1353.65	0.30	0.00	1361.18
World Energy Paramount Bio-fuels Facility Connections	1.79	11.15	9.46	0.02	0.75	0.65	1353.65	0.30	0.00	1361.18
Maximum Total Daily Emissions	**8.42**	**66.67**	**42.91**	**0.09**	**6.82**	**4.93**	**8670.87**	**1.56**	**0.36**	**8820.00**
Significance Threshold	**75**	**100**	**550**	**150**	**150**	**55**	**-**	**-**	**-**	**-**
Significant Impact?	**No**	**No**	**No**	**No**	**No**	**No**	**-**	**-**	**-**	**-**
	Tons per Year						Metric Tons per Year			
Pipeline Spread	0.19	1.56	0.98	0.00	0.22	0.15	145.57	0.04	0.00	146.50
Pipe Delivery	0.00	0.00	0.00	0.00	0.00	0.00	1.02	0.00	0.00	1.07

Activity	Pollutant									
	VOC	NOx	CO	SOx	PM_{10}	$PM_{2.5}$	CO_2	CH_4	N_2O	CO_2e
ASV & Pipeline Connections	0.04	0.22	0.19	0.00	0.02	0.01	24.48	0.00	0.00	24.62
World Energy Paramount Bio-fuels Facility Connections	0.04	0.22	0.19	0.00	0.02	0.01	24.48	0.00	0.00	24.62
Maximum Total Yearly Emissions	**0.27**	**2.01**	**1.36**	**0.00**	**0.25**	**0.18**	**195.55**	**0.05**	**0.00**	**196.81**
Significance Thresholds	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**10,000**
Significant Impact?	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**No**

*Note: Total may not add up due to rounding.
Source: Trinity Consultants, 2018.

4.2.2. Operational Emissions – Mobile Sources

Operational impacts are those that result from the day-to-day activities occurring throughout the proposed Project. Operation of the proposed Project will decrease emissions from mobile sources. Constructing 0.5 miles of pipeline to connect the existing Air Products' hydrogen facility in the City of Carson to the World Energy Bio-fuels Facility in the City of Paramount will decrease the number of trucks currently used to deliver liquefied hydrogen from sources other than Air Products to the Bio-fuels Facility. We note that no delivery trucks originate from the Air Products' hydrogen facility in the City of Carson because the facility does not currently produce liquid hydrogen and does not otherwise supply the World Energy Bio-fuels Facility with hydrogen. A summary of the reductions are shown in Table 4-6. The closest liquid hydrogen facility is approximately 45 miles from the World Energy Bio-fuels Facility. EMFAC2017 was used to quantify the emission reductions from eliminating hydrogen delivery truck trips. The calculations are included in the Appendix to this AQIA.

Table 4-6. Truck Displacement Emission Reductions

Activity	Pollutant									
	VOC	NOx	CO	SOx	PM_{10}	$PM_{2.5}$	CO_2	CH_4	N_2O	CO_2e
	Tons/year						MT/year			
Truck Displacement	**0.05**	**1.22**	**0.19**	**0.00**	**0.04**	**0.03**	**297.03**	**0.00**	**0.05**	**311**

4.2.3. Operational Emissions – Electricity

The operation of the proposed Project will consist of a daily electricity usage to transport the hydrogen through the pipeline. A maximum of 300 kilowatt hours will be used daily. CalEEMod electrical utility emission factors for Southern California Edison were used to calculate the greenhouse gas emissions associated with the electricity usage.

Table 4-7. Project Operational Electricity Emissions

Pollutant			
CO_2	CH_4	N_2O	CO_2e
MT/year			
34.89	**0.00**	**0.00**	**35.02**

4.2.4. Operational Emissions – Stationary Sources

The operation of the proposed Project will consist of transporting hydrogen using a 12 mile underground pipeline. Therefore, operational emissions from stationary sources are assumed to be negligible.

The Project will not result in an increase in operational emissions from the Air Products Carson Hydrogen Plant, as this facility currently operates at maximum hydrogen production capacity and will only redirect existing hydrogen production from current industrial customers to the World Energy facility.

4.3. EVALUATION OF IMPACTS AND MITIGATION MEASURES

The evaluation was prepared in accordance with the standards, procedures and methodologies established in the SCAQMD CEQA Air Quality Handbook and updated supplemental information (SCAQMD 1993 and 2018).

4.3.1. Types of Impacts

Direct Impacts. Direct impacts are the result of the project itself (from its construction and operation) in the form of emissions generated at the Project location. For example, exhaust emissions from construction vehicles and fugitive dust are direct impacts.

Indirect Impacts. Indirect impacts are those which may occur at locations other than the Project location, or on a regional basis. For example, an increase in motor vehicle trips attracted to the project location could affect regional air quality.

Cumulative Impacts. Cumulative impacts are the combination of project's direct and/or indirect impacts along with other existing, proposed, and reasonably foreseeable projects that may be related to the project. For example, the cumulative impact of all construction activity in an air basin may affect regional air quality.

Consistency with Plans and Programs. A project may be considered to have a significant impact if it conflicts with or delays implementation of any applicable air quality attainment or maintenance plan. A project is conforming if it complies with the applicable rules and regulations, complies with all proposed control measures that are not yet adopted from the applicable plan(s), and is consistent with the growth forecasts in the applicable plan(s) (or is directly included in the applicable plan).

4.3.2. Impact: Air Quality Criteria A, D, and E

First, all impact categories were screened to determine if they would have no impacts or would be well below a SCAQMD threshold. The following impact criteria met this screening review and do not require further assessment:

- **The project would not conflict with or obstruct implementation of the applicable air quality plan (Criterion A)**.

The proposed Project operations would extend 0.5 miles of pipeline within the City of Carson and therefore reduce the number of existing hydrogen delivery trips to the World Energy Paramount Bio-fuels Facility. Thus, as shown above in Table 4-4 and 4-5, because the proposed pipeline expansion would have less than significant construction and operation impacts without considering the reduction in hydrogen delivery truck traffic, it would not impact the nonattainment area planning by the SCAQMD for the federal ozone standard, nor would it disrupt or hinder implementation of any plan control measures. Therefore, this criterion does not require further evaluation.

- **The Project would expose sensitive receptors to emissions of Toxic Air Contaminants (Criterion D).**

The primary air toxic associated with the proposed Project is the emission of diesel particulate matter (DPM) from the hydrogen delivery trucks used by non-Air Products facilities to deliver liquid hydrogen to the World Energy Facility. The proposed Project would reduce or eliminate these existing delivery trips. Additionally, while there will be some diesel particulate emissions from the Project construction-related activities, these activities would be temporary and the total number of equipment sources and truck trips is considered small compared to other source types with the propensity to cause "hot spots" due to diesel emissions from mobile sources (e.g., ports, distribution centers, and intermodal railyards). As shown in Table 3-5, the nearest receptor to the Project is located more than 2,000 feet (0.47 miles) from the pipeline spread construction area, which is the location of the most intensive construction activity.

Also, it should be noted that the proposed Project does not include any additional operational truck activity and would result in a reduction in operational-related hydrogen delivery truck trips. Because of the reduction in truck activity during Project operations, the lack of sensitive receptors in close proximity to the proposed Project emission sources, and that the fact that the only Project diesel combustion activity would be temporary during construction, it is concluded there would be no substantial additional exposure of sensitive receptors to toxic air contaminants as a result of the proposed Project. Therefore, this criterion does not require further evaluation.

- **The project would not create objectionable odors affecting a substantial number of people (Criterion E).**

Pipelines are project types with the little to no cause for nuisance odors. Because the proposed Project would not be a source of odors and further would reduce existing truck deliveries to the World Energy facility, the proposed Project would not increase the intensity of odor emitting activities at either the Carson Air Products facility or the World Energy Paramount Bio-fuels Facility. In these circumstances, the SCAQMD CEQA Guidelines do not require further evaluation of potential nuisance odors.

4.3.3. Impact: Air Quality Criteria B and C

- **Emissions from the project would violate any air quality standard or contribute substantially to an existing or projected air quality violation (Criterion B).**

Construction (Less than Significant, No Mitigation Required). The Project's construction emissions were quantified in Section 4.2.1, and found to be below applicable SCAQMD thresholds of significance. CalEEMod includes control measures which can reasonably be implemented as best management practices to reduce fugitive dust emissions. The following measures will be implemented by the Project and were included in the CalEEMod analysis of emissions.

- **Best Management Practices-1**: Water all active construction sites at least twice daily. Frequency should be based on the type of operation, soil, and wind exposure.

- **Best Management Practices-2**: Reduce travel speeds of onsite vehicles on unpaved roads and surfaces within the pipeline trench construction area to 15 miles per hour.

- **Best Management Practices-3**: Cover inactive storage piles.

- **Best Management Practices-4**: Sweep streets if visible solid material is carried out from the construction site.

Upon implementation of the above best management practices, the proposed Project's construction emissions will remain less than significant.

Operation (Less than Significant, No Mitigation Required). The Project's mobile source operations emissions would reduce over existing operations as discussed above in Section 4.2.2. The Project's stationary source emissions would have little to no change over existing operations as discussed above in Section 4.2.3. Therefore the proposed Project's operations emissions will be less than significant.

- **Emissions from the project would result in a cumulatively considerable net increase in any criteria pollutant for which the project region is nonattainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursor) (Criterion C) (Less than Significant, No Mitigation Required).**

SCAQMD's approach to assessing cumulative impacts dictates that a Project's contribution to cumulative impacts to regional air quality would be considered potentially significant if the Project's impact would be individually significant (i.e., exceeds the SCAQMD's quantitative thresholds). For a Project that would not individually cause a significant impact, the Project's contribution to any cumulative impact may be considered less than significant, provided that the Project is consistent with all applicable regional air quality plans. Because the proposed Project does not result in any significant air quality individually, and does not conflict with any applicable air quality plans, it is not considered to contribute to significant cumulative air quality impacts.

4.3.4. Impact: Greenhouse Gasses Criteria A and B

- **The project would generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment (Criterion A) (Less than Significant, No Mitigation Required).**

The proposed Project's construction emissions are presented in Tables 4-4 and 4-5 above, and were compared to the SCAQMD threshold of significance applicable to the GHG emissions from stationary sources. GHG emissions from both the construction phases are well below the applicable threshold and are therefore less than significant. The Project's mobile source operations emissions would reduce over existing operations as discussed above in Section 4.2.2. The Project's stationary source emissions would have little to no change over existing operations as discussed above in Section 4.2.3. For these reasons, the proposed Project's construction and operational emissions are considered to have less than significant GHG impacts.

- **The project would conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs. (Criterion B) (Less than Significant, No Mitigation Required).**

None of the proposed Project elements conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing GHG emissions. The proposed Project does not conflict with the goals of AB 32, will not hinder the implementation of any of the measures specified in the updated AB 32 Scoping Plan, and will comply with all GHG measures already adopted under AB 32 and other authorities. Similarly, the proposed Project does not conflict with the South Bay Cities Council of Governments Climate Action Plan.

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APPENDIX A: EMISSIONS SUMMARIES

Annual Construction Emissions

	Annual (tons/year)						Annual (MT/year)			
	ROG	NOx	CO	SOx	PM10	PM2.5	CO2	CH4	N2O	CO2e
Unmitigated Construction	0.2659	2.0129	1.3601	0.0023	0.3923	0.2542	195.5534	0.0482	0.0002	196.8089
Mitigated Construction	0.2659	2.0129	1.3601	0.0023	0.2482	0.1750	195.5533	0.0482	0.0002	196.8087
SCAQMD Thresholds	NA	NA	NA	NA	NA	NA	NA	NA	NA	10,000
Exceed Threshold (Yes/No)	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**No**

Maximum Daily Construction Emissions

	Daily (lbs/day)									
	ROG	NOx	CO	SOx	PM10	PM2.5	CO2	CH4	N2O	CO2e
Unmitigated Construction	8.4232	66.6671	42.9080	0.0905	10.1333	6.7515	8670.8711	1.5644	0.3551	8819.9983
Mitigated Construction	8.4232	66.6671	42.9080	0.0905	6.8211	4.9309	8670.8711	1.5644	0.3551	8819.9983
SCAQMD Thresholds	75	100	550	150	150	55	NA	NA	NA	NA
Exceed Threshold (Yes/No)	**No**	**No**	**No**	**No**	**No**	**No**	**NA**	**NA**	**NA**	**NA**

Operational Emissions - Electricity Usage

	CO2	CH4	N2O	CO2e
lbs/day	210.732	0.009	0.002	211.501
MT/year	34.889	0.001	0.000	35.016

Operational Emissions Reduction - Truck Displacement

	ROG	NOx	CO	SOx	PM10	PM2.5	CO2	CH4	N2O	CO2e
lbs/day	0.1917	4.4712	0.7078	0.0113	0.1608	0.1078	1196.0471	0.0089	0.1880	1252.294
tons/year	0.0350	0.8160	0.1292	0.0021	0.0293	0.0197	NA	NA	NA	NA
MT/year	NA	NA	NA	NA	NA	NA	198.019	0.001	0.031	207.3314

Construction Equipment Operational Hours

Pipeline Spread

Site Preparation				
Equipment	**Number**	**Hours/Day**	**HP**	**Load**
Cranes	2	6	231	0.29
Rubber Tired Dozers	2	4	247	0.4
Tractors/Loaders/ Backhoes	2	4	97	0.37
Trenchers	2	6	78	0.5
Welders	8	4	46	0.45

Equipment is standard pipeline construction equipment

HP and Load for equipment type are CalEEMod defaults

Paving				
Equipment	**Number**	**Hours/Day**	**HP**	**Load**
Cement and Motar Mixers	4	6	9	0.56
Pavers	1	7	130	0.42
Rollers	1	7	80	0.38
Tractors/Loaders/ Backhoes	1	7	97	0.37

Equipment type, number, Hours/Day, HP, and Load are CalEEMod defaults for Paving.

Construction Equipment Operational Hours

Pipeline Connections

Site Preparation				
Equipment	**Number**	**Hours/Day**	**HP**	**Load**
Cranes	1	4	231	0.29
Tractors/Loaders/ Backhoes	1	4	97	0.37
Trenchers	1	4	78	0.5
Welders	4	6	46	0.45

HP and Load for equipment type are CalEEMod defaults

Paramount Refinery Connections (Station Crew)

Site Preparation				
Equipment	**Number**	**Hours/Day**	**HP**	**Load**
Cranes	1	4	231	0.29
Tractors/Loaders/ Backhoes	1	4	97	0.37
Trenchers	1	4	78	0.5
Welders	4	6	46	0.45

HP and Load for equipment type are CalEEMod defaults

Pipeline Spread Construction Equipment and Worker Travel (CalEEMod)

Total project time: 20 weeks

		Criteria Pollutants						Greenhouse Gases (GHGs)			
	Year	**ROG**	**NOx**	**CO**	**SO2**	**PM10**	**PM2.5**	**CO2**	**CH4**	**N2O**	**CO2e**
Annual Emissions (tons/year for criteria pollutants; MT/year for GHGs)	2019	0.1943	1.5625	0.9820	1.70E-03	0.3621	0.2281	145.5700	0.0373	0.0000	146.5024
	2020	0.0104	0.0869	0.072	1.20E-04	0.0152	9.72E-03	10.5474	2.66E-03	0.0000	10.6139
	Max	**0.1943**	**1.5625**	**0.9820**	**1.70E-03**	**0.3621**	**0.2281**	**145.5700**	**0.0373**	**0.0000**	**146.5024**

		Criteria Pollutants						Greenhouse Gases (GHGs)			
	Year	**ROG**	**NOx**	**CO**	**SO2**	**PM10**	**PM2.5**	**CO2**	**CH4**	**N2O**	**CO2e**
Winter Maximum Daily Emissions (lbs/day)	2019	4.4817	35.9173	22.5411	0.0390	8.3300	5.2458	3683.1167	0.9448	0.0000	3706.7376
	2020	4.1204	33.6136	21.8099	0.0389	8.1557	5.0813	3618.6506	0.9276	0.0000	3641.8413
Summer Maximum Daily Emissions (lbs/day)	2019	4.4655	35.9055	22.6602	0.0392	8.3300	5.2458	3704.3633	0.9456	0.0000	3728.0020
	2020	4.1051	33.6031	21.9204	0.0391	8.1557	5.0813	3639.2584	0.9283	0.0000	3662.4653
Daily Emissions (lbs/day)	**Max**	**4.4817**	**35.9173**	**22.6602**	**0.0392**	**8.3300**	**5.2458**	**3704.3633**	**0.9456**	**0.0000**	**3728.0020**

Pipeline Spread T7 Tractor Truck Delivery (EMFAC2017)

Delivery of pipes

Based on:

Total One-way Trips: 8 [(2640 ft of pipe/12 ft per piece)/60 pieces per trip*2 for one way trips]

Miles/One-Way Trip: 85 (approximate distance from site location to farthest edge of LA County)

Total miles traveled: 680

	ROG	**NOx**	**CO**	**SOx**	**PM10**	**PM2.5**	**CO2**	**CH4**	**N2O**	**CO2e**
Emission Factor (grams/mile)	0.2415	5.6336	0.8918	0.0142	0.2026	0.1358	1506.9940	0.0112	0.2369	--
lbs/mile	0.0005	0.0124	0.0020	0.0000	0.0004	0.0003	3.3224	0.0000	0.0005	3.4848
lbs/year	0.3621	8.4456	1.3370	0.0213	0.3037	0.2035	2259.2000	0.0168	0.3551	2369.6387
lbs/day	0.3621	8.4456	1.3370	0.0213	0.3037	0.2035	2259.2000	0.0168	0.3551	2369.6387
tons/year	0.0002	0.0042	0.0007	0.0000	0.0002	0.0001	1.1296	0.0000	0.0002	1.1848

PM10 and PM2.5 emissions account for PM from running, tire wear and break wear.

Annual emissions are equivalent to daily emissions due to the assumption that deliveries all occur in one day.

Pipeline Connections Construction Equipment and Worker Travel (CalEEMod)

Total project time: 8 weeks

		Criteria Pollutants						Greenhouse Gases (GHGs)			
	Year	ROG	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O	CO2e
Annual Emissions (tons/year for criteria pollutants; MT/year for GHGs)	2019	0.0357	0.2231	0.1887	3.00E-04	0.0150	0.0130	24.4793	5.46E-03	0.0000	24.6158

		Criteria Pollutants						Greenhouse Gases (GHGs)			
	Year	ROG	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O	CO2e
Winter Maximum Daily Emissions (lbs/day)	2019	1.7897	11.1521	9.4268	0.0150	0.7498	0.6511	1347.2344	0.3009	0.0000	1354.7575
Summer Maximum Daily Emissions (lbs/day)	2019	1.7852	11.1487	9.4554	0.0150	0.7498	0.6511	1353.6539	0.3010	0.0000	1361.1788
Daily Emissions (lbs/day)	**Max**	**1.7897**	**11.1521**	**9.4554**	**0.0150**	**0.7498**	**0.6511**	**1353.6539**	**0.3010**	**0.0000**	**1361.1788**

Paramount Refinery Connections Construction Equipment and Worker Travel (CalEEMod)

Total project time: 8 weeks

		Criteria Pollutants						Greenhouse Gases (GHGs)			
	Year	ROG	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O	CO2e
Annual Emissions (tons/year for criteria pollutants; MT/year for GHGs)	2019	0.0357	0.2231	0.1887	3.00E-04	0.0150	0.0130	24.4793	5.46E-03	0.0000	24.6158

		Criteria Pollutants						Greenhouse Gases (GHGs)			
	Year	ROG	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O	CO2e
Winter Maximum Daily Emissions (lbs/day)	2019	1.7897	11.1521	9.4268	0.0150	0.7498	0.6511	1347.2344	0.3009	0.0000	1354.7575
Summer Maximum Daily Emissions (lbs/day)	2019	1.7852	11.1487	9.4554	0.0150	0.7498	0.6511	1353.6539	0.3010	0.0000	1361.1788
Daily Emissions (lbs/day)	**Max**	**1.7897**	**11.1521**	**9.4554**	**0.0150**	**0.7498**	**0.6511**	**1353.6539**	**0.3010**	**0.0000**	**1361.1788**

Maximum Total Project Construction Emissions

	Criteria Pollutants						Greenhouse Gases (GHGs)			
	ROG	NOx	CO	SOx	PM10	PM2.5	CO2	CH4	N2O	CO2e
Annual Emissions (tons/year for criteria pollutants; MT/year for GHGs)	0.2659	2.0129	1.3601	0.0023	0.3923	0.2542	195.5534	0.0482	0.0002	196.8089

	Criteria Pollutants						Greenhouse Gases (GHGs)			
	ROG	NOx	CO	SOx	PM10	PM2.5	CO2	CH4	N2O	CO2e
Max Daily (lbs/day)	8.4232	66.6671	42.9080	0.0905	10.1333	6.7515	8670.8711	1.5644	0.3551	8819.9983

Construction mitigation measures are watering exposed areas two times a day and posting 15 mph for all unpaved roads.

Pipeline Spread Construction Equipment and Worker Travel (CalEEMod)

Total project time: 20 weeks

		Criteria Pollutants						Greenhouse Gases (GHGs)			
	Year	**ROG**	**NOx**	**CO**	**SO2**	**PM10**	**PM2.5**	**CO2**	**CH4**	**N2O**	**CO2e**
Annual Emissions (tons/year for criteria pollutants; MT/year for GHGs)	2019	0.1943	1.5625	0.9820	1.70E-03	0.2180	0.1489	145.5699	0.0373	0.0000	146.5022
	2020	0.0104	0.0869	0.072	1.20E-04	0.0102	6.99E-03	10.5474	2.66E-03	0.0000	10.6139
	Max	**0.1943**	**1.5625**	**0.9820**	**0.0017**	**0.2180**	**0.1489**	**145.5699**	**0.0373**	**0.0000**	**146.5022**

		Criteria Pollutants						Greenhouse Gases (GHGs)			
	Year	**ROG**	**NOx**	**CO**	**SO2**	**PM10**	**PM2.5**	**CO2**	**CH4**	**N2O**	**CO2e**
Winter Maximum Daily Emissions (lbs/day)	2019	4.4817	35.9173	22.5411	0.0390	5.0178	3.4252	3683.1167	0.9448	0.0000	3706.7376
	2020	4.1204	33.6136	21.8099	0.0389	4.8435	3.2607	3618.6506	0.9276	0.0000	3641.8413
Summer Maximum Daily Emissions (lbs/day)	2019	4.4655	35.9055	22.6602	0.0392	5.0178	3.4252	3704.3633	0.9456	0.0000	3728.0020
	2020	4.1051	33.6031	21.9204	0.0391	4.8435	3.2607	3639.2584	0.9283	0.0000	3662.4653
Daily Emissions (lbs/day)	**Max**	**4.4817**	**35.9173**	**22.6602**	**0.0392**	**5.0178**	**3.4252**	**3704.3633**	**0.9456**	**0.0000**	**3728.0020**

Pipeline Spread T7 Tractor Truck Delivery (EMFAC2017)

Delivery of pipes

Based on:

One-way Trips:	8	[(2640 ft of pipe/12 ft per piece)/60 pieces per trip*2 for one way trips]
Miles/One-way Trip:	85	(approximate distance from site location to farthest edge of LA County)
Total miles traveled:	680	

	ROG	**NOx**	**CO**	**SOx**	**PM10**	**PM2.5**	**CO2**	**CH4**	**N2O**	**CO2e**
Emission Factor (grams/mile)	0.2415	5.6336	0.8918	0.0142	0.2026	0.1358	1506.9940	0.0112	0.2369	--
lbs/mile	0.0005	0.0124	0.0020	0.0000	0.0004	0.0003	3.3224	0.0000	0.0005	3.4848
lbs/year	0.3621	8.4456	1.3370	0.0213	0.3037	0.2035	2259.2000	0.0168	0.3551	2369.6387
lbs/day	0.3621	8.4456	1.3370	0.0213	0.3037	0.2035	2259.2000	0.0168	0.3551	2369.6387
tons/year	0.0002	0.0042	0.0007	0.0000	0.0002	0.0001	1.1296	0.0000	0.0002	1.1848

PM10 and PM2.5 emissions account for PM from running, tire wear and break wear.

Annual emissions are equivalent to daily emissions due to the assumption that deliveries all occur in one day.

Pipeline Connections Construction Equipment and Worker Travel (CalEEMod)

Total project time: 8 weeks

		Criteria Pollutants						Greenhouse Gases (GHGs)			
	Year	**ROG**	**NOx**	**CO**	**SO2**	**PM10**	**PM2.5**	**CO2**	**CH4**	**N2O**	**CO2e**
Annual Emissions (tons/year for criteria pollutants; MT/year for GHGs)	2019	0.0357	0.2231	0.1887	3.00E-04	0.0150	0.0130	24.4793	5.46E-03	0.0000	24.6158

		Criteria Pollutants						Greenhouse Gases (GHGs)			
	Year	**ROG**	**NOx**	**CO**	**SO2**	**PM10**	**PM2.5**	**CO2**	**CH4**	**N2O**	**CO2e**
Winter Maximum Daily Emissions (lbs/day)	2019	1.7897	11.1521	9.4268	0.0150	0.7498	0.6511	1347.2344	0.3009	0.0000	1354.7575
Summer Maximum Daily Emissions (lbs/day)	2019	1.7852	11.1487	9.4554	0.0150	0.7498	0.6511	1353.6539	0.3010	0.0000	1361.1788
Daily Emissions (lbs/day)	**Max**	**1.7897**	**11.1521**	**9.4554**	**0.0150**	**0.7498**	**0.6511**	**1353.6539**	**0.3010**	**0.0000**	**1361.1788**

Paramount Refinery Connections Construction Equipment and Worker Travel (CalEEMod)

Total project time: 8 weeks

		Criteria Pollutants						Greenhouse Gases (GHGs)			
	Year	ROG	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O	CO2e
Annual Emissions (tons/year for criteria pollutants; MT/year for GHGs)	2019	0.0357	0.2231	0.1887	3.00E-04	0.0150	0.0130	24.4793	5.46E-03	0.0000	24.6158

		Criteria Pollutants						Greenhouse Gases (GHGs)			
	Year	ROG	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O	CO2e
Winter Maximum Daily Emissions (lbs/day)	2019	1.7897	11.1521	9.4268	0.0150	0.7498	0.6511	1347.2344	0.3009	0.0000	1354.7575
Summer Maximum Daily Emissions (lbs/day)	2019	1.7852	11.1487	9.4554	0.0150	0.7498	0.6511	1353.6539	0.3010	0.0000	1361.1788
Daily Emissions (lbs/day)	**Max**	**1.7897**	**11.1521**	**9.4554**	**0.0150**	**0.7498**	**0.6511**	**1353.6539**	**0.3010**	**0.0000**	**1361.1788**

Maximum Total Project Construction Emissions

	Criteria Pollutants						Greenhouse Gases (GHGs)			
	ROG	NOx	CO	SOx	PM10	PM2.5	CO2	CH4	N2O	CO2e
Annual Emissions (tons/year for criteria pollutants; MT/year for GHGs)	0.2659	2.0129	1.3601	0.0023	0.2482	0.1750	195.5533	0.0482	0.0002	196.8087

	Criteria Pollutants						Greenhouse Gases (GHGs)			
	ROG	NOx	CO	SOx	PM10	PM2.5	CO2	CH4	N2O	CO2e
Max Daily (lbs/day)	8.4232	66.6671	42.9080	0.0905	6.8211	4.9309	8670.8711	1.5644	0.3551	8819.9983

Operational Electricity Emissions

Southern California Edison Electrical Utility Emission Factors

CO2 Intensity Factor	702.44	lb/MWhr
CH4 Intensity Factor	0.029	lb/MWhr
N2O Intensity Factor	0.00617	lb/MWhr
Conversion	0.00045	MT/lb

	Total Electricty Usage (kWhr)	Conversion Factor (MWhr/kWhr)	CO2 Emissions	CH4 Emissions	N2O Emissions	CO2e Emissions
Daily (lbs/day)	300	0.001	210.732	0.009	0.002	211.50
Annual (MT/yr)	109,500	0.001	34.89	0.00	0.00	35.02

2019 Hydrogen Delivery T7 Tractor Emissions - EMFAC2017

Daily delivery of hydrogen

Based on:

One-way Trips/year:	4380	(average of 6 trucks/day x 365 days a year x 2 for one way trips)
One-way Miles/Trip:	45	(minimum distance from site to closest LHY facility)
Total miles traveled/year:	197,100	

	ROG	NOx	CO	SOX	PM10[1]	PM2.5[1]	CO2	CH4	N2O	CO2e
Em. Factor (grams/mile)	0.2415	5.6336	0.8918	0.0142	0.2026	0.1358	1506.9940	0.0112	0.2369	
Lbs/Mile	0.0005	0.0124	0.0020	0.0000	0.0004	0.0003	3.3224	0.0000	0.0005	
Lbs/Year	104.946	2447.968	387.523	6.187	88.029	58.996	654,835.768	4.874	102.931	
lbs/day	0.2875	6.7068	1.0617	0.0169	0.2412	0.1616	1794.0706	0.0134	0.2820	1878.441
Tons/year	**0.052**	**1.224**	**0.194**	**0.003**	**0.044**	**0.029**	**NA**	**NA**	**NA**	**NA**
MT/year							**297.029**	**0.002**	**0.047**	**310.997**

[1] PM accounts for PM from running, tire wear and break wear.

Pipeline Spread

Los Angeles-South Coast County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Light Industry	7.92	1000sqft	0.18	7,920.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	11			**Operational Year**	2020
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use -

Construction Phase - Total project time = 20 weeks

Off-road Equipment -

Off-road Equipment - Standard pipeline construction equipment

Trips and VMT - Expected 20-40 workers for the bulk of the project (site preparation) = average 30 trips
Re-paving # of worker trips is CalEEMod default

Grading -

Construction Off-road Equipment Mitigation -

Pipeline Spread - Los Angeles-South Coast County, Winter

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	5.00	10.00
tblConstructionPhase	NumDays	1.00	90.00
tblGrading	AcresOfGrading	45.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	8.00
tblOffRoadEquipment	PhaseName		Site Preparation
tblOffRoadEquipment	PhaseName		Site Preparation
tblOffRoadEquipment	PhaseName		Site Preparation
tblOffRoadEquipment	PhaseName		Site Preparation
tblOffRoadEquipment	UsageHours	8.00	4.00
tblTripsAndVMT	WorkerTripNumber	43.00	30.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2019	4.4817	35.9173	22.5411	0.0390	6.3574	1.9725	8.3300	3.3992	1.8466	5.2458	0.0000	3,683.1167	3,683.1167	0.9448	0.0000	3,706.7376
2020	4.1204	33.6136	21.8099	0.0389	6.3574	1.7982	8.1557	3.3992	1.6822	5.0813	0.0000	3,618.6506	3,618.6506	0.9276	0.0000	3,641.8413
Maximum	**4.4817**	**35.9173**	**22.5411**	**0.0390**	**6.3574**	**1.9725**	**8.3300**	**3.3992**	**1.8466**	**5.2458**	**0.0000**	**3,683.1167**	**3,683.1167**	**0.9448**	**0.0000**	**3,706.7376**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2019	4.4817	35.9173	22.5411	0.0390	3.0453	1.9725	5.0178	1.5785	1.8466	3.4252	0.0000	3,683.1167	3,683.1167	0.9448	0.0000	3,706.7376
2020	4.1204	33.6136	21.8099	0.0389	3.0453	1.7982	4.8435	1.5785	1.6822	3.2607	0.0000	3,618.6506	3,618.6506	0.9276	0.0000	3,641.8413
Maximum	**4.4817**	**35.9173**	**22.5411**	**0.0390**	**3.0453**	**1.9725**	**5.0178**	**1.5785**	**1.8466**	**3.4252**	**0.0000**	**3,683.1167**	**3,683.1167**	**0.9448**	**0.0000**	**3,706.7376**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**52.10**	**0.00**	**40.18**	**53.56**	**0.00**	**35.26**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.1770	1.0000e-005	8.1000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		1.7300e-003	1.7300e-003	0.0000		1.8500e-003
Energy	4.2400e-003	0.0385	0.0323	2.3000e-004		2.9300e-003	2.9300e-003		2.9300e-003	2.9300e-003		46.2053	46.2053	8.9000e-004	8.5000e-004	46.4799
Mobile	0.1283	0.6686	1.8857	6.3400e-003	0.5198	6.6300e-003	0.5265	0.1391	6.2200e-003	0.1454		643.8421	643.8421	0.0356		644.7312
Total	**0.3096**	**0.7071**	**1.9189**	**6.5700e-003**	**0.5198**	**9.5600e-003**	**0.5294**	**0.1391**	**9.1500e-003**	**0.1483**		**690.0491**	**690.0491**	**0.0365**	**8.5000e-004**	**691.2129**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.1770	1.0000e-005	8.1000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		1.7300e-003	1.7300e-003	0.0000		1.8500e-003
Energy	4.2400e-003	0.0385	0.0323	2.3000e-004		2.9300e-003	2.9300e-003		2.9300e-003	2.9300e-003		46.2053	46.2053	8.9000e-004	8.5000e-004	46.4799
Mobile	0.1283	0.6686	1.8857	6.3400e-003	0.5198	6.6300e-003	0.5265	0.1391	6.2200e-003	0.1454		643.8421	643.8421	0.0356		644.7312
Total	**0.3096**	**0.7071**	**1.9189**	**6.5700e-003**	**0.5198**	**9.5600e-003**	**0.5294**	**0.1391**	**9.1500e-003**	**0.1483**		**690.0491**	**690.0491**	**0.0365**	**8.5000e-004**	**691.2129**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	9/2/2019	1/3/2020	5	90	
2	Re-Paving	Paving	1/6/2020	1/17/2020	5	10	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Pipeline Spread - Los Angeles-South Coast County, Winter

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Cranes	2	6.00	231	0.29
Site Preparation	Rubber Tired Dozers	2	4.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	2	4.00	97	0.37
Site Preparation	Trenchers	2	6.00	78	0.50
Site Preparation	Welders	8	4.00	46	0.45
Re-Paving	Cement and Mortar Mixers	4	6.00	9	0.56
Re-Paving	Pavers	1	7.00	130	0.42
Re-Paving	Rollers	1	7.00	80	0.38
Re-Paving	Tractors/Loaders/Backhoes	1	7.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	17	30.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Re-Paving	7	18.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Site Preparation - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.0221	0.0000	6.0221	3.3102	0.0000	3.3102			0.0000			0.0000
Off-Road	4.3156	35.7953	21.2137	0.0356		1.9696	1.9696		1.8440	1.8440		3,340.4775	3,340.4775	0.9331		3,363.8037
Total	**4.3156**	**35.7953**	**21.2137**	**0.0356**	**6.0221**	**1.9696**	**7.9917**	**3.3102**	**1.8440**	**5.1542**		**3,340.4775**	**3,340.4775**	**0.9331**		**3,363.8037**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1661	0.1220	1.3274	3.4400e-003	0.3353	2.8900e-003	0.3382	0.0889	2.6600e-003	0.0916		342.6392	342.6392	0.0118		342.9339
Total	**0.1661**	**0.1220**	**1.3274**	**3.4400e-003**	**0.3353**	**2.8900e-003**	**0.3382**	**0.0889**	**2.6600e-003**	**0.0916**		**342.6392**	**342.6392**	**0.0118**		**342.9339**

3.2 Site Preparation - 2019

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.7099	0.0000	2.7099	1.4896	0.0000	1.4896			0.0000			0.0000
Off-Road	4.3156	35.7953	21.2137	0.0356		1.9696	1.9696		1.8440	1.8440	0.0000	3,340.4775	3,340.4775	0.9331		3,363.8037
Total	**4.3156**	**35.7953**	**21.2137**	**0.0356**	**2.7099**	**1.9696**	**4.6796**	**1.4896**	**1.8440**	**3.3336**	**0.0000**	**3,340.4775**	**3,340.4775**	**0.9331**		**3,363.8037**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1661	0.1220	1.3274	3.4400e-003	0.3353	2.8900e-003	0.3382	0.0889	2.6600e-003	0.0916		342.6392	342.6392	0.0118		342.9339
Total	**0.1661**	**0.1220**	**1.3274**	**3.4400e-003**	**0.3353**	**2.8900e-003**	**0.3382**	**0.0889**	**2.6600e-003**	**0.0916**		**342.6392**	**342.6392**	**0.0118**		**342.9339**

3.2 Site Preparation - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.0221	0.0000	6.0221	3.3102	0.0000	3.3102			0.0000			0.0000
Off-Road	3.9670	33.5048	20.6069	0.0356		1.7954	1.7954		1.6796	1.6796		3,286.4245	3,286.4245	0.9172		3,309.3534
Total	**3.9670**	**33.5048**	**20.6069**	**0.0356**	**6.0221**	**1.7954**	**7.8175**	**3.3102**	**1.6796**	**4.9898**		**3,286.4245**	**3,286.4245**	**0.9172**		**3,309.3534**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1533	0.1087	1.2030	3.3400e-003	0.3353	2.8000e-003	0.3381	0.0889	2.5800e-003	0.0915		332.2261	332.2261	0.0105		332.4879
Total	**0.1533**	**0.1087**	**1.2030**	**3.3400e-003**	**0.3353**	**2.8000e-003**	**0.3381**	**0.0889**	**2.5800e-003**	**0.0915**		**332.2261**	**332.2261**	**0.0105**		**332.4879**

3.2 Site Preparation - 2020

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.7099	0.0000	2.7099	1.4896	0.0000	1.4896			0.0000			0.0000
Off-Road	3.9670	33.5048	20.6069	0.0356		1.7954	1.7954		1.6796	1.6796	0.0000	3,286.4245	3,286.4245	0.9172		3,309.3534
Total	**3.9670**	**33.5048**	**20.6069**	**0.0356**	**2.7099**	**1.7954**	**4.5054**	**1.4896**	**1.6796**	**3.1692**	**0.0000**	**3,286.4245**	**3,286.4245**	**0.9172**		**3,309.3534**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1533	0.1087	1.2030	3.3400e-003	0.3353	2.8000e-003	0.3381	0.0889	2.5800e-003	0.0915		332.2261	332.2261	0.0105		332.4879
Total	**0.1533**	**0.1087**	**1.2030**	**3.3400e-003**	**0.3353**	**2.8000e-003**	**0.3381**	**0.0889**	**2.5800e-003**	**0.0915**		**332.2261**	**332.2261**	**0.0105**		**332.4879**

3.3 Re-Paving - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.7716	7.2266	7.1128	0.0113		0.3950	0.3950		0.3669	0.3669		1,035.3926	1,035.3926	0.3016		1,042.9323
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.7716**	**7.2266**	**7.1128**	**0.0113**		**0.3950**	**0.3950**		**0.3669**	**0.3669**		**1,035.3926**	**1,035.3926**	**0.3016**		**1,042.9323**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0920	0.0652	0.7218	2.0000e-003	0.2012	1.6800e-003	0.2029	0.0534	1.5500e-003	0.0549		199.3357	199.3357	6.2800e-003		199.4927
Total	**0.0920**	**0.0652**	**0.7218**	**2.0000e-003**	**0.2012**	**1.6800e-003**	**0.2029**	**0.0534**	**1.5500e-003**	**0.0549**		**199.3357**	**199.3357**	**6.2800e-003**		**199.4927**

3.3 Re-Paving - 2020

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.7716	7.2266	7.1128	0.0113		0.3950	0.3950		0.3669	0.3669	0.0000	1,035.3926	1,035.3926	0.3016		1,042.9323
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.7716**	**7.2266**	**7.1128**	**0.0113**		**0.3950**	**0.3950**		**0.3669**	**0.3669**	**0.0000**	**1,035.3926**	**1,035.3926**	**0.3016**		**1,042.9323**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0920	0.0652	0.7218	2.0000e-003	0.2012	1.6800e-003	0.2029	0.0534	1.5500e-003	0.0549		199.3357	199.3357	6.2800e-003		199.4927
Total	**0.0920**	**0.0652**	**0.7218**	**2.0000e-003**	**0.2012**	**1.6800e-003**	**0.2029**	**0.0534**	**1.5500e-003**	**0.0549**		**199.3357**	**199.3357**	**6.2800e-003**		**199.4927**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.1283	0.6686	1.8857	6.3400e-003	0.5198	6.6300e-003	0.5265	0.1391	6.2200e-003	0.1454		643.8421	643.8421	0.0356		644.7312
Unmitigated	0.1283	0.6686	1.8857	6.3400e-003	0.5198	6.6300e-003	0.5265	0.1391	6.2200e-003	0.1454		643.8421	643.8421	0.0356		644.7312

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Light Industry	55.20	10.45	5.39	184,629	184,629
Total	55.20	10.45	5.39	184,629	184,629

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
General Light Industry	16.60	8.40	6.90	59.00	28.00	13.00	92	5	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
General Light Industry	0.547726	0.045437	0.201480	0.122768	0.016614	0.006090	0.019326	0.029174	0.002438	0.002359	0.005005	0.000677	0.000907

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	4.2400e-003	0.0385	0.0323	2.3000e-004		2.9300e-003	2.9300e-003		2.9300e-003	2.9300e-003		46.2053	46.2053	8.9000e-004	8.5000e-004	46.4799
NaturalGas Unmitigated	4.2400e-003	0.0385	0.0323	2.3000e-004		2.9300e-003	2.9300e-003		2.9300e-003	2.9300e-003		46.2053	46.2053	8.9000e-004	8.5000e-004	46.4799

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
General Light Industry	392.745	4.2400e-003	0.0385	0.0323	2.3000e-004		2.9300e-003	2.9300e-003		2.9300e-003	2.9300e-003		46.2053	46.2053	8.9000e-004	8.5000e-004	46.4799
Total		**4.2400e-003**	**0.0385**	**0.0323**	**2.3000e-004**		**2.9300e-003**	**2.9300e-003**		**2.9300e-003**	**2.9300e-003**		**46.2053**	**46.2053**	**8.9000e-004**	**8.5000e-004**	**46.4799**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
General Light Industry	0.392745	4.2400e-003	0.0385	0.0323	2.3000e-004		2.9300e-003	2.9300e-003		2.9300e-003	2.9300e-003		46.2053	46.2053	8.9000e-004	8.5000e-004	46.4799
Total		**4.2400e-003**	**0.0385**	**0.0323**	**2.3000e-004**		**2.9300e-003**	**2.9300e-003**		**2.9300e-003**	**2.9300e-003**		**46.2053**	**46.2053**	**8.9000e-004**	**8.5000e-004**	**46.4799**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.1770	1.0000e-005	8.1000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		1.7300e-003	1.7300e-003	0.0000		1.8500e-003
Unmitigated	0.1770	1.0000e-005	8.1000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		1.7300e-003	1.7300e-003	0.0000		1.8500e-003

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0201					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.1568					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	8.0000e-005	1.0000e-005	8.1000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		1.7300e-003	1.7300e-003	0.0000		1.8500e-003
Total	**0.1770**	**1.0000e-005**	**8.1000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**1.7300e-003**	**1.7300e-003**	**0.0000**		**1.8500e-003**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0201					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.1568					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	8.0000e-005	1.0000e-005	8.1000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		1.7300e-003	1.7300e-003	0.0000		1.8500e-003
Total	**0.1770**	**1.0000e-005**	**8.1000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**1.7300e-003**	**1.7300e-003**	**0.0000**		**1.8500e-003**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Pipeline Spread - Los Angeles-South Coast County, Winter

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Pipeline Spread

Los Angeles-South Coast County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Light Industry	7.92	1000sqft	0.18	7,920.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	11			**Operational Year**	2020
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use -

Construction Phase - Total project time = 20 weeks

Off-road Equipment -

Off-road Equipment - Standard pipeline construction equipment

Trips and VMT - Expected 20-40 workers for the bulk of the project (site preparation) = average 30 trips
Re-paving # of worker trips is CalEEMod default

Grading -

Construction Off-road Equipment Mitigation -

Pipeline Spread - Los Angeles-South Coast County, Summer

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	5.00	10.00
tblConstructionPhase	NumDays	1.00	90.00
tblGrading	AcresOfGrading	45.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	8.00
tblOffRoadEquipment	PhaseName		Site Preparation
tblOffRoadEquipment	PhaseName		Site Preparation
tblOffRoadEquipment	PhaseName		Site Preparation
tblOffRoadEquipment	PhaseName		Site Preparation
tblOffRoadEquipment	UsageHours	8.00	4.00
tblTripsAndVMT	WorkerTripNumber	43.00	30.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2019	4.4655	35.9055	22.6602	0.0392	6.3574	1.9725	8.3300	3.3992	1.8466	5.2458	0.0000	3,704.3633	3,704.3633	0.9456	0.0000	3,728.0020
2020	4.1051	33.6031	21.9204	0.0391	6.3574	1.7982	8.1557	3.3992	1.6822	5.0813	0.0000	3,639.2584	3,639.2584	0.9283	0.0000	3,662.4653
Maximum	**4.4655**	**35.9055**	**22.6602**	**0.0392**	**6.3574**	**1.9725**	**8.3300**	**3.3992**	**1.8466**	**5.2458**	**0.0000**	**3,704.3633**	**3,704.3633**	**0.9456**	**0.0000**	**3,728.0020**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2019	4.4655	35.9055	22.6602	0.0392	3.0453	1.9725	5.0178	1.5785	1.8466	3.4252	0.0000	3,704.3633	3,704.3633	0.9456	0.0000	3,728.0020
2020	4.1051	33.6031	21.9204	0.0391	3.0453	1.7982	4.8435	1.5785	1.6822	3.2607	0.0000	3,639.2584	3,639.2584	0.9283	0.0000	3,662.4653
Maximum	**4.4655**	**35.9055**	**22.6602**	**0.0392**	**3.0453**	**1.9725**	**5.0178**	**1.5785**	**1.8466**	**3.4252**	**0.0000**	**3,704.3633**	**3,704.3633**	**0.9456**	**0.0000**	**3,728.0020**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**52.10**	**0.00**	**40.18**	**53.56**	**0.00**	**35.26**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.1770	1.0000e-005	8.1000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		1.7300e-003	1.7300e-003	0.0000		1.8500e-003
Energy	4.2400e-003	0.0385	0.0323	2.3000e-004		2.9300e-003	2.9300e-003		2.9300e-003	2.9300e-003		46.2053	46.2053	8.9000e-004	8.5000e-004	46.4799
Mobile	0.1318	0.6472	2.0024	6.6600e-003	0.5198	6.6100e-003	0.5264	0.1391	6.2000e-003	0.1453		676.4165	676.4165	0.0359		677.3145
Total	**0.3131**	**0.6857**	**2.0355**	**6.8900e-003**	**0.5198**	**9.5400e-003**	**0.5294**	**0.1391**	**9.1300e-003**	**0.1483**		**722.6235**	**722.6235**	**0.0368**	**8.5000e-004**	**723.7962**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.1770	1.0000e-005	8.1000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		1.7300e-003	1.7300e-003	0.0000		1.8500e-003
Energy	4.2400e-003	0.0385	0.0323	2.3000e-004		2.9300e-003	2.9300e-003		2.9300e-003	2.9300e-003		46.2053	46.2053	8.9000e-004	8.5000e-004	46.4799
Mobile	0.1318	0.6472	2.0024	6.6600e-003	0.5198	6.6100e-003	0.5264	0.1391	6.2000e-003	0.1453		676.4165	676.4165	0.0359		677.3145
Total	**0.3131**	**0.6857**	**2.0355**	**6.8900e-003**	**0.5198**	**9.5400e-003**	**0.5294**	**0.1391**	**9.1300e-003**	**0.1483**		**722.6235**	**722.6235**	**0.0368**	**8.5000e-004**	**723.7962**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	9/2/2019	1/3/2020	5	90	
2	Re-Paving	Paving	1/6/2020	1/17/2020	5	10	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Pipeline Spread - Los Angeles-South Coast County, Summer

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Cranes	2	6.00	231	0.29
Site Preparation	Rubber Tired Dozers	2	4.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	2	4.00	97	0.37
Site Preparation	Trenchers	2	6.00	78	0.50
Site Preparation	Welders	8	4.00	46	0.45
Re-Paving	Cement and Mortar Mixers	4	6.00	9	0.56
Re-Paving	Pavers	1	7.00	130	0.42
Re-Paving	Rollers	1	7.00	80	0.38
Re-Paving	Tractors/Loaders/Backhoes	1	7.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	17	30.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Re-Paving	7	18.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Site Preparation - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.0221	0.0000	6.0221	3.3102	0.0000	3.3102			0.0000			0.0000
Off-Road	4.3156	35.7953	21.2137	0.0356		1.9696	1.9696		1.8440	1.8440		3,340.4775	3,340.4775	0.9331		3,363.8037
Total	**4.3156**	**35.7953**	**21.2137**	**0.0356**	**6.0221**	**1.9696**	**7.9917**	**3.3102**	**1.8440**	**5.1542**		**3,340.4775**	**3,340.4775**	**0.9331**		**3,363.8037**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1499	0.1102	1.4465	3.6600e-003	0.3353	2.8900e-003	0.3382	0.0889	2.6600e-003	0.0916		363.8859	363.8859	0.0125		364.1983
Total	**0.1499**	**0.1102**	**1.4465**	**3.6600e-003**	**0.3353**	**2.8900e-003**	**0.3382**	**0.0889**	**2.6600e-003**	**0.0916**		**363.8859**	**363.8859**	**0.0125**		**364.1983**

3.2 Site Preparation - 2019

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.7099	0.0000	2.7099	1.4896	0.0000	1.4896			0.0000			0.0000
Off-Road	4.3156	35.7953	21.2137	0.0356		1.9696	1.9696		1.8440	1.8440	0.0000	3,340.4775	3,340.4775	0.9331		3,363.8037
Total	**4.3156**	**35.7953**	**21.2137**	**0.0356**	**2.7099**	**1.9696**	**4.6796**	**1.4896**	**1.8440**	**3.3336**	**0.0000**	**3,340.4775**	**3,340.4775**	**0.9331**		**3,363.8037**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1499	0.1102	1.4465	3.6600e-003	0.3353	2.8900e-003	0.3382	0.0889	2.6600e-003	0.0916		363.8859	363.8859	0.0125		364.1983
Total	**0.1499**	**0.1102**	**1.4465**	**3.6600e-003**	**0.3353**	**2.8900e-003**	**0.3382**	**0.0889**	**2.6600e-003**	**0.0916**		**363.8859**	**363.8859**	**0.0125**		**364.1983**

3.2 Site Preparation - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.0221	0.0000	6.0221	3.3102	0.0000	3.3102			0.0000			0.0000
Off-Road	3.9670	33.5048	20.6069	0.0356		1.7954	1.7954		1.6796	1.6796		3,286.4245	3,286.4245	0.9172		3,309.3534
Total	**3.9670**	**33.5048**	**20.6069**	**0.0356**	**6.0221**	**1.7954**	**7.8175**	**3.3102**	**1.6796**	**4.9898**		**3,286.4245**	**3,286.4245**	**0.9172**		**3,309.3534**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1381	0.0982	1.3135	3.5400e-003	0.3353	2.8000e-003	0.3381	0.0889	2.5800e-003	0.0915		352.8339	352.8339	0.0111		353.1120
Total	**0.1381**	**0.0982**	**1.3135**	**3.5400e-003**	**0.3353**	**2.8000e-003**	**0.3381**	**0.0889**	**2.5800e-003**	**0.0915**		**352.8339**	**352.8339**	**0.0111**		**353.1120**

3.2 Site Preparation - 2020

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.7099	0.0000	2.7099	1.4896	0.0000	1.4896			0.0000			0.0000
Off-Road	3.9670	33.5048	20.6069	0.0356		1.7954	1.7954		1.6796	1.6796	0.0000	3,286.4245	3,286.4245	0.9172		3,309.3534
Total	**3.9670**	**33.5048**	**20.6069**	**0.0356**	**2.7099**	**1.7954**	**4.5054**	**1.4896**	**1.6796**	**3.1692**	**0.0000**	**3,286.4245**	**3,286.4245**	**0.9172**		**3,309.3534**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1381	0.0982	1.3135	3.5400e-003	0.3353	2.8000e-003	0.3381	0.0889	2.5800e-003	0.0915		352.8339	352.8339	0.0111		353.1120
Total	**0.1381**	**0.0982**	**1.3135**	**3.5400e-003**	**0.3353**	**2.8000e-003**	**0.3381**	**0.0889**	**2.5800e-003**	**0.0915**		**352.8339**	**352.8339**	**0.0111**		**353.1120**

3.3 Re-Paving - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.7716	7.2266	7.1128	0.0113		0.3950	0.3950		0.3669	0.3669		1,035.3926	1,035.3926	0.3016		1,042.9323
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.7716**	**7.2266**	**7.1128**	**0.0113**		**0.3950**	**0.3950**		**0.3669**	**0.3669**		**1,035.3926**	**1,035.3926**	**0.3016**		**1,042.9323**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0828	0.0589	0.7881	2.1300e-003	0.2012	1.6800e-003	0.2029	0.0534	1.5500e-003	0.0549		211.7003	211.7003	6.6700e-003		211.8672
Total	**0.0828**	**0.0589**	**0.7881**	**2.1300e-003**	**0.2012**	**1.6800e-003**	**0.2029**	**0.0534**	**1.5500e-003**	**0.0549**		**211.7003**	**211.7003**	**6.6700e-003**		**211.8672**

3.3 Re-Paving - 2020

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.7716	7.2266	7.1128	0.0113		0.3950	0.3950		0.3669	0.3669	0.0000	1,035.3926	1,035.3926	0.3016		1,042.9323
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.7716**	**7.2266**	**7.1128**	**0.0113**		**0.3950**	**0.3950**		**0.3669**	**0.3669**	**0.0000**	**1,035.3926**	**1,035.3926**	**0.3016**		**1,042.9323**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0828	0.0589	0.7881	2.1300e-003	0.2012	1.6800e-003	0.2029	0.0534	1.5500e-003	0.0549		211.7003	211.7003	6.6700e-003		211.8672
Total	**0.0828**	**0.0589**	**0.7881**	**2.1300e-003**	**0.2012**	**1.6800e-003**	**0.2029**	**0.0534**	**1.5500e-003**	**0.0549**		**211.7003**	**211.7003**	**6.6700e-003**		**211.8672**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.1318	0.6472	2.0024	6.6600e-003	0.5198	6.6100e-003	0.5264	0.1391	6.2000e-003	0.1453		676.4165	676.4165	0.0359		677.3145
Unmitigated	0.1318	0.6472	2.0024	6.6600e-003	0.5198	6.6100e-003	0.5264	0.1391	6.2000e-003	0.1453		676.4165	676.4165	0.0359		677.3145

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Light Industry	55.20	10.45	5.39	184,629	184,629
Total	55.20	10.45	5.39	184,629	184,629

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
General Light Industry	16.60	8.40	6.90	59.00	28.00	13.00	92	5	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
General Light Industry	0.547726	0.045437	0.201480	0.122768	0.016614	0.006090	0.019326	0.029174	0.002438	0.002359	0.005005	0.000677	0.000907

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	4.2400e-003	0.0385	0.0323	2.3000e-004		2.9300e-003	2.9300e-003		2.9300e-003	2.9300e-003		46.2053	46.2053	8.9000e-004	8.5000e-004	46.4799
NaturalGas Unmitigated	4.2400e-003	0.0385	0.0323	2.3000e-004		2.9300e-003	2.9300e-003		2.9300e-003	2.9300e-003		46.2053	46.2053	8.9000e-004	8.5000e-004	46.4799

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
General Light Industry	392.745	4.2400e-003	0.0385	0.0323	2.3000e-004		2.9300e-003	2.9300e-003		2.9300e-003	2.9300e-003		46.2053	46.2053	8.9000e-004	8.5000e-004	46.4799
Total		**4.2400e-003**	**0.0385**	**0.0323**	**2.3000e-004**		**2.9300e-003**	**2.9300e-003**		**2.9300e-003**	**2.9300e-003**		**46.2053**	**46.2053**	**8.9000e-004**	**8.5000e-004**	**46.4799**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
General Light Industry	0.392745	4.2400e-003	0.0385	0.0323	2.3000e-004		2.9300e-003	2.9300e-003		2.9300e-003	2.9300e-003		46.2053	46.2053	8.9000e-004	8.5000e-004	46.4799
Total		**4.2400e-003**	**0.0385**	**0.0323**	**2.3000e-004**		**2.9300e-003**	**2.9300e-003**		**2.9300e-003**	**2.9300e-003**		**46.2053**	**46.2053**	**8.9000e-004**	**8.5000e-004**	**46.4799**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.1770	1.0000e-005	8.1000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		1.7300e-003	1.7300e-003	0.0000		1.8500e-003
Unmitigated	0.1770	1.0000e-005	8.1000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		1.7300e-003	1.7300e-003	0.0000		1.8500e-003

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0201					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.1568					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	8.0000e-005	1.0000e-005	8.1000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		1.7300e-003	1.7300e-003	0.0000		1.8500e-003
Total	**0.1770**	**1.0000e-005**	**8.1000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**1.7300e-003**	**1.7300e-003**	**0.0000**		**1.8500e-003**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0201					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.1568					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	8.0000e-005	1.0000e-005	8.1000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		1.7300e-003	1.7300e-003	0.0000		1.8500e-003
Total	**0.1770**	**1.0000e-005**	**8.1000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**1.7300e-003**	**1.7300e-003**	**0.0000**		**1.8500e-003**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Pipeline Spread

Los Angeles-South Coast County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Light Industry	7.92	1000sqft	0.18	7,920.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	11			**Operational Year**	2020
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use -

Construction Phase - Total project time = 20 weeks

Off-road Equipment -

Off-road Equipment - Standard pipeline construction equipment

Trips and VMT - Expected 20-40 workers for the bulk of the project (site preparation) = average 30 trips
Re-paving # of worker trips is CalEEMod default

Grading -

Construction Off-road Equipment Mitigation -

Pipeline Spread - Los Angeles-South Coast County, Annual

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	5.00	10.00
tblConstructionPhase	NumDays	1.00	90.00
tblGrading	AcresOfGrading	45.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	8.00
tblOffRoadEquipment	PhaseName		Site Preparation
tblOffRoadEquipment	PhaseName		Site Preparation
tblOffRoadEquipment	PhaseName		Site Preparation
tblOffRoadEquipment	PhaseName		Site Preparation
tblOffRoadEquipment	UsageHours	8.00	4.00
tblTripsAndVMT	WorkerTripNumber	43.00	30.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2019	0.1943	1.5625	0.9820	1.7000e-003	0.2763	0.0858	0.3621	0.1478	0.0803	0.2281	0.0000	145.5700	145.5700	0.0373	0.0000	146.5024
2020	0.0104	0.0869	0.0720	1.2000e-004	0.0105	4.6800e-003	0.0152	5.3600e-003	4.3700e-003	9.7200e-003	0.0000	10.5474	10.5474	2.6600e-003	0.0000	10.6139
Maximum	**0.1943**	**1.5625**	**0.9820**	**1.7000e-003**	**0.2763**	**0.0858**	**0.3621**	**0.1478**	**0.0803**	**0.2281**	**0.0000**	**145.5700**	**145.5700**	**0.0373**	**0.0000**	**146.5024**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2019	0.1943	1.5625	0.9820	1.7000e-003	0.1322	0.0858	0.2180	0.0686	0.0803	0.1489	0.0000	145.5699	145.5699	0.0373	0.0000	146.5022
2020	0.0104	0.0869	0.0720	1.2000e-004	5.5400e-003	4.6800e-003	0.0102	2.6300e-003	4.3700e-003	6.9900e-003	0.0000	10.5474	10.5474	2.6600e-003	0.0000	10.6139
Maximum	**0.1943**	**1.5625**	**0.9820**	**1.7000e-003**	**0.1322**	**0.0858**	**0.2180**	**0.0686**	**0.0803**	**0.1489**	**0.0000**	**145.5699**	**145.5699**	**0.0373**	**0.0000**	**146.5022**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**51.98**	**0.00**	**39.51**	**53.49**	**0.00**	**34.45**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Pipeline Spread - Los Angeles-South Coast County, Annual

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	9-2-2019	12-1-2019	1.3127	1.3127
2	12-2-2019	3-1-2020	0.5082	0.5082
		Highest	1.3127	1.3127

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0323	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-004	2.0000e-004	0.0000	0.0000	2.1000e-004
Energy	7.7000e-004	7.0300e-003	5.9000e-003	4.0000e-005		5.3000e-004	5.3000e-004		5.3000e-004	5.3000e-004	0.0000	35.6605	35.6605	1.3000e-003	3.8000e-004	35.8061
Mobile	0.0173	0.0937	0.2636	8.8000e-004	0.0701	9.1000e-004	0.0710	0.0188	8.5000e-004	0.0196	0.0000	81.3755	81.3755	4.4300e-003	0.0000	81.4862
Waste						0.0000	0.0000		0.0000	0.0000	1.9934	0.0000	1.9934	0.1178	0.0000	4.9385
Water						0.0000	0.0000		0.0000	0.0000	0.5811	7.5985	8.1795	0.0600	1.4700e-003	10.1186
Total	**0.0504**	**0.1007**	**0.2696**	**9.2000e-004**	**0.0701**	**1.4400e-003**	**0.0715**	**0.0188**	**1.3800e-003**	**0.0202**	**2.5744**	**124.6346**	**127.2090**	**0.1835**	**1.8500e-003**	**132.3497**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0323	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-004	2.0000e-004	0.0000	0.0000	2.1000e-004
Energy	7.7000e-004	7.0300e-003	5.9000e-003	4.0000e-005		5.3000e-004	5.3000e-004		5.3000e-004	5.3000e-004	0.0000	35.6605	35.6605	1.3000e-003	3.8000e-004	35.8061
Mobile	0.0173	0.0937	0.2636	8.8000e-004	0.0701	9.1000e-004	0.0710	0.0188	8.5000e-004	0.0196	0.0000	81.3755	81.3755	4.4300e-003	0.0000	81.4862
Waste						0.0000	0.0000		0.0000	0.0000	1.9934	0.0000	1.9934	0.1178	0.0000	4.9385
Water						0.0000	0.0000		0.0000	0.0000	0.5811	7.5985	8.1795	0.0600	1.4700e-003	10.1186
Total	**0.0504**	**0.1007**	**0.2696**	**9.2000e-004**	**0.0701**	**1.4400e-003**	**0.0715**	**0.0188**	**1.3800e-003**	**0.0202**	**2.5744**	**124.6346**	**127.2090**	**0.1835**	**1.8500e-003**	**132.3497**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	9/2/2019	1/3/2020	5	90	
2	Re-Paving	Paving	1/6/2020	1/17/2020	5	10	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Cranes	2	6.00	231	0.29
Site Preparation	Rubber Tired Dozers	2	4.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	2	4.00	97	0.37
Site Preparation	Trenchers	2	6.00	78	0.50
Site Preparation	Welders	8	4.00	46	0.45
Re-Paving	Cement and Mortar Mixers	4	6.00	9	0.56
Re-Paving	Pavers	1	7.00	130	0.42
Re-Paving	Rollers	1	7.00	80	0.38
Re-Paving	Tractors/Loaders/Backhoes	1	7.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	17	30.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Re-Paving	7	18.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Site Preparation - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.2620	0.0000	0.2620	0.1440	0.0000	0.1440	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1877	1.5571	0.9228	1.5500e-003		0.0857	0.0857		0.0802	0.0802	0.0000	131.8237	131.8237	0.0368	0.0000	132.7442
Total	**0.1877**	**1.5571**	**0.9228**	**1.5500e-003**	**0.2620**	**0.0857**	**0.3476**	**0.1440**	**0.0802**	**0.2242**	**0.0000**	**131.8237**	**131.8237**	**0.0368**	**0.0000**	**132.7442**

3.2 Site Preparation - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.5400e-003	5.4500e-003	0.0593	1.5000e-004	0.0143	1.3000e-004	0.0144	3.8000e-003	1.2000e-004	3.9100e-003	0.0000	13.7463	13.7463	4.7000e-004	0.0000	13.7581
Total	**6.5400e-003**	**5.4500e-003**	**0.0593**	**1.5000e-004**	**0.0143**	**1.3000e-004**	**0.0144**	**3.8000e-003**	**1.2000e-004**	**3.9100e-003**	**0.0000**	**13.7463**	**13.7463**	**4.7000e-004**	**0.0000**	**13.7581**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1179	0.0000	0.1179	0.0648	0.0000	0.0648	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1877	1.5571	0.9228	1.5500e-003		0.0857	0.0857		0.0802	0.0802	0.0000	131.8236	131.8236	0.0368	0.0000	132.7441
Total	**0.1877**	**1.5571**	**0.9228**	**1.5500e-003**	**0.1179**	**0.0857**	**0.2036**	**0.0648**	**0.0802**	**0.1450**	**0.0000**	**131.8236**	**131.8236**	**0.0368**	**0.0000**	**132.7441**

3.2 Site Preparation - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.5400e-003	5.4500e-003	0.0593	1.5000e-004	0.0143	1.3000e-004	0.0144	3.8000e-003	1.2000e-004	3.9100e-003	0.0000	13.7463	13.7463	4.7000e-004	0.0000	13.7581
Total	**6.5400e-003**	**5.4500e-003**	**0.0593**	**1.5000e-004**	**0.0143**	**1.3000e-004**	**0.0144**	**3.8000e-003**	**1.2000e-004**	**3.9100e-003**	**0.0000**	**13.7463**	**13.7463**	**4.7000e-004**	**0.0000**	**13.7581**

3.2 Site Preparation - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					9.0300e-003	0.0000	9.0300e-003	4.9700e-003	0.0000	4.9700e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	5.9500e-003	0.0503	0.0309	5.0000e-005		2.6900e-003	2.6900e-003		2.5200e-003	2.5200e-003	0.0000	4.4721	4.4721	1.2500e-003	0.0000	4.5033
Total	**5.9500e-003**	**0.0503**	**0.0309**	**5.0000e-005**	**9.0300e-003**	**2.6900e-003**	**0.0117**	**4.9700e-003**	**2.5200e-003**	**7.4900e-003**	**0.0000**	**4.4721**	**4.4721**	**1.2500e-003**	**0.0000**	**4.5033**

3.2 Site Preparation - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.1000e-004	1.7000e-004	1.8500e-003	1.0000e-005	4.9000e-004	0.0000	5.0000e-004	1.3000e-004	0.0000	1.3000e-004	0.0000	0.4596	0.4596	1.0000e-005	0.0000	0.4600
Total	**2.1000e-004**	**1.7000e-004**	**1.8500e-003**	**1.0000e-005**	**4.9000e-004**	**0.0000**	**5.0000e-004**	**1.3000e-004**	**0.0000**	**1.3000e-004**	**0.0000**	**0.4596**	**0.4596**	**1.0000e-005**	**0.0000**	**0.4600**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					4.0600e-003	0.0000	4.0600e-003	2.2300e-003	0.0000	2.2300e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	5.9500e-003	0.0503	0.0309	5.0000e-005		2.6900e-003	2.6900e-003		2.5200e-003	2.5200e-003	0.0000	4.4721	4.4721	1.2500e-003	0.0000	4.5033
Total	**5.9500e-003**	**0.0503**	**0.0309**	**5.0000e-005**	**4.0600e-003**	**2.6900e-003**	**6.7500e-003**	**2.2300e-003**	**2.5200e-003**	**4.7500e-003**	**0.0000**	**4.4721**	**4.4721**	**1.2500e-003**	**0.0000**	**4.5033**

3.2 Site Preparation - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.1000e-004	1.7000e-004	1.8500e-003	1.0000e-005	4.9000e-004	0.0000	5.0000e-004	1.3000e-004	0.0000	1.3000e-004	0.0000	0.4596	0.4596	1.0000e-005	0.0000	0.4600
Total	**2.1000e-004**	**1.7000e-004**	**1.8500e-003**	**1.0000e-005**	**4.9000e-004**	**0.0000**	**5.0000e-004**	**1.3000e-004**	**0.0000**	**1.3000e-004**	**0.0000**	**0.4596**	**0.4596**	**1.0000e-005**	**0.0000**	**0.4600**

3.3 Re-Paving - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	3.8600e-003	0.0361	0.0356	6.0000e-005		1.9800e-003	1.9800e-003		1.8300e-003	1.8300e-003	0.0000	4.6965	4.6965	1.3700e-003	0.0000	4.7307
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**3.8600e-003**	**0.0361**	**0.0356**	**6.0000e-005**		**1.9800e-003**	**1.9800e-003**		**1.8300e-003**	**1.8300e-003**	**0.0000**	**4.6965**	**4.6965**	**1.3700e-003**	**0.0000**	**4.7307**

3.3 Re-Paving - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.2000e-004	3.4000e-004	3.7000e-003	1.0000e-005	9.9000e-004	1.0000e-005	9.9000e-004	2.6000e-004	1.0000e-005	2.7000e-004	0.0000	0.9192	0.9192	3.0000e-005	0.0000	0.9199
Total	**4.2000e-004**	**3.4000e-004**	**3.7000e-003**	**1.0000e-005**	**9.9000e-004**	**1.0000e-005**	**9.9000e-004**	**2.6000e-004**	**1.0000e-005**	**2.7000e-004**	**0.0000**	**0.9192**	**0.9192**	**3.0000e-005**	**0.0000**	**0.9199**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	3.8600e-003	0.0361	0.0356	6.0000e-005		1.9800e-003	1.9800e-003		1.8300e-003	1.8300e-003	0.0000	4.6965	4.6965	1.3700e-003	0.0000	4.7307
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**3.8600e-003**	**0.0361**	**0.0356**	**6.0000e-005**		**1.9800e-003**	**1.9800e-003**		**1.8300e-003**	**1.8300e-003**	**0.0000**	**4.6965**	**4.6965**	**1.3700e-003**	**0.0000**	**4.7307**

3.3 Re-Paving - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.2000e-004	3.4000e-004	3.7000e-003	1.0000e-005	9.9000e-004	1.0000e-005	9.9000e-004	2.6000e-004	1.0000e-005	2.7000e-004	0.0000	0.9192	0.9192	3.0000e-005	0.0000	0.9199
Total	**4.2000e-004**	**3.4000e-004**	**3.7000e-003**	**1.0000e-005**	**9.9000e-004**	**1.0000e-005**	**9.9000e-004**	**2.6000e-004**	**1.0000e-005**	**2.7000e-004**	**0.0000**	**0.9192**	**0.9192**	**3.0000e-005**	**0.0000**	**0.9199**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0173	0.0937	0.2636	8.8000e-004	0.0701	9.1000e-004	0.0710	0.0188	8.5000e-004	0.0196	0.0000	81.3755	81.3755	4.4300e-003	0.0000	81.4862
Unmitigated	0.0173	0.0937	0.2636	8.8000e-004	0.0701	9.1000e-004	0.0710	0.0188	8.5000e-004	0.0196	0.0000	81.3755	81.3755	4.4300e-003	0.0000	81.4862

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Light Industry	55.20	10.45	5.39	184,629	184,629
Total	55.20	10.45	5.39	184,629	184,629

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
General Light Industry	16.60	8.40	6.90	59.00	28.00	13.00	92	5	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
General Light Industry	0.547726	0.045437	0.201480	0.122768	0.016614	0.006090	0.019326	0.029174	0.002438	0.002359	0.005005	0.000677	0.000907

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	28.0107	28.0107	1.1600e-003	2.4000e-004	28.1109
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	28.0107	28.0107	1.1600e-003	2.4000e-004	28.1109
NaturalGas Mitigated	7.7000e-004	7.0300e-003	5.9000e-003	4.0000e-005		5.3000e-004	5.3000e-004		5.3000e-004	5.3000e-004	0.0000	7.6498	7.6498	1.5000e-004	1.4000e-004	7.6953
NaturalGas Unmitigated	7.7000e-004	7.0300e-003	5.9000e-003	4.0000e-005		5.3000e-004	5.3000e-004		5.3000e-004	5.3000e-004	0.0000	7.6498	7.6498	1.5000e-004	1.4000e-004	7.6953

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
General Light Industry	143352	7.7000e-004	7.0300e-003	5.9000e-003	4.0000e-005		5.3000e-004	5.3000e-004		5.3000e-004	5.3000e-004	0.0000	7.6498	7.6498	1.5000e-004	1.4000e-004	7.6953
Total		**7.7000e-004**	**7.0300e-003**	**5.9000e-003**	**4.0000e-005**		**5.3000e-004**	**5.3000e-004**		**5.3000e-004**	**5.3000e-004**	**0.0000**	**7.6498**	**7.6498**	**1.5000e-004**	**1.4000e-004**	**7.6953**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
General Light Industry	143352	7.7000e-004	7.0300e-003	5.9000e-003	4.0000e-005		5.3000e-004	5.3000e-004		5.3000e-004	5.3000e-004	0.0000	7.6498	7.6498	1.5000e-004	1.4000e-004	7.6953
Total		**7.7000e-004**	**7.0300e-003**	**5.9000e-003**	**4.0000e-005**		**5.3000e-004**	**5.3000e-004**		**5.3000e-004**	**5.3000e-004**	**0.0000**	**7.6498**	**7.6498**	**1.5000e-004**	**1.4000e-004**	**7.6953**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Light Industry	87912	28.0107	1.1600e-003	2.4000e-004	28.1109
Total		**28.0107**	**1.1600e-003**	**2.4000e-004**	**28.1109**

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Light Industry	87912	28.0107	1.1600e-003	2.4000e-004	28.1109
Total		**28.0107**	**1.1600e-003**	**2.4000e-004**	**28.1109**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0323	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-004	2.0000e-004	0.0000	0.0000	2.1000e-004
Unmitigated	0.0323	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-004	2.0000e-004	0.0000	0.0000	2.1000e-004

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	3.6700e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0286					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-004	2.0000e-004	0.0000	0.0000	2.1000e-004
Total	**0.0323**	**0.0000**	**1.0000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**2.0000e-004**	**2.0000e-004**	**0.0000**	**0.0000**	**2.1000e-004**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	3.6700e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0286					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-004	2.0000e-004	0.0000	0.0000	2.1000e-004
Total	**0.0323**	**0.0000**	**1.0000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**2.0000e-004**	**2.0000e-004**	**0.0000**	**0.0000**	**2.1000e-004**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	8.1795	0.0600	1.4700e-003	10.1186
Unmitigated	8.1795	0.0600	1.4700e-003	10.1186

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Light Industry	1.8315 / 0	8.1795	0.0600	1.4700e-003	10.1186
Total		**8.1795**	**0.0600**	**1.4700e-003**	**10.1186**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Light Industry	1.8315 / 0	8.1795	0.0600	1.4700e-003	10.1186
Total		**8.1795**	**0.0600**	**1.4700e-003**	**10.1186**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	1.9934	0.1178	0.0000	4.9385
Unmitigated	1.9934	0.1178	0.0000	4.9385

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Light Industry	9.82	1.9934	0.1178	0.0000	4.9385
Total		**1.9934**	**0.1178**	**0.0000**	**4.9385**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Light Industry	9.82	1.9934	0.1178	0.0000	4.9385
Total		**1.9934**	**0.1178**	**0.0000**	**4.9385**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

ASV and Pipeline Connections

Los Angeles-South Coast County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Light Industry	5.00	1000sqft	0.11	5,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	9			**Operational Year**	2019
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use -

Construction Phase - Expected timeline is 8 weeks

Off-road Equipment - Construction activities only include welding of piping

Trips and VMT - Expected 5-10 workers = average 8 workers

Vehicle Trips -

Construction Off-road Equipment Mitigation -

ASV and Pipeline Connections - Los Angeles-South Coast County, Winter

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	100.00	40.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	4.00
tblOffRoadEquipment	PhaseName		Building Construction
tblOffRoadEquipment	PhaseName		Building Construction
tblOffRoadEquipment	UsageHours	8.00	4.00
tblTripsAndVMT	WorkerTripNumber	2.00	8.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2019	1.7897	11.1521	9.4268	0.0150	0.0958	0.6540	0.7498	0.0256	0.6256	0.6511	0.0000	1,347.2344	1,347.2344	0.3009	0.0000	1,354.7575
Maximum	**1.7897**	**11.1521**	**9.4268**	**0.0150**	**0.0958**	**0.6540**	**0.7498**	**0.0256**	**0.6256**	**0.6511**	**0.0000**	**1,347.2344**	**1,347.2344**	**0.3009**	**0.0000**	**1,354.7575**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2019	1.7897	11.1521	9.4268	0.0150	0.0958	0.6540	0.7498	0.0256	0.6256	0.6511	0.0000	1,347.2344	1,347.2344	0.3009	0.0000	1,354.7575
Maximum	**1.7897**	**11.1521**	**9.4268**	**0.0150**	**0.0958**	**0.6540**	**0.7498**	**0.0256**	**0.6256**	**0.6511**	**0.0000**	**1,347.2344**	**1,347.2344**	**0.3009**	**0.0000**	**1,354.7575**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.1118	0.0000	5.2000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		1.0900e-003	1.0900e-003	0.0000		1.1700e-003
Energy	2.6700e-003	0.0243	0.0204	1.5000e-004		1.8500e-003	1.8500e-003		1.8500e-003	1.8500e-003		29.1700	29.1700	5.6000e-004	5.3000e-004	29.3434
Mobile	0.0886	0.4586	1.3013	4.1000e-003	0.3282	4.8500e-003	0.3330	0.0879	4.5600e-003	0.0924		416.0915	416.0915	0.0242		416.6963
Total	**0.2030**	**0.4829**	**1.3222**	**4.2500e-003**	**0.3282**	**6.7000e-003**	**0.3349**	**0.0879**	**6.4100e-003**	**0.0943**		**445.2626**	**445.2626**	**0.0248**	**5.3000e-004**	**446.0409**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.1118	0.0000	5.2000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		1.0900e-003	1.0900e-003	0.0000		1.1700e-003
Energy	2.6700e-003	0.0243	0.0204	1.5000e-004		1.8500e-003	1.8500e-003		1.8500e-003	1.8500e-003		29.1700	29.1700	5.6000e-004	5.3000e-004	29.3434
Mobile	0.0886	0.4586	1.3013	4.1000e-003	0.3282	4.8500e-003	0.3330	0.0879	4.5600e-003	0.0924		416.0915	416.0915	0.0242		416.6963
Total	**0.2030**	**0.4829**	**1.3222**	**4.2500e-003**	**0.3282**	**6.7000e-003**	**0.3349**	**0.0879**	**6.4100e-003**	**0.0943**		**445.2626**	**445.2626**	**0.0248**	**5.3000e-004**	**446.0409**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Building Construction	Building Construction	9/2/2019	10/25/2019	5	40	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Building Construction	Cranes	1	4.00	231	0.29
Building Construction	Tractors/Loaders/Backhoes	1	4.00	97	0.37
Building Construction	Trenchers	1	4.00	78	0.50
Building Construction	Welders	4	6.00	46	0.45

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Building Construction	7	8.00	1.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Building Construction - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.7411	11.0036	9.0389	0.0138		0.6524	0.6524		0.6242	0.6242		1,228.7362	1,228.7362	0.2959		1,236.1331
Total	**1.7411**	**11.0036**	**9.0389**	**0.0138**		**0.6524**	**0.6524**		**0.6242**	**0.6242**		**1,228.7362**	**1,228.7362**	**0.2959**		**1,236.1331**

3.2 Building Construction - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	4.3300e-003	0.1159	0.0339	2.5000e-004	6.4000e-003	7.5000e-004	7.1500e-003	1.8400e-003	7.2000e-004	2.5600e-003		27.1277	27.1277	1.9100e-003		27.1754
Worker	0.0443	0.0325	0.3540	9.2000e-004	0.0894	7.7000e-004	0.0902	0.0237	7.1000e-004	0.0244		91.3705	91.3705	3.1400e-003		91.4491
Total	**0.0486**	**0.1484**	**0.3878**	**1.1700e-003**	**0.0958**	**1.5200e-003**	**0.0973**	**0.0256**	**1.4300e-003**	**0.0270**		**118.4982**	**118.4982**	**5.0500e-003**		**118.6244**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.7411	11.0036	9.0389	0.0138		0.6524	0.6524		0.6242	0.6242	0.0000	1,228.7362	1,228.7362	0.2959		1,236.1331
Total	**1.7411**	**11.0036**	**9.0389**	**0.0138**		**0.6524**	**0.6524**		**0.6242**	**0.6242**	**0.0000**	**1,228.7362**	**1,228.7362**	**0.2959**		**1,236.1331**

3.2 Building Construction - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	4.3300e-003	0.1159	0.0339	2.5000e-004	6.4000e-003	7.5000e-004	7.1500e-003	1.8400e-003	7.2000e-004	2.5600e-003		27.1277	27.1277	1.9100e-003		27.1754
Worker	0.0443	0.0325	0.3540	9.2000e-004	0.0894	7.7000e-004	0.0902	0.0237	7.1000e-004	0.0244		91.3705	91.3705	3.1400e-003		91.4491
Total	**0.0486**	**0.1484**	**0.3878**	**1.1700e-003**	**0.0958**	**1.5200e-003**	**0.0973**	**0.0256**	**1.4300e-003**	**0.0270**		**118.4982**	**118.4982**	**5.0500e-003**		**118.6244**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0886	0.4586	1.3013	4.1000e-003	0.3282	4.8500e-003	0.3330	0.0879	4.5600e-003	0.0924		416.0915	416.0915	0.0242		416.6963
Unmitigated	0.0886	0.4586	1.3013	4.1000e-003	0.3282	4.8500e-003	0.3330	0.0879	4.5600e-003	0.0924		416.0915	416.0915	0.0242		416.6963

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Light Industry	34.85	6.60	3.40	116,559	116,559
Total	34.85	6.60	3.40	116,559	116,559

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
General Light Industry	16.60	8.40	6.90	59.00	28.00	13.00	92	5	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
General Light Industry	0.548007	0.045751	0.200309	0.124119	0.017133	0.006025	0.018861	0.028423	0.002391	0.002469	0.004915	0.000672	0.000925

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	2.6700e-003	0.0243	0.0204	1.5000e-004		1.8500e-003	1.8500e-003		1.8500e-003	1.8500e-003		29.1700	29.1700	5.6000e-004	5.3000e-004	29.3434
NaturalGas Unmitigated	2.6700e-003	0.0243	0.0204	1.5000e-004		1.8500e-003	1.8500e-003		1.8500e-003	1.8500e-003		29.1700	29.1700	5.6000e-004	5.3000e-004	29.3434

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
General Light Industry	247.945	2.6700e-003	0.0243	0.0204	1.5000e-004		1.8500e-003	1.8500e-003		1.8500e-003	1.8500e-003		29.1700	29.1700	5.6000e-004	5.3000e-004	29.3434
Total		**2.6700e-003**	**0.0243**	**0.0204**	**1.5000e-004**		**1.8500e-003**	**1.8500e-003**		**1.8500e-003**	**1.8500e-003**		**29.1700**	**29.1700**	**5.6000e-004**	**5.3000e-004**	**29.3434**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
General Light Industry	0.247945	2.6700e-003	0.0243	0.0204	1.5000e-004		1.8500e-003	1.8500e-003		1.8500e-003	1.8500e-003		29.1700	29.1700	5.6000e-004	5.3000e-004	29.3434
Total		**2.6700e-003**	**0.0243**	**0.0204**	**1.5000e-004**		**1.8500e-003**	**1.8500e-003**		**1.8500e-003**	**1.8500e-003**		**29.1700**	**29.1700**	**5.6000e-004**	**5.3000e-004**	**29.3434**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.1118	0.0000	5.2000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		1.0900e-003	1.0900e-003	0.0000		1.1700e-003
Unmitigated	0.1118	0.0000	5.2000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		1.0900e-003	1.0900e-003	0.0000		1.1700e-003

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0127					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0990					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	5.0000e-005	0.0000	5.2000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		1.0900e-003	1.0900e-003	0.0000		1.1700e-003
Total	**0.1118**	**0.0000**	**5.2000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**1.0900e-003**	**1.0900e-003**	**0.0000**		**1.1700e-003**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0127					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0990					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	5.0000e-005	0.0000	5.2000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		1.0900e-003	1.0900e-003	0.0000		1.1700e-003
Total	**0.1118**	**0.0000**	**5.2000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**1.0900e-003**	**1.0900e-003**	**0.0000**		**1.1700e-003**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

ASV and Pipeline Connections

Los Angeles-South Coast County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Light Industry	5.00	1000sqft	0.11	5,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	9			**Operational Year**	2019
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use -

Construction Phase - Expected timeline is 8 weeks

Off-road Equipment - Construction activities only include welding of piping

Trips and VMT - Expected 5-10 workers = average 8 workers

Vehicle Trips -

Construction Off-road Equipment Mitigation -

ASV and Pipeline Connections - Los Angeles-South Coast County, Summer

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	100.00	40.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	4.00
tblOffRoadEquipment	PhaseName		Building Construction
tblOffRoadEquipment	PhaseName		Building Construction
tblOffRoadEquipment	UsageHours	8.00	4.00
tblTripsAndVMT	WorkerTripNumber	2.00	8.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2019	1.7852	11.1487	9.4554	0.0150	0.0958	0.6539	0.7498	0.0256	0.6256	0.6511	0.0000	1,353.6539	1,353.6539	0.3010	0.0000	1,361.1788
Maximum	**1.7852**	**11.1487**	**9.4554**	**0.0150**	**0.0958**	**0.6539**	**0.7498**	**0.0256**	**0.6256**	**0.6511**	**0.0000**	**1,353.6539**	**1,353.6539**	**0.3010**	**0.0000**	**1,361.1788**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2019	1.7852	11.1487	9.4554	0.0150	0.0958	0.6539	0.7498	0.0256	0.6256	0.6511	0.0000	1,353.6539	1,353.6539	0.3010	0.0000	1,361.1788
Maximum	**1.7852**	**11.1487**	**9.4554**	**0.0150**	**0.0958**	**0.6539**	**0.7498**	**0.0256**	**0.6256**	**0.6511**	**0.0000**	**1,353.6539**	**1,353.6539**	**0.3010**	**0.0000**	**1,361.1788**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.1118	0.0000	5.2000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		1.0900e-003	1.0900e-003	0.0000		1.1700e-003
Energy	2.6700e-003	0.0243	0.0204	1.5000e-004		1.8500e-003	1.8500e-003		1.8500e-003	1.8500e-003		29.1700	29.1700	5.6000e-004	5.3000e-004	29.3434
Mobile	0.0909	0.4432	1.3807	4.3100e-003	0.3282	4.8300e-003	0.3330	0.0879	4.5400e-003	0.0924		437.2542	437.2542	0.0245		437.8657
Total	**0.2053**	**0.4675**	**1.4017**	**4.4600e-003**	**0.3282**	**6.6800e-003**	**0.3349**	**0.0879**	**6.3900e-003**	**0.0942**		**466.4253**	**466.4253**	**0.0250**	**5.3000e-004**	**467.2102**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.1118	0.0000	5.2000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		1.0900e-003	1.0900e-003	0.0000		1.1700e-003
Energy	2.6700e-003	0.0243	0.0204	1.5000e-004		1.8500e-003	1.8500e-003		1.8500e-003	1.8500e-003		29.1700	29.1700	5.6000e-004	5.3000e-004	29.3434
Mobile	0.0909	0.4432	1.3807	4.3100e-003	0.3282	4.8300e-003	0.3330	0.0879	4.5400e-003	0.0924		437.2542	437.2542	0.0245		437.8657
Total	**0.2053**	**0.4675**	**1.4017**	**4.4600e-003**	**0.3282**	**6.6800e-003**	**0.3349**	**0.0879**	**6.3900e-003**	**0.0942**		**466.4253**	**466.4253**	**0.0250**	**5.3000e-004**	**467.2102**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Building Construction	Building Construction	9/2/2019	10/25/2019	5	40	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Building Construction	Cranes	1	4.00	231	0.29
Building Construction	Tractors/Loaders/Backhoes	1	4.00	97	0.37
Building Construction	Trenchers	1	4.00	78	0.50
Building Construction	Welders	4	6.00	46	0.45

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Building Construction	7	8.00	1.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Building Construction - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.7411	11.0036	9.0389	0.0138		0.6524	0.6524		0.6242	0.6242		1,228.7362	1,228.7362	0.2959		1,236.1331
Total	**1.7411**	**11.0036**	**9.0389**	**0.0138**		**0.6524**	**0.6524**		**0.6242**	**0.6242**		**1,228.7362**	**1,228.7362**	**0.2959**		**1,236.1331**

3.2 Building Construction - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	4.1600e-003	0.1157	0.0307	2.6000e-004	6.4000e-003	7.4000e-004	7.1400e-003	1.8400e-003	7.1000e-004	2.5500e-003		27.8815	27.8815	1.7900e-003		27.9261
Worker	0.0400	0.0294	0.3857	9.7000e-004	0.0894	7.7000e-004	0.0902	0.0237	7.1000e-004	0.0244		97.0362	97.0362	3.3300e-003		97.1196
Total	**0.0441**	**0.1451**	**0.4164**	**1.2300e-003**	**0.0958**	**1.5100e-003**	**0.0973**	**0.0256**	**1.4200e-003**	**0.0270**		**124.9177**	**124.9177**	**5.1200e-003**		**125.0457**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.7411	11.0036	9.0389	0.0138		0.6524	0.6524		0.6242	0.6242	0.0000	1,228.7362	1,228.7362	0.2959		1,236.1331
Total	**1.7411**	**11.0036**	**9.0389**	**0.0138**		**0.6524**	**0.6524**		**0.6242**	**0.6242**	**0.0000**	**1,228.7362**	**1,228.7362**	**0.2959**		**1,236.1331**

3.2 Building Construction - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	4.1600e-003	0.1157	0.0307	2.6000e-004	6.4000e-003	7.4000e-004	7.1400e-003	1.8400e-003	7.1000e-004	2.5500e-003		27.8815	27.8815	1.7900e-003		27.9261
Worker	0.0400	0.0294	0.3857	9.7000e-004	0.0894	7.7000e-004	0.0902	0.0237	7.1000e-004	0.0244		97.0362	97.0362	3.3300e-003		97.1196
Total	**0.0441**	**0.1451**	**0.4164**	**1.2300e-003**	**0.0958**	**1.5100e-003**	**0.0973**	**0.0256**	**1.4200e-003**	**0.0270**		**124.9177**	**124.9177**	**5.1200e-003**		**125.0457**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0909	0.4432	1.3807	4.3100e-003	0.3282	4.8300e-003	0.3330	0.0879	4.5400e-003	0.0924		437.2542	437.2542	0.0245		437.8657
Unmitigated	0.0909	0.4432	1.3807	4.3100e-003	0.3282	4.8300e-003	0.3330	0.0879	4.5400e-003	0.0924		437.2542	437.2542	0.0245		437.8657

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Light Industry	34.85	6.60	3.40	116,559	116,559
Total	34.85	6.60	3.40	116,559	116,559

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
General Light Industry	16.60	8.40	6.90	59.00	28.00	13.00	92	5	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
General Light Industry	0.548007	0.045751	0.200309	0.124119	0.017133	0.006025	0.018861	0.028423	0.002391	0.002469	0.004915	0.000672	0.000925

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	2.6700e-003	0.0243	0.0204	1.5000e-004		1.8500e-003	1.8500e-003		1.8500e-003	1.8500e-003		29.1700	29.1700	5.6000e-004	5.3000e-004	29.3434
NaturalGas Unmitigated	2.6700e-003	0.0243	0.0204	1.5000e-004		1.8500e-003	1.8500e-003		1.8500e-003	1.8500e-003		29.1700	29.1700	5.6000e-004	5.3000e-004	29.3434

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
General Light Industry	247.945	2.6700e-003	0.0243	0.0204	1.5000e-004		1.8500e-003	1.8500e-003		1.8500e-003	1.8500e-003		29.1700	29.1700	5.6000e-004	5.3000e-004	29.3434
Total		**2.6700e-003**	**0.0243**	**0.0204**	**1.5000e-004**		**1.8500e-003**	**1.8500e-003**		**1.8500e-003**	**1.8500e-003**		**29.1700**	**29.1700**	**5.6000e-004**	**5.3000e-004**	**29.3434**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
General Light Industry	0.247945	2.6700e-003	0.0243	0.0204	1.5000e-004		1.8500e-003	1.8500e-003		1.8500e-003	1.8500e-003		29.1700	29.1700	5.6000e-004	5.3000e-004	29.3434
Total		**2.6700e-003**	**0.0243**	**0.0204**	**1.5000e-004**		**1.8500e-003**	**1.8500e-003**		**1.8500e-003**	**1.8500e-003**		**29.1700**	**29.1700**	**5.6000e-004**	**5.3000e-004**	**29.3434**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.1118	0.0000	5.2000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		1.0900e-003	1.0900e-003	0.0000		1.1700e-003
Unmitigated	0.1118	0.0000	5.2000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		1.0900e-003	1.0900e-003	0.0000		1.1700e-003

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0127					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0990					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	5.0000e-005	0.0000	5.2000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		1.0900e-003	1.0900e-003	0.0000		1.1700e-003
Total	**0.1118**	**0.0000**	**5.2000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**1.0900e-003**	**1.0900e-003**	**0.0000**		**1.1700e-003**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0127					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0990					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	5.0000e-005	0.0000	5.2000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		1.0900e-003	1.0900e-003	0.0000		1.1700e-003
Total	**0.1118**	**0.0000**	**5.2000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**1.0900e-003**	**1.0900e-003**	**0.0000**		**1.1700e-003**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

ASV and Pipeline Connections

Los Angeles-South Coast County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Light Industry	5.00	1000sqft	0.11	5,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	9			**Operational Year**	2019
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use -

Construction Phase - Expected timeline is 8 weeks

Off-road Equipment - Construction activities only include welding of piping

Trips and VMT - Expected 5-10 workers = average 8 workers

Vehicle Trips -

Construction Off-road Equipment Mitigation -

ASV and Pipeline Connections - Los Angeles-South Coast County, Annual

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	100.00	40.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	4.00
tblOffRoadEquipment	PhaseName		Building Construction
tblOffRoadEquipment	PhaseName		Building Construction
tblOffRoadEquipment	UsageHours	8.00	4.00
tblTripsAndVMT	WorkerTripNumber	2.00	8.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2019	0.0357	0.2231	0.1887	3.0000e-004	1.8800e-003	0.0131	0.0150	5.0000e-004	0.0125	0.0130	0.0000	24.4793	24.4793	5.4600e-003	0.0000	24.6158
Maximum	**0.0357**	**0.2231**	**0.1887**	**3.0000e-004**	**1.8800e-003**	**0.0131**	**0.0150**	**5.0000e-004**	**0.0125**	**0.0130**	**0.0000**	**24.4793**	**24.4793**	**5.4600e-003**	**0.0000**	**24.6158**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2019	0.0357	0.2231	0.1887	3.0000e-004	1.8800e-003	0.0131	0.0150	5.0000e-004	0.0125	0.0130	0.0000	24.4793	24.4793	5.4600e-003	0.0000	24.6158
Maximum	**0.0357**	**0.2231**	**0.1887**	**3.0000e-004**	**1.8800e-003**	**0.0131**	**0.0150**	**5.0000e-004**	**0.0125**	**0.0130**	**0.0000**	**24.4793**	**24.4793**	**5.4600e-003**	**0.0000**	**24.6158**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	9-2-2019	9-30-2019	0.1340	0.1340
		Highest	0.1340	0.1340

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0204	0.0000	6.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.2000e-004	1.2000e-004	0.0000	0.0000	1.3000e-004
Energy	4.9000e-004	4.4400e-003	3.7300e-003	3.0000e-005		3.4000e-004	3.4000e-004		3.4000e-004	3.4000e-004	0.0000	22.5129	22.5129	8.2000e-004	2.4000e-004	22.6049
Mobile	0.0119	0.0643	0.1819	5.7000e-004	0.0442	6.6000e-004	0.0449	0.0119	6.2000e-004	0.0125	0.0000	52.5905	52.5905	3.0100e-003	0.0000	52.6658
Waste						0.0000	0.0000		0.0000	0.0000	1.2585	0.0000	1.2585	0.0744	0.0000	3.1180
Water						0.0000	0.0000		0.0000	0.0000	0.3668	4.7970	5.1638	0.0379	9.3000e-004	6.3880
Total	**0.0328**	**0.0687**	**0.1856**	**6.0000e-004**	**0.0442**	**1.0000e-003**	**0.0453**	**0.0119**	**9.6000e-004**	**0.0128**	**1.6254**	**79.9005**	**81.5259**	**0.1161**	**1.1700e-003**	**84.7768**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0204	0.0000	6.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.2000e-004	1.2000e-004	0.0000	0.0000	1.3000e-004
Energy	4.9000e-004	4.4400e-003	3.7300e-003	3.0000e-005		3.4000e-004	3.4000e-004		3.4000e-004	3.4000e-004	0.0000	22.5129	22.5129	8.2000e-004	2.4000e-004	22.6049
Mobile	0.0119	0.0643	0.1819	5.7000e-004	0.0442	6.6000e-004	0.0449	0.0119	6.2000e-004	0.0125	0.0000	52.5905	52.5905	3.0100e-003	0.0000	52.6658
Waste						0.0000	0.0000		0.0000	0.0000	1.2585	0.0000	1.2585	0.0744	0.0000	3.1180
Water						0.0000	0.0000		0.0000	0.0000	0.3668	4.7970	5.1638	0.0379	9.3000e-004	6.3880
Total	**0.0328**	**0.0687**	**0.1856**	**6.0000e-004**	**0.0442**	**1.0000e-003**	**0.0453**	**0.0119**	**9.6000e-004**	**0.0128**	**1.6254**	**79.9005**	**81.5259**	**0.1161**	**1.1700e-003**	**84.7768**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Building Construction	Building Construction	9/2/2019	10/25/2019	5	40	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Building Construction	Cranes	1	4.00	231	0.29
Building Construction	Tractors/Loaders/Backhoes	1	4.00	97	0.37
Building Construction	Trenchers	1	4.00	78	0.50
Building Construction	Welders	4	6.00	46	0.45

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Building Construction	7	8.00	1.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Building Construction - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0348	0.2201	0.1808	2.8000e-004		0.0131	0.0131		0.0125	0.0125	0.0000	22.2938	22.2938	5.3700e-003	0.0000	22.4280
Total	**0.0348**	**0.2201**	**0.1808**	**2.8000e-004**		**0.0131**	**0.0131**		**0.0125**	**0.0125**	**0.0000**	**22.2938**	**22.2938**	**5.3700e-003**	**0.0000**	**22.4280**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	8.0000e-005	2.3600e-003	6.5000e-004	1.0000e-005	1.3000e-004	1.0000e-005	1.4000e-004	4.0000e-005	1.0000e-005	5.0000e-005	0.0000	0.5001	0.5001	3.0000e-005	0.0000	0.5010
Worker	8.0000e-004	6.7000e-004	7.2600e-003	2.0000e-005	1.7500e-003	2.0000e-005	1.7700e-003	4.7000e-004	1.0000e-005	4.8000e-004	0.0000	1.6854	1.6854	6.0000e-005	0.0000	1.6868
Total	**8.8000e-004**	**3.0300e-003**	**7.9100e-003**	**3.0000e-005**	**1.8800e-003**	**3.0000e-005**	**1.9100e-003**	**5.1000e-004**	**2.0000e-005**	**5.3000e-004**	**0.0000**	**2.1855**	**2.1855**	**9.0000e-005**	**0.0000**	**2.1878**

3.2 Building Construction - 2019

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0348	0.2201	0.1808	2.8000e-004		0.0131	0.0131		0.0125	0.0125	0.0000	22.2938	22.2938	5.3700e-003	0.0000	22.4280
Total	**0.0348**	**0.2201**	**0.1808**	**2.8000e-004**		**0.0131**	**0.0131**		**0.0125**	**0.0125**	**0.0000**	**22.2938**	**22.2938**	**5.3700e-003**	**0.0000**	**22.4280**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	8.0000e-005	2.3600e-003	6.5000e-004	1.0000e-005	1.3000e-004	1.0000e-005	1.4000e-004	4.0000e-005	1.0000e-005	5.0000e-005	0.0000	0.5001	0.5001	3.0000e-005	0.0000	0.5010
Worker	8.0000e-004	6.7000e-004	7.2600e-003	2.0000e-005	1.7500e-003	2.0000e-005	1.7700e-003	4.7000e-004	1.0000e-005	4.8000e-004	0.0000	1.6854	1.6854	6.0000e-005	0.0000	1.6868
Total	**8.8000e-004**	**3.0300e-003**	**7.9100e-003**	**3.0000e-005**	**1.8800e-003**	**3.0000e-005**	**1.9100e-003**	**5.1000e-004**	**2.0000e-005**	**5.3000e-004**	**0.0000**	**2.1855**	**2.1855**	**9.0000e-005**	**0.0000**	**2.1878**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0119	0.0643	0.1819	5.7000e-004	0.0442	6.6000e-004	0.0449	0.0119	6.2000e-004	0.0125	0.0000	52.5905	52.5905	3.0100e-003	0.0000	52.6658
Unmitigated	0.0119	0.0643	0.1819	5.7000e-004	0.0442	6.6000e-004	0.0449	0.0119	6.2000e-004	0.0125	0.0000	52.5905	52.5905	3.0100e-003	0.0000	52.6658

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Light Industry	34.85	6.60	3.40	116,559	116,559
Total	34.85	6.60	3.40	116,559	116,559

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
General Light Industry	16.60	8.40	6.90	59.00	28.00	13.00	92	5	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
General Light Industry	0.548007	0.045751	0.200309	0.124119	0.017133	0.006025	0.018861	0.028423	0.002391	0.002469	0.004915	0.000672	0.000925

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	17.6835	17.6835	7.3000e-004	1.5000e-004	17.7468
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	17.6835	17.6835	7.3000e-004	1.5000e-004	17.7468
NaturalGas Mitigated	4.9000e-004	4.4400e-003	3.7300e-003	3.0000e-005		3.4000e-004	3.4000e-004		3.4000e-004	3.4000e-004	0.0000	4.8294	4.8294	9.0000e-005	9.0000e-005	4.8581
NaturalGas Unmitigated	4.9000e-004	4.4400e-003	3.7300e-003	3.0000e-005		3.4000e-004	3.4000e-004		3.4000e-004	3.4000e-004	0.0000	4.8294	4.8294	9.0000e-005	9.0000e-005	4.8581

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
General Light Industry	90500	4.9000e-004	4.4400e-003	3.7300e-003	3.0000e-005		3.4000e-004	3.4000e-004		3.4000e-004	3.4000e-004	0.0000	4.8294	4.8294	9.0000e-005	9.0000e-005	4.8581
Total		**4.9000e-004**	**4.4400e-003**	**3.7300e-003**	**3.0000e-005**		**3.4000e-004**	**3.4000e-004**		**3.4000e-004**	**3.4000e-004**	**0.0000**	**4.8294**	**4.8294**	**9.0000e-005**	**9.0000e-005**	**4.8581**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
General Light Industry	90500	4.9000e-004	4.4400e-003	3.7300e-003	3.0000e-005		3.4000e-004	3.4000e-004		3.4000e-004	3.4000e-004	0.0000	4.8294	4.8294	9.0000e-005	9.0000e-005	4.8581
Total		**4.9000e-004**	**4.4400e-003**	**3.7300e-003**	**3.0000e-005**		**3.4000e-004**	**3.4000e-004**		**3.4000e-004**	**3.4000e-004**	**0.0000**	**4.8294**	**4.8294**	**9.0000e-005**	**9.0000e-005**	**4.8581**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Light Industry	55500	17.6835	7.3000e-004	1.5000e-004	17.7468
Total		**17.6835**	**7.3000e-004**	**1.5000e-004**	**17.7468**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Light Industry	55500	17.6835	7.3000e-004	1.5000e-004	17.7468
Total		**17.6835**	**7.3000e-004**	**1.5000e-004**	**17.7468**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0204	0.0000	6.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.2000e-004	1.2000e-004	0.0000	0.0000	1.3000e-004
Unmitigated	0.0204	0.0000	6.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.2000e-004	1.2000e-004	0.0000	0.0000	1.3000e-004

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	2.3200e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0181					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.0000e-005	0.0000	6.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.2000e-004	1.2000e-004	0.0000	0.0000	1.3000e-004
Total	**0.0204**	**0.0000**	**6.0000e-005**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**1.2000e-004**	**1.2000e-004**	**0.0000**	**0.0000**	**1.3000e-004**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	2.3200e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0181					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.0000e-005	0.0000	6.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.2000e-004	1.2000e-004	0.0000	0.0000	1.3000e-004
Total	**0.0204**	**0.0000**	**6.0000e-005**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**1.2000e-004**	**1.2000e-004**	**0.0000**	**0.0000**	**1.3000e-004**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	5.1638	0.0379	9.3000e-004	6.3880
Unmitigated	5.1638	0.0379	9.3000e-004	6.3880

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Light Industry	1.15625 / 0	5.1638	0.0379	9.3000e-004	6.3880
Total		**5.1638**	**0.0379**	**9.3000e-004**	**6.3880**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Light Industry	1.15625 / 0	5.1638	0.0379	9.3000e-004	6.3880
Total		**5.1638**	**0.0379**	**9.3000e-004**	**6.3880**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	1.2585	0.0744	0.0000	3.1180
Unmitigated	1.2585	0.0744	0.0000	3.1180

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Light Industry	6.2	1.2585	0.0744	0.0000	3.1180
Total		**1.2585**	**0.0744**	**0.0000**	**3.1180**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Light Industry	6.2	1.2585	0.0744	0.0000	3.1180
Total		**1.2585**	**0.0744**	**0.0000**	**3.1180**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Station Crew

Los Angeles-South Coast County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Light Industry	5.00	1000sqft	0.11	5,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	9			**Operational Year**	2019
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use -

Construction Phase - Estimated construction time = 8 weeks

Off-road Equipment - Welding activity expected

Trips and VMT - Estimated 5-10 workers = average 8 workers

Construction Off-road Equipment Mitigation -

Station Crew - Los Angeles-South Coast County, Winter

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	100.00	40.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	4.00
tblOffRoadEquipment	PhaseName		Building Construction
tblOffRoadEquipment	PhaseName		Building Construction
tblOffRoadEquipment	UsageHours	8.00	4.00
tblTripsAndVMT	WorkerTripNumber	2.00	8.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2019	1.7897	11.1521	9.4268	0.0150	0.0958	0.6540	0.7498	0.0256	0.6256	0.6511	0.0000	1,347.2344	1,347.2344	0.3009	0.0000	1,354.7575
Maximum	**1.7897**	**11.1521**	**9.4268**	**0.0150**	**0.0958**	**0.6540**	**0.7498**	**0.0256**	**0.6256**	**0.6511**	**0.0000**	**1,347.2344**	**1,347.2344**	**0.3009**	**0.0000**	**1,354.7575**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2019	1.7897	11.1521	9.4268	0.0150	0.0958	0.6540	0.7498	0.0256	0.6256	0.6511	0.0000	1,347.2344	1,347.2344	0.3009	0.0000	1,354.7575
Maximum	**1.7897**	**11.1521**	**9.4268**	**0.0150**	**0.0958**	**0.6540**	**0.7498**	**0.0256**	**0.6256**	**0.6511**	**0.0000**	**1,347.2344**	**1,347.2344**	**0.3009**	**0.0000**	**1,354.7575**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.1118	0.0000	5.2000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		1.0900e-003	1.0900e-003	0.0000		1.1700e-003
Energy	2.6700e-003	0.0243	0.0204	1.5000e-004		1.8500e-003	1.8500e-003		1.8500e-003	1.8500e-003		29.1700	29.1700	5.6000e-004	5.3000e-004	29.3434
Mobile	0.0886	0.4586	1.3013	4.1000e-003	0.3282	4.8500e-003	0.3330	0.0879	4.5600e-003	0.0924		416.0915	416.0915	0.0242		416.6963
Total	**0.2030**	**0.4829**	**1.3222**	**4.2500e-003**	**0.3282**	**6.7000e-003**	**0.3349**	**0.0879**	**6.4100e-003**	**0.0943**		**445.2626**	**445.2626**	**0.0248**	**5.3000e-004**	**446.0409**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.1118	0.0000	5.2000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		1.0900e-003	1.0900e-003	0.0000		1.1700e-003
Energy	2.6700e-003	0.0243	0.0204	1.5000e-004		1.8500e-003	1.8500e-003		1.8500e-003	1.8500e-003		29.1700	29.1700	5.6000e-004	5.3000e-004	29.3434
Mobile	0.0886	0.4586	1.3013	4.1000e-003	0.3282	4.8500e-003	0.3330	0.0879	4.5600e-003	0.0924		416.0915	416.0915	0.0242		416.6963
Total	**0.2030**	**0.4829**	**1.3222**	**4.2500e-003**	**0.3282**	**6.7000e-003**	**0.3349**	**0.0879**	**6.4100e-003**	**0.0943**		**445.2626**	**445.2626**	**0.0248**	**5.3000e-004**	**446.0409**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Building Construction	Building Construction	9/2/2019	10/25/2019	5	40	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Building Construction	Cranes	1	4.00	231	0.29
Building Construction	Tractors/Loaders/Backhoes	1	4.00	97	0.37
Building Construction	Trenchers	1	4.00	78	0.50
Building Construction	Welders	4	6.00	46	0.45

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Building Construction	7	8.00	1.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Building Construction - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.7411	11.0036	9.0389	0.0138		0.6524	0.6524		0.6242	0.6242		1,228.7362	1,228.7362	0.2959		1,236.1331
Total	**1.7411**	**11.0036**	**9.0389**	**0.0138**		**0.6524**	**0.6524**		**0.6242**	**0.6242**		**1,228.7362**	**1,228.7362**	**0.2959**		**1,236.1331**

3.2 Building Construction - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	4.3300e-003	0.1159	0.0339	2.5000e-004	6.4000e-003	7.5000e-004	7.1500e-003	1.8400e-003	7.2000e-004	2.5600e-003		27.1277	27.1277	1.9100e-003		27.1754
Worker	0.0443	0.0325	0.3540	9.2000e-004	0.0894	7.7000e-004	0.0902	0.0237	7.1000e-004	0.0244		91.3705	91.3705	3.1400e-003		91.4491
Total	**0.0486**	**0.1484**	**0.3878**	**1.1700e-003**	**0.0958**	**1.5200e-003**	**0.0973**	**0.0256**	**1.4300e-003**	**0.0270**		**118.4982**	**118.4982**	**5.0500e-003**		**118.6244**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.7411	11.0036	9.0389	0.0138		0.6524	0.6524		0.6242	0.6242	0.0000	1,228.7362	1,228.7362	0.2959		1,236.1331
Total	**1.7411**	**11.0036**	**9.0389**	**0.0138**		**0.6524**	**0.6524**		**0.6242**	**0.6242**	**0.0000**	**1,228.7362**	**1,228.7362**	**0.2959**		**1,236.1331**

3.2 Building Construction - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	4.3300e-003	0.1159	0.0339	2.5000e-004	6.4000e-003	7.5000e-004	7.1500e-003	1.8400e-003	7.2000e-004	2.5600e-003		27.1277	27.1277	1.9100e-003		27.1754
Worker	0.0443	0.0325	0.3540	9.2000e-004	0.0894	7.7000e-004	0.0902	0.0237	7.1000e-004	0.0244		91.3705	91.3705	3.1400e-003		91.4491
Total	**0.0486**	**0.1484**	**0.3878**	**1.1700e-003**	**0.0958**	**1.5200e-003**	**0.0973**	**0.0256**	**1.4300e-003**	**0.0270**		**118.4982**	**118.4982**	**5.0500e-003**		**118.6244**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0886	0.4586	1.3013	4.1000e-003	0.3282	4.8500e-003	0.3330	0.0879	4.5600e-003	0.0924		416.0915	416.0915	0.0242		416.6963
Unmitigated	0.0886	0.4586	1.3013	4.1000e-003	0.3282	4.8500e-003	0.3330	0.0879	4.5600e-003	0.0924		416.0915	416.0915	0.0242		416.6963

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Light Industry	34.85	6.60	3.40	116,559	116,559
Total	34.85	6.60	3.40	116,559	116,559

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
General Light Industry	16.60	8.40	6.90	59.00	28.00	13.00	92	5	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
General Light Industry	0.548007	0.045751	0.200309	0.124119	0.017133	0.006025	0.018861	0.028423	0.002391	0.002469	0.004915	0.000672	0.000925

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	2.6700e-003	0.0243	0.0204	1.5000e-004		1.8500e-003	1.8500e-003		1.8500e-003	1.8500e-003		29.1700	29.1700	5.6000e-004	5.3000e-004	29.3434
NaturalGas Unmitigated	2.6700e-003	0.0243	0.0204	1.5000e-004		1.8500e-003	1.8500e-003		1.8500e-003	1.8500e-003		29.1700	29.1700	5.6000e-004	5.3000e-004	29.3434

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
General Light Industry	247.945	2.6700e-003	0.0243	0.0204	1.5000e-004		1.8500e-003	1.8500e-003		1.8500e-003	1.8500e-003		29.1700	29.1700	5.6000e-004	5.3000e-004	29.3434
Total		**2.6700e-003**	**0.0243**	**0.0204**	**1.5000e-004**		**1.8500e-003**	**1.8500e-003**		**1.8500e-003**	**1.8500e-003**		**29.1700**	**29.1700**	**5.6000e-004**	**5.3000e-004**	**29.3434**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
General Light Industry	0.247945	2.6700e-003	0.0243	0.0204	1.5000e-004		1.8500e-003	1.8500e-003		1.8500e-003	1.8500e-003		29.1700	29.1700	5.6000e-004	5.3000e-004	29.3434
Total		**2.6700e-003**	**0.0243**	**0.0204**	**1.5000e-004**		**1.8500e-003**	**1.8500e-003**		**1.8500e-003**	**1.8500e-003**		**29.1700**	**29.1700**	**5.6000e-004**	**5.3000e-004**	**29.3434**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.1118	0.0000	5.2000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		1.0900e-003	1.0900e-003	0.0000		1.1700e-003
Unmitigated	0.1118	0.0000	5.2000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		1.0900e-003	1.0900e-003	0.0000		1.1700e-003

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0127					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0990					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	5.0000e-005	0.0000	5.2000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		1.0900e-003	1.0900e-003	0.0000		1.1700e-003
Total	**0.1118**	**0.0000**	**5.2000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**1.0900e-003**	**1.0900e-003**	**0.0000**		**1.1700e-003**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0127					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0990					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	5.0000e-005	0.0000	5.2000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		1.0900e-003	1.0900e-003	0.0000		1.1700e-003
Total	**0.1118**	**0.0000**	**5.2000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**1.0900e-003**	**1.0900e-003**	**0.0000**		**1.1700e-003**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Station Crew

Los Angeles-South Coast County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Light Industry	5.00	1000sqft	0.11	5,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	9			**Operational Year**	2019
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use -

Construction Phase - Estimated construction time = 8 weeks

Off-road Equipment - Welding activity expected

Trips and VMT - Estimated 5-10 workers = average 8 workers

Construction Off-road Equipment Mitigation -

Station Crew - Los Angeles-South Coast County, Summer

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	100.00	40.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	4.00
tblOffRoadEquipment	PhaseName		Building Construction
tblOffRoadEquipment	PhaseName		Building Construction
tblOffRoadEquipment	UsageHours	8.00	4.00
tblTripsAndVMT	WorkerTripNumber	2.00	8.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2019	1.7852	11.1487	9.4554	0.0150	0.0958	0.6539	0.7498	0.0256	0.6256	0.6511	0.0000	1,353.6539	1,353.6539	0.3010	0.0000	1,361.1788
Maximum	**1.7852**	**11.1487**	**9.4554**	**0.0150**	**0.0958**	**0.6539**	**0.7498**	**0.0256**	**0.6256**	**0.6511**	**0.0000**	**1,353.6539**	**1,353.6539**	**0.3010**	**0.0000**	**1,361.1788**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2019	1.7852	11.1487	9.4554	0.0150	0.0958	0.6539	0.7498	0.0256	0.6256	0.6511	0.0000	1,353.6539	1,353.6539	0.3010	0.0000	1,361.1788
Maximum	**1.7852**	**11.1487**	**9.4554**	**0.0150**	**0.0958**	**0.6539**	**0.7498**	**0.0256**	**0.6256**	**0.6511**	**0.0000**	**1,353.6539**	**1,353.6539**	**0.3010**	**0.0000**	**1,361.1788**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.1118	0.0000	5.2000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		1.0900e-003	1.0900e-003	0.0000		1.1700e-003
Energy	2.6700e-003	0.0243	0.0204	1.5000e-004		1.8500e-003	1.8500e-003		1.8500e-003	1.8500e-003		29.1700	29.1700	5.6000e-004	5.3000e-004	29.3434
Mobile	0.0909	0.4432	1.3807	4.3100e-003	0.3282	4.8300e-003	0.3330	0.0879	4.5400e-003	0.0924		437.2542	437.2542	0.0245		437.8657
Total	**0.2053**	**0.4675**	**1.4017**	**4.4600e-003**	**0.3282**	**6.6800e-003**	**0.3349**	**0.0879**	**6.3900e-003**	**0.0942**		**466.4253**	**466.4253**	**0.0250**	**5.3000e-004**	**467.2102**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.1118	0.0000	5.2000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		1.0900e-003	1.0900e-003	0.0000		1.1700e-003
Energy	2.6700e-003	0.0243	0.0204	1.5000e-004		1.8500e-003	1.8500e-003		1.8500e-003	1.8500e-003		29.1700	29.1700	5.6000e-004	5.3000e-004	29.3434
Mobile	0.0909	0.4432	1.3807	4.3100e-003	0.3282	4.8300e-003	0.3330	0.0879	4.5400e-003	0.0924		437.2542	437.2542	0.0245		437.8657
Total	**0.2053**	**0.4675**	**1.4017**	**4.4600e-003**	**0.3282**	**6.6800e-003**	**0.3349**	**0.0879**	**6.3900e-003**	**0.0942**		**466.4253**	**466.4253**	**0.0250**	**5.3000e-004**	**467.2102**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Building Construction	Building Construction	9/2/2019	10/25/2019	5	40	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Building Construction	Cranes	1	4.00	231	0.29
Building Construction	Tractors/Loaders/Backhoes	1	4.00	97	0.37
Building Construction	Trenchers	1	4.00	78	0.50
Building Construction	Welders	4	6.00	46	0.45

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Building Construction	7	8.00	1.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Building Construction - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.7411	11.0036	9.0389	0.0138		0.6524	0.6524		0.6242	0.6242		1,228.7362	1,228.7362	0.2959		1,236.1331
Total	**1.7411**	**11.0036**	**9.0389**	**0.0138**		**0.6524**	**0.6524**		**0.6242**	**0.6242**		**1,228.7362**	**1,228.7362**	**0.2959**		**1,236.1331**

3.2 Building Construction - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	4.1600e-003	0.1157	0.0307	2.6000e-004	6.4000e-003	7.4000e-004	7.1400e-003	1.8400e-003	7.1000e-004	2.5500e-003		27.8815	27.8815	1.7900e-003		27.9261
Worker	0.0400	0.0294	0.3857	9.7000e-004	0.0894	7.7000e-004	0.0902	0.0237	7.1000e-004	0.0244		97.0362	97.0362	3.3300e-003		97.1196
Total	**0.0441**	**0.1451**	**0.4164**	**1.2300e-003**	**0.0958**	**1.5100e-003**	**0.0973**	**0.0256**	**1.4200e-003**	**0.0270**		**124.9177**	**124.9177**	**5.1200e-003**		**125.0457**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.7411	11.0036	9.0389	0.0138		0.6524	0.6524		0.6242	0.6242	0.0000	1,228.7362	1,228.7362	0.2959		1,236.1331
Total	**1.7411**	**11.0036**	**9.0389**	**0.0138**		**0.6524**	**0.6524**		**0.6242**	**0.6242**	**0.0000**	**1,228.7362**	**1,228.7362**	**0.2959**		**1,236.1331**

3.2 Building Construction - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	4.1600e-003	0.1157	0.0307	2.6000e-004	6.4000e-003	7.4000e-004	7.1400e-003	1.8400e-003	7.1000e-004	2.5500e-003		27.8815	27.8815	1.7900e-003		27.9261
Worker	0.0400	0.0294	0.3857	9.7000e-004	0.0894	7.7000e-004	0.0902	0.0237	7.1000e-004	0.0244		97.0362	97.0362	3.3300e-003		97.1196
Total	**0.0441**	**0.1451**	**0.4164**	**1.2300e-003**	**0.0958**	**1.5100e-003**	**0.0973**	**0.0256**	**1.4200e-003**	**0.0270**		**124.9177**	**124.9177**	**5.1200e-003**		**125.0457**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0909	0.4432	1.3807	4.3100e-003	0.3282	4.8300e-003	0.3330	0.0879	4.5400e-003	0.0924		437.2542	437.2542	0.0245		437.8657
Unmitigated	0.0909	0.4432	1.3807	4.3100e-003	0.3282	4.8300e-003	0.3330	0.0879	4.5400e-003	0.0924		437.2542	437.2542	0.0245		437.8657

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Light Industry	34.85	6.60	3.40	116,559	116,559
Total	34.85	6.60	3.40	116,559	116,559

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
General Light Industry	16.60	8.40	6.90	59.00	28.00	13.00	92	5	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
General Light Industry	0.548007	0.045751	0.200309	0.124119	0.017133	0.006025	0.018861	0.028423	0.002391	0.002469	0.004915	0.000672	0.000925

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	2.6700e-003	0.0243	0.0204	1.5000e-004		1.8500e-003	1.8500e-003		1.8500e-003	1.8500e-003		29.1700	29.1700	5.6000e-004	5.3000e-004	29.3434
NaturalGas Unmitigated	2.6700e-003	0.0243	0.0204	1.5000e-004		1.8500e-003	1.8500e-003		1.8500e-003	1.8500e-003		29.1700	29.1700	5.6000e-004	5.3000e-004	29.3434

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
General Light Industry	247.945	2.6700e-003	0.0243	0.0204	1.5000e-004		1.8500e-003	1.8500e-003		1.8500e-003	1.8500e-003		29.1700	29.1700	5.6000e-004	5.3000e-004	29.3434
Total		**2.6700e-003**	**0.0243**	**0.0204**	**1.5000e-004**		**1.8500e-003**	**1.8500e-003**		**1.8500e-003**	**1.8500e-003**		**29.1700**	**29.1700**	**5.6000e-004**	**5.3000e-004**	**29.3434**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
General Light Industry	0.247945	2.6700e-003	0.0243	0.0204	1.5000e-004		1.8500e-003	1.8500e-003		1.8500e-003	1.8500e-003		29.1700	29.1700	5.6000e-004	5.3000e-004	29.3434
Total		**2.6700e-003**	**0.0243**	**0.0204**	**1.5000e-004**		**1.8500e-003**	**1.8500e-003**		**1.8500e-003**	**1.8500e-003**		**29.1700**	**29.1700**	**5.6000e-004**	**5.3000e-004**	**29.3434**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.1118	0.0000	5.2000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		1.0900e-003	1.0900e-003	0.0000		1.1700e-003
Unmitigated	0.1118	0.0000	5.2000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		1.0900e-003	1.0900e-003	0.0000		1.1700e-003

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0127					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0990					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	5.0000e-005	0.0000	5.2000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		1.0900e-003	1.0900e-003	0.0000		1.1700e-003
Total	**0.1118**	**0.0000**	**5.2000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**1.0900e-003**	**1.0900e-003**	**0.0000**		**1.1700e-003**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0127					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0990					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	5.0000e-005	0.0000	5.2000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		1.0900e-003	1.0900e-003	0.0000		1.1700e-003
Total	**0.1118**	**0.0000**	**5.2000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**1.0900e-003**	**1.0900e-003**	**0.0000**		**1.1700e-003**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Station Crew

Los Angeles-South Coast County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Light Industry	5.00	1000sqft	0.11	5,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	9			**Operational Year**	2019
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use -

Construction Phase - Estimated construction time = 8 weeks

Off-road Equipment - Welding activity expected

Trips and VMT - Estimated 5-10 workers = average 8 workers

Construction Off-road Equipment Mitigation -

Station Crew - Los Angeles-South Coast County, Annual

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	100.00	40.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	4.00
tblOffRoadEquipment	PhaseName		Building Construction
tblOffRoadEquipment	PhaseName		Building Construction
tblOffRoadEquipment	UsageHours	8.00	4.00
tblTripsAndVMT	WorkerTripNumber	2.00	8.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2019	0.0357	0.2231	0.1887	3.0000e-004	1.8800e-003	0.0131	0.0150	5.0000e-004	0.0125	0.0130	0.0000	24.4793	24.4793	5.4600e-003	0.0000	24.6158
Maximum	**0.0357**	**0.2231**	**0.1887**	**3.0000e-004**	**1.8800e-003**	**0.0131**	**0.0150**	**5.0000e-004**	**0.0125**	**0.0130**	**0.0000**	**24.4793**	**24.4793**	**5.4600e-003**	**0.0000**	**24.6158**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2019	0.0357	0.2231	0.1887	3.0000e-004	1.8800e-003	0.0131	0.0150	5.0000e-004	0.0125	0.0130	0.0000	24.4793	24.4793	5.4600e-003	0.0000	24.6158
Maximum	**0.0357**	**0.2231**	**0.1887**	**3.0000e-004**	**1.8800e-003**	**0.0131**	**0.0150**	**5.0000e-004**	**0.0125**	**0.0130**	**0.0000**	**24.4793**	**24.4793**	**5.4600e-003**	**0.0000**	**24.6158**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Station Crew - Los Angeles-South Coast County, Annual

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	9-2-2019	9-30-2019	0.1340	0.1340
		Highest	0.1340	0.1340

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0204	0.0000	6.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.2000e-004	1.2000e-004	0.0000	0.0000	1.3000e-004
Energy	4.9000e-004	4.4400e-003	3.7300e-003	3.0000e-005		3.4000e-004	3.4000e-004		3.4000e-004	3.4000e-004	0.0000	22.5129	22.5129	8.2000e-004	2.4000e-004	22.6049
Mobile	0.0119	0.0643	0.1819	5.7000e-004	0.0442	6.6000e-004	0.0449	0.0119	6.2000e-004	0.0125	0.0000	52.5905	52.5905	3.0100e-003	0.0000	52.6658
Waste						0.0000	0.0000		0.0000	0.0000	1.2585	0.0000	1.2585	0.0744	0.0000	3.1180
Water						0.0000	0.0000		0.0000	0.0000	0.3668	4.7970	5.1638	0.0379	9.3000e-004	6.3880
Total	**0.0328**	**0.0687**	**0.1856**	**6.0000e-004**	**0.0442**	**1.0000e-003**	**0.0453**	**0.0119**	**9.6000e-004**	**0.0128**	**1.6254**	**79.9005**	**81.5259**	**0.1161**	**1.1700e-003**	**84.7768**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0204	0.0000	6.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.2000e-004	1.2000e-004	0.0000	0.0000	1.3000e-004
Energy	4.9000e-004	4.4400e-003	3.7300e-003	3.0000e-005		3.4000e-004	3.4000e-004		3.4000e-004	3.4000e-004	0.0000	22.5129	22.5129	8.2000e-004	2.4000e-004	22.6049
Mobile	0.0119	0.0643	0.1819	5.7000e-004	0.0442	6.6000e-004	0.0449	0.0119	6.2000e-004	0.0125	0.0000	52.5905	52.5905	3.0100e-003	0.0000	52.6658
Waste						0.0000	0.0000		0.0000	0.0000	1.2585	0.0000	1.2585	0.0744	0.0000	3.1180
Water						0.0000	0.0000		0.0000	0.0000	0.3668	4.7970	5.1638	0.0379	9.3000e-004	6.3880
Total	**0.0328**	**0.0687**	**0.1856**	**6.0000e-004**	**0.0442**	**1.0000e-003**	**0.0453**	**0.0119**	**9.6000e-004**	**0.0128**	**1.6254**	**79.9005**	**81.5259**	**0.1161**	**1.1700e-003**	**84.7768**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Building Construction	Building Construction	9/2/2019	10/25/2019	5	40	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Building Construction	Cranes	1	4.00	231	0.29
Building Construction	Tractors/Loaders/Backhoes	1	4.00	97	0.37
Building Construction	Trenchers	1	4.00	78	0.50
Building Construction	Welders	4	6.00	46	0.45

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Building Construction	7	8.00	1.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Building Construction - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0348	0.2201	0.1808	2.8000e-004		0.0131	0.0131		0.0125	0.0125	0.0000	22.2938	22.2938	5.3700e-003	0.0000	22.4280
Total	**0.0348**	**0.2201**	**0.1808**	**2.8000e-004**		**0.0131**	**0.0131**		**0.0125**	**0.0125**	**0.0000**	**22.2938**	**22.2938**	**5.3700e-003**	**0.0000**	**22.4280**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	8.0000e-005	2.3600e-003	6.5000e-004	1.0000e-005	1.3000e-004	1.0000e-005	1.4000e-004	4.0000e-005	1.0000e-005	5.0000e-005	0.0000	0.5001	0.5001	3.0000e-005	0.0000	0.5010
Worker	8.0000e-004	6.7000e-004	7.2600e-003	2.0000e-005	1.7500e-003	2.0000e-005	1.7700e-003	4.7000e-004	1.0000e-005	4.8000e-004	0.0000	1.6854	1.6854	6.0000e-005	0.0000	1.6868
Total	**8.8000e-004**	**3.0300e-003**	**7.9100e-003**	**3.0000e-005**	**1.8800e-003**	**3.0000e-005**	**1.9100e-003**	**5.1000e-004**	**2.0000e-005**	**5.3000e-004**	**0.0000**	**2.1855**	**2.1855**	**9.0000e-005**	**0.0000**	**2.1878**

3.2 Building Construction - 2019

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0348	0.2201	0.1808	2.8000e-004		0.0131	0.0131		0.0125	0.0125	0.0000	22.2938	22.2938	5.3700e-003	0.0000	22.4280
Total	**0.0348**	**0.2201**	**0.1808**	**2.8000e-004**		**0.0131**	**0.0131**		**0.0125**	**0.0125**	**0.0000**	**22.2938**	**22.2938**	**5.3700e-003**	**0.0000**	**22.4280**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	8.0000e-005	2.3600e-003	6.5000e-004	1.0000e-005	1.3000e-004	1.0000e-005	1.4000e-004	4.0000e-005	1.0000e-005	5.0000e-005	0.0000	0.5001	0.5001	3.0000e-005	0.0000	0.5010
Worker	8.0000e-004	6.7000e-004	7.2600e-003	2.0000e-005	1.7500e-003	2.0000e-005	1.7700e-003	4.7000e-004	1.0000e-005	4.8000e-004	0.0000	1.6854	1.6854	6.0000e-005	0.0000	1.6868
Total	**8.8000e-004**	**3.0300e-003**	**7.9100e-003**	**3.0000e-005**	**1.8800e-003**	**3.0000e-005**	**1.9100e-003**	**5.1000e-004**	**2.0000e-005**	**5.3000e-004**	**0.0000**	**2.1855**	**2.1855**	**9.0000e-005**	**0.0000**	**2.1878**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0119	0.0643	0.1819	5.7000e-004	0.0442	6.6000e-004	0.0449	0.0119	6.2000e-004	0.0125	0.0000	52.5905	52.5905	3.0100e-003	0.0000	52.6658
Unmitigated	0.0119	0.0643	0.1819	5.7000e-004	0.0442	6.6000e-004	0.0449	0.0119	6.2000e-004	0.0125	0.0000	52.5905	52.5905	3.0100e-003	0.0000	52.6658

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Light Industry	34.85	6.60	3.40	116,559	116,559
Total	34.85	6.60	3.40	116,559	116,559

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
General Light Industry	16.60	8.40	6.90	59.00	28.00	13.00	92	5	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
General Light Industry	0.548007	0.045751	0.200309	0.124119	0.017133	0.006025	0.018861	0.028423	0.002391	0.002469	0.004915	0.000672	0.000925

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	17.6835	17.6835	7.3000e-004	1.5000e-004	17.7468
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	17.6835	17.6835	7.3000e-004	1.5000e-004	17.7468
NaturalGas Mitigated	4.9000e-004	4.4400e-003	3.7300e-003	3.0000e-005		3.4000e-004	3.4000e-004		3.4000e-004	3.4000e-004	0.0000	4.8294	4.8294	9.0000e-005	9.0000e-005	4.8581
NaturalGas Unmitigated	4.9000e-004	4.4400e-003	3.7300e-003	3.0000e-005		3.4000e-004	3.4000e-004		3.4000e-004	3.4000e-004	0.0000	4.8294	4.8294	9.0000e-005	9.0000e-005	4.8581

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
General Light Industry	90500	4.9000e-004	4.4400e-003	3.7300e-003	3.0000e-005		3.4000e-004	3.4000e-004		3.4000e-004	3.4000e-004	0.0000	4.8294	4.8294	9.0000e-005	9.0000e-005	4.8581
Total		**4.9000e-004**	**4.4400e-003**	**3.7300e-003**	**3.0000e-005**		**3.4000e-004**	**3.4000e-004**		**3.4000e-004**	**3.4000e-004**	**0.0000**	**4.8294**	**4.8294**	**9.0000e-005**	**9.0000e-005**	**4.8581**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
General Light Industry	90500	4.9000e-004	4.4400e-003	3.7300e-003	3.0000e-005		3.4000e-004	3.4000e-004		3.4000e-004	3.4000e-004	0.0000	4.8294	4.8294	9.0000e-005	9.0000e-005	4.8581
Total		**4.9000e-004**	**4.4400e-003**	**3.7300e-003**	**3.0000e-005**		**3.4000e-004**	**3.4000e-004**		**3.4000e-004**	**3.4000e-004**	**0.0000**	**4.8294**	**4.8294**	**9.0000e-005**	**9.0000e-005**	**4.8581**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Light Industry	55500	17.6835	7.3000e-004	1.5000e-004	17.7468
Total		**17.6835**	**7.3000e-004**	**1.5000e-004**	**17.7468**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Light Industry	55500	17.6835	7.3000e-004	1.5000e-004	17.7468
Total		**17.6835**	**7.3000e-004**	**1.5000e-004**	**17.7468**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0204	0.0000	6.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.2000e-004	1.2000e-004	0.0000	0.0000	1.3000e-004
Unmitigated	0.0204	0.0000	6.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.2000e-004	1.2000e-004	0.0000	0.0000	1.3000e-004

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	2.3200e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0181					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.0000e-005	0.0000	6.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.2000e-004	1.2000e-004	0.0000	0.0000	1.3000e-004
Total	**0.0204**	**0.0000**	**6.0000e-005**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**1.2000e-004**	**1.2000e-004**	**0.0000**	**0.0000**	**1.3000e-004**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	2.3200e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0181					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.0000e-005	0.0000	6.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.2000e-004	1.2000e-004	0.0000	0.0000	1.3000e-004
Total	**0.0204**	**0.0000**	**6.0000e-005**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**1.2000e-004**	**1.2000e-004**	**0.0000**	**0.0000**	**1.3000e-004**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	5.1638	0.0379	9.3000e-004	6.3880
Unmitigated	5.1638	0.0379	9.3000e-004	6.3880

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Light Industry	1.15625 / 0	5.1638	0.0379	9.3000e-004	6.3880
Total		**5.1638**	**0.0379**	**9.3000e-004**	**6.3880**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Light Industry	1.15625 / 0	5.1638	0.0379	9.3000e-004	6.3880
Total		**5.1638**	**0.0379**	**9.3000e-004**	**6.3880**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	1.2585	0.0744	0.0000	3.1180
Unmitigated	1.2585	0.0744	0.0000	3.1180

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Light Industry	6.2	1.2585	0.0744	0.0000	3.1180
Total		**1.2585**	**0.0744**	**0.0000**	**3.1180**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Light Industry	6.2	1.2585	0.0744	0.0000	3.1180
Total		**1.2585**	**0.0744**	**0.0000**	**3.1180**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Summary of Operational Emissions

Scenario	VOC	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
Worst-case Flaring Scenario (Pipeline Leak Blowdown)	0.00	10.82	0.34	0.00	0.00	0.00
Worst-case Carson Plant Emission Increase	11.38	17.50	11.38	0.51	13.64	13.64
Proposed Project Emission Increase	11.38	28.32	11.72	0.51	13.64	13.64
Existing Truck Emissions (Baseline)	0.29	6.71	1.06	0.02	0.24	0.16
Net	11.09	21.61	10.66	0.49	13.40	13.48
SCAQMD Regional Operational Threshold	55	55	550	150	150	55
Exceed Regional Threshold?	No	No	No	No	No	No
SCAQMD Localized Operational Threshold	-	142	7558	-	38	23
Exceed Localized Threshold?	-	No	No	-	No	No

1998 EIR Hydrogen Plant Emissions (1998 EIR Table 5-8)

1998 EIR Plant Throughput, mmscfd 96

Equipment	VOC	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
Reformer	156	240	156	7	187	187
Fugitive	0	0	0	0	0	0
Flaring Events	0	1141	0	0	0	0
Indirect	17	56	73	3	11	11
Total Emissions	173	1437	229	10	198	198

Project Emissions Increase

Project Increase, mmscfd 7

Equipment	VOC	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
Reformer	11.375	17.5	11.375	0.510417	13.63542	13.63542
Fugitive	0	0	0	0	0	0
Flaring Events	0	0	0	0	0	0
Indirect	0	0	0	0	0	0
Total Emissions	11.375	17.5	11.375	0.510417	13.63542	13.63542

GHG

Process	**CO2**	**CH4**	**N2O**	**CO2e**
Worst-case Flaring Scenario (Pipeline Leak Blowdown)	4.94E-04	1.82E-06	1.59E-05	5.28E-03
Pipeline Electrical Emissions	-	-	-	35
Worst-case Carson Plant Emission Increase	-	-	-	31,820
Amortized Construction	-	-	-	8
Proposed Project Emission Increase	4.94E-04	1.82E-06	1.59E-05	31,863
Existing Truck Emissions (Baseline)	-	-	-	311
Net GHG Emissions	-	-	-	31,552
SCAQMD Thresholds	-	-	-	10,000
Signifciant?	-	-	-	Yes

1998 EIR GHG Emission Estimate

Carson Plant Reformer Gas Use	928	mmbtu/hr
Natural Gas CO2 EF, AP-42 section 1.4	120000	lb/mmscf
Natural Gas CH4 EF, AP-42 section 1.4	2.3	lb/mmscf
Natural Gas N2O EF, AP-42 section 1.4	2.2	lb/mmscf
HHV, AP-42 section 1.4	1020	btu/scf
Natural Gas CO2e EF	0.0537	MT/mmbtu
Annual Reformer GHG Emissions, MT	436,395	MT
Annual Project GHG	31,820	MT

Air Products Hydrogen Pipeline EIR
Emissions from Flaring Scenarios

Pipeline Blowdown Scenario

16,610	Pipeline Length, 6", ft
24,933	Pipeline Length, 8", ft
19,639	Pipeline Length, 12", ft
27,389	Total Pipeline Volume, ft3
0.09252	Hydrogen density at 260 psig
0.00516	Hydrogen density at atm pressure, lb/ft3
2,393	Mass of hydrogen released, lb
0.46	mmscf released
343	HHV of hydrogen, btu/scf
159.1	mmbtu released

Emissions

5.28E-03	CO2e, MT
0.341	CO, lbs
0.068	NOx Emission Factor, lb/mmbtu,
10.8	NOx Emissions, lbs

Pipeline Overflow Scenario

50	Flow rate to pipeline, mmscfd
10	Duration of overflow, minutes
0.35	flow to flare, mmscf
119.1	mmbtu released

Emissions

3.95E-03	CO2e, MT
0.255	CO, lbs
8.10	NOx Emissions, lbs

Notes:
Nox emission factor based on AP-42 Table 13.5-1
Hydrogen density and HHV based on www.engineeringtoolbox.com
Assumes N2O production the same as methane combustion

GHG Carbon Intensity
as per USEPA Mandatory reporting Rule formulas and approach

Inputs	**H2 Combustion, Blowdown**	**H2 Combustion, OverFlow**	Notes
Unit destruction efficiency, fraction	0.98	0.98	from Applicant
Volume of gas sent to unit, scf	4.64E+05	3.47E+05	0.49 mmscf combusted
Concentration of gas hydrocarbon constituents	0.00001	0.00001	10 ppm
Mole fraction CO2 in fuel gas	0.00001	0.00001	10 ppm
Mole fraction CH4 in fuel gas	0.00001	0.00001	10 ppm
HHV of gas, btu/scf	343	343	
Outputs			
GHG (CO2 combusted)	2.44E-04	1.83E-04	
GHG (CO2 uncombusted)	2.49E-04	1.87E-04	
GHG (CH4)	1.82E-06	1.36E-06	
GHG (N2O)	1.59E-05	1.19E-05	
Total CO2e, MT	5.28E-03	3.95E-03	
GHG EF, MTCO2e/mmscf	1.14E-02	1.14E-02	
Total CO, lbs	3.41E-01	2.55E-01	if all uncombusted CO2 and CH4 convert to CO

Gas Composition

Constituent	Mole Percent	Mole Percent	Number of Carbon	Notes
O2	0.0005	0.0005	0	5 ppm
N2	0.001	0.001	0	10 ppm
H2	99.9955	99.9955	0	remainder of gas
CO	0.001	0.001	1	10 ppm
CO2	0.001	0.001	1	10 ppm
CH4 (Methane)	0.001	0.001	1	10 ppm
C2H6 (Ethane)	0	0	2	
C2H4 (Ethene)	0	0	2	
C3H8 (Propane)	0	0	3	
I-C4H10 (i-Butane)	0	0	4	
n-C4H10 (n-Butane)	0	0	4	
I-C5H12 (i-Pentane)	0	0	5	
n-C5H12 (n-Pentane)	0	0	5	
C6H14 (Hexane+)	0	0	5	
Concentration of gas hydrocarbon constituents	0.00001	0		

Construction Emissions
Construction of an H2 Plant

										Emission Factors (g/bhp-hr)								
Phase	**Equipment**	**CalEEMod Equipment Code**	**Fuel**	**Include in Peak Day**	**HP**	**# of equipment or acres**	**Work Days**	**Hrs/ day or Miles/Day**	**Load Factor**	**VOC**	**NO_X**	**CO**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**	**CO2**	**CH4**	**N2O**
Construction	Air compressor	Air Compressors2020-175	D	1	150	3	260	8	0.48	0.37400	2.55800	3.20300	0.00600	0.13300	0.13300	568.29900	0.03300	0.00420
	Backhoe	Tractors/Loaders/Backhoes2020-120	D	1	86	4	260	8	0.37	0.33100	3.32571	3.60147	0.00490	0.21030	0.19350	475.15430	0.15370	0.00420
	Crane	Cranes2020-175	D	1	130	4	260	8	0.29	0.53690	5.56970	3.56232	0.00490	0.29780	0.27400	474.59390	0.15350	0.00420
	Dozer	Rubber Tired Dozers2020-175	D	1	55	1	260	8	0.40	0.72640	7.18525	3.89288	0.00490	0.41070	0.37780	473.01160	0.15300	0.00420
	Fork Lift	ForkLifts2020-120	D	1	95	5	260	8	0.20	0.45870	4.13299	3.75954	0.00490	0.30790	0.28330	471.52850	0.15250	0.00420
	Loader	Tractors/Loaders/Backhoes2020-175	D	1	140	2	260	8	0.37	0.24550	2.41467	3.10518	0.00480	0.12170	0.11190	467.51320	0.15120	0.00420
	Grinder	Other construction equipment2020-175	D	1	150	4	260	8	0.42	0.38770	4.11203	3.23528	0.00490	0.21700	0.19960	469.98370	0.15200	0.00420
	Man Lift	Other construction equipment2020-120	D	1	63	4	260	8	0.42	0.51910	4.77120	3.73189	0.00490	0.35370	0.32540	472.21620	0.15270	0.00420
	Welding Machine	Welders2020-50	D	1	50	8	260	8	0.45	0.93700	4.30400	4.84000	0.00700	0.23800	0.23800	568.29900	0.08400	0.00420
	Other Misc	Other construction equipment2020-120	D	1	50	20	260	8	0.42	0.51910	4.77120	3.73189	0.00490	0.35370	0.32540	472.21620	0.15270	0.00420
	Concrete Truck	EMFAC2015-T7	D	1	90	5	260	8	0.38	0.12818	0.84892	0.22556	0.00000	0.01972	0.01814	108.79078	0.00446	0.00420
	Dump Truck	EMFAC2015-T7	D	1	250	6	260	8	0.38	0.12818	0.84892	0.22556	0.00000	0.01972	0.01814	108.79078	0.00446	0.00420
	Water Truck	EMFAC2015-T7	D	1	185	2	260	8	0.38	0.12818	0.84892	0.22556	0.00000	0.01972	0.01814	108.79078	0.00446	0.00420
	Pickup Truck	EMFAC2015-LDTG	G	1	185	25	260	8	0.38	0.02244	0.01628	0.25810	0.00000	0.00060	0.00053	34.14949	0.00140	0.00420
	Asphalt Paving	-	-	1	-	2.00	20	8	-	2.62	-	-	-	-	-	-	-	-
	Fugitive Dust	-	-	1	-	2.00	40	8	-	-	-	-	-	1.2	1.2	-	-	-
On Highway																		
	Trucks	EMFAC2021-T7OHW	D	1	-	25	260	33.2	-	0.00011	0.00732	0.00047	0.00001	0.00004	0.00004	3.09805	0.00100	0.00420
	Autos	EMFAC2021-LDAOHW	G	1	-	100	260	33.2	-	0.00002	0.00012	0.00101	0.00001	0.00000	0.00000	0.61993	0.00002	0.00420
Totals																		

Notes
Trucks assumed to be onroad emissions certified.
Fugitive Dust based on AP42 Section 13.2.3 in units of tons/acre/month, assumes 30 days per month (as per AP-42)
CalEEMod Emission factors utilized

Construction Emissions
Construction of an H2 Plant

										Emissions (lb/day)						Emissions, tons total						GHG, MT total				
Phase	Equipment	CalEEMod Equipment Code	Fuel	Include in Peak Day	HP	# of equipment or acres	Work Days	Hrs/ day or Miles/Day	Load Factor	VOC	NO_X	CO	SO_2	PM_{10}	$PM_{2.5}$	VOC	NO_X	CO	SO_2	PM_{10}	$PM_{2.5}$	CO2	CH4	N2O	CO2e	Total Fuel Use, gal
Construction	Air compressor	Air Compressors2020-175	D	1	150	3	260	8	0.48	1.42	9.74	12.20	0.02	0.51	0.51	0.19	1.27	1.59	0.00	0.07	0.07	253	0.015	0.002	254	22,958
	Backhoe	Tractors/Loaders/Backhoes2020-120	D	1	86	4	260	8	0.37	0.74	7.47	8.08	0.01	0.47	0.43	0.10	0.97	1.05	0.00	0.06	0.06	125	0.040	0.001	126	13,528
	Crane	Cranes2020-175	D	1	130	4	260	8	0.29	1.43	14.81	9.47	0.01	0.79	0.73	0.19	1.93	1.23	0.00	0.10	0.09	148	0.048	0.001	149	16,028
	Dozer	Rubber Tired Dozers2020-175	D	1	55	1	260	8	0.40	0.28	2.79	1.51	0.00	0.16	0.15	0.04	0.36	0.20	0.00	0.02	0.02	21	0.007	0.000	22	2,338
	Fork Lift	ForkLifts2020-120	D	1	95	5	260	8	0.20	0.77	6.92	6.30	0.01	0.52	0.47	0.10	0.90	0.82	0.00	0.07	0.06	92	0.030	0.001	93	10,097
	Loader	Tractors/Loaders/Backhoes2020-175	D	1	140	2	260	8	0.37	0.45	4.41	5.67	0.01	0.22	0.20	0.06	0.57	0.74	0.00	0.03	0.03	100	0.032	0.001	101	11,011
	Grinder	Other construction equipment2020-175	D	1	150	4	260	8	0.42	1.72	18.28	14.38	0.02	0.96	0.89	0.22	2.38	1.87	0.00	0.13	0.12	244	0.079	0.002	247	26,785
	Man Lift	Other construction equipment2020-120	D	1	63	4	260	8	0.42	0.97	8.91	6.97	0.01	0.66	0.61	0.13	1.16	0.91	0.00	0.09	0.08	103	0.033	0.001	104	11,250
	Welding Machine	Welders2020-50	D	1	50	8	260	8	0.45	2.97	13.66	15.37	0.02	0.76	0.76	0.39	1.78	2.00	0.00	0.10	0.10	211	0.031	0.002	212	19,132
	Other Misc	Other construction equipment2020-120	D	1	50	20	260	8	0.42	3.85	35.34	27.64	0.04	2.62	2.41	0.50	4.59	3.59	0.00	0.34	0.31	409	0.132	0.004	414	44,641
	Concrete Truck	EMFAC2015-T7	D	1	90	5	260	8	0.38	0.39	2.56	0.68	0.00	0.06	0.05	0.05	0.33	0.09	0.00	0.01	0.01	38	0.002	0.001	39	18,175
	Dump Truck	EMFAC2015-T7	D	1	250	6	260	8	0.38	1.29	8.53	2.27	0.00	0.20	0.18	0.17	1.11	0.29	0.00	0.03	0.02	128	0.005	0.005	130	60,584
	Water Truck	EMFAC2015-T7	D	1	185	2	260	8	0.38	0.32	2.11	0.56	0.00	0.05	0.04	0.04	0.27	0.07	0.00	0.01	0.01	32	0.001	0.001	32	14,944
	Pickup Truck	EMFAC2015-LDTG	G	1	185	25	260	8	0.38	0.70	0.50	8.00	0.00	0.02	0.02	0.09	0.07	1.04	0.00	0.00	0.00	124	0.005	0.015	129	186,801
	Asphalt Paving	-	-	1	-	2.00	20	8	-	0.26	-	-	-	-	-	0.00	-	-	-	-	-	-	-	-		-
	Fugitive Dust	-	-	1	-	2.00	40	8	-	-	-	-	-	4.0	4.0	-	-	-	-	0.08	0.08	-	-	-		-
On Highway																										
	Trucks	EMFAC2021-T7OHW	D	1	-	25	260	33.2	-	0.09	6.08	0.39	0.01	0.03	0.03	0.012	0.790	0.051	0.001	0.004	0.004	301	0.097	0.408	425	-
	Autos	EMFAC2021-LDAOHW	G	1	-	100	260	33.2	-	0.08	0.40	3.34	0.03	0.01	0.01	0.010	0.052	0.434	0.004	0.002	0.001	241	0.010	1.631	727	-
Totals										17.72	142.51	122.83	0.20	12.04	11.50	2.3	18.5	16.0	0.0	1.1	1.1	2570.9	0.6	2.1	3204	458,273

Notes
Trucks assumed to be onroad emissions certified.
Fugitive Dust based on AP42 Section 13.2.3 in units of tons/acre/month, assumes 30 days per month (as per AP-42)
CalEEMod Emission factors utilized

Construction Emissions

Pipeline Modification Alternative

										Emission Factors (g/bhp-hr)								
Phase	**Equipment**	**CalEEMod Equipment Code**	**Fuel**	**Include in Peak Day**	**HP**	**# of equipment or acres**	**Work Days**	**Hrs/ day**	**Load Factor**	**VOC**	**NO_X**	**CO**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**	**CO2**	**CH4**	**N2O**
Construction	Welding Truck	EMFAC2015-T6	D	1	185	1	36	8	0.38	0.01935	0.35108	0.03298	0.00000	0.00178	0.00164	70.51336	0.00289	0.00420
	Welding Machine	Welders2020-120	D	1	70	1	36	8	0.45	0.45500	3.35100	3.60500	0.00600	0.21600	0.21600	568.29900	0.04100	0.00420
	Crane	Cranes2020-250	D	1	185	0	36	8	0.29	0.38370	4.56329	1.79040	0.00490	0.18810	0.17310	472.94880	0.15300	0.00420
	Backhoe	Tractors/Loaders/Backhoes2020-120	D	1	55	1	36	8	0.37	0.33100	3.32571	3.60147	0.00490	0.21030	0.19350	475.15430	0.15370	0.00420
	Dozer	Rubber Tired Dozers2020-500	D	1	285	0	36	8	0.40	0.53490	5.64089	4.41134	0.00490	0.25910	0.23840	479.75690	0.15520	0.00420
	Grader	Graders2020-175	D	1	135	0	36	8	0.41	0.56670	5.53045	3.62102	0.00490	0.30850	0.28380	478.04030	0.15460	0.00420
	Compactor	Rollers2020-250	D	1	185	1	36	8	0.38	0.20850	2.75095	1.25343	0.00490	0.08920	0.08200	473.36690	0.15310	0.00420
	Water Truck	EMFAC2015-T7	D	1	185	1	36	8	0.38	0.12818	0.84892	0.22556	0.00000	0.01972	0.01814	108.79078	0.00446	0.00420
	Dump Truck	EMFAC2015-T7	D	1	185	1	36	8	0.38	0.12818	0.84892	0.22556	0.00000	0.01972	0.01814	108.79078	0.00446	0.00420
	Pickup Truck	EMFAC2015-LDTG	G	1	185	1	36	8	0.38	0.02244	0.01628	0.25810	0.00000	0.00060	0.00053	34.14949	0.00140	0.00420
	Asphalt Paving	-	-	1	-	0.55	12	8	-	2.62	-	-	-	-	-	-	-	-
	Fugitive Dust	-	-	1	-	0.55	36	8	-	-	-	-	-	1.2	1.2	-	-	-
Totals																		

Notes

Trucks assumed to be onroad emissions certified.

Fugitive Dust based on AP42 Section 13.2.3 in units of tons/acre/month, assumes 30 days per month (as per AP-42)

CalEEMod Emission factors utilized

Area for fugitive dust and asphalt is total area of construction project. For peak day, total area is divided by the work days.

Areas based on 20x100 foot excavation

Construction Emissions

Pipeline Modification Alternative

										Emissions (lb/day)						Emissions, tons total						GHG, MT total				
Phase	Equipment	CalEEMod Equipment Code	Fuel	Include in Peak Day	HP	# of equipment or acres	Work Days	Hrs/ day	Load Factor	VOC	NO_X	CO	SO_2	PM_{10}	$PM_{2.5}$	VOC	NO_X	CO	SO_2	PM_{10}	$PM_{2.5}$	CO2	CH4	N2O	CO2e	Total Fuel Use, gal
Construction	Welding Truck	EMFAC2015-T6	D	1	185	1	36	8	0.38	0.02	0.44	0.04	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	1	0	0	1	1,035
	Welding Machine	Welders2020-120	D	1	70	1	36	8	0.45	0.25	1.86	2.00	0.00	0.12	0.12	0.00	0.03	0.04	0.00	0.00	0.00	5	0	0	5	464
	Crane	Cranes2020-250	D	1	185	0	36	8	0.29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0	0	0
	Backhoe	Tractors/Loaders/Backhoes2020-120	D	1	55	1	36	8	0.37	0.12	1.19	1.29	0.00	0.08	0.07	0.00	0.02	0.02	0.00	0.00	0.00	3	0	0	3	299
	Dozer	Rubber Tired Dozers2020-500	D	1	285	0	36	8	0.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0	0	0
	Grader	Graders2020-175	D	1	135	0	36	8	0.41	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0	0	0
	Compactor	Rollers2020-250	D	1	185	1	36	8	0.38	0.26	3.41	1.55	0.01	0.11	0.10	0.00	0.06	0.03	0.00	0.00	0.00	10	0	0	10	1,035
	Water Truck	EMFAC2015-T7	D	1	185	1	36	8	0.38	0.16	1.05	0.28	0.00	0.02	0.02	0.00	0.02	0.01	0.00	0.00	0.00	2	0	0	2	1,035
	Dump Truck	EMFAC2015-T7	D	1	185	1	36	8	0.38	0.16	1.05	0.28	0.00	0.02	0.02	0.00	0.02	0.01	0.00	0.00	0.00	2	0	0	2	1,035
	Pickup Truck	EMFAC2015-LDTG	G	1	185	1	36	8	0.38	0.03	0.02	0.32	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	1	0	0	1	1,035
	Asphalt Paving	-	-	1	-	0.55	12	8	-	0.1203	-	-	-	-	-	0.0007	-	-	-	-	-	-	-	-		-
	Fugitive Dust	-	-	1	-	0.55	36	8	-	-	-	-	-	1.2	1.2	-	-	-	-	0.02	0.02	-	-	-		-
Totals										1.12	9.03	5.77	0.01	1.58	1.56	0.0	0.2	0.1	0.0	0.0	0.0	23.9	0.0	0.0	24.1	5,936

Notes

Trucks assumed to be onroad emissions certified.

Fugitive Dust based on AP42 Section 13.2.3 in units of tons/acre/month, assumes 30 days per month (as per AP-42)

CalEEMod Emission factors utilized

Area for fugitive dust and asphalt is total area of construction project. For peak day, total area is divided by the work days.

Areas based on 20x100 foot excavation

Truck Transportation of Gaseous Hydrogen from Carson

			Emission Factors (g/mile)									Emissions (lb/day)						Emissions, tons total						GHG, MT total			
Phase	Trucks per Day	Distance RT, miles	VOC	NO_X	CO	SO_2	PM_{10}	$PM_{2.5}$	CO2	CH4	N2O	VOC	NO_X	CO	SO_2	PM_{10}	$PM_{2.5}$	VOC	NO_X	CO	SO_2	PM_{10}	$PM_{2.5}$	CO2	CH4	N2O	CO2e
Hydrogen Trucks	35	23.4	0.049	3.320	0.213	0.012	0.018	0.018	1405	0.0006	0.1917	0.09	5.99	0.38	0.02	0.03	0.03	0.02	1.09	0.07	0.00	0.01	0.01	417	0	0	434

EMFAC2014 using 65 mph for SC District