Air Quality and Greenhouse Gas Emissions Assessment for the VEGA SES 4 Solar Energy Project

County of Imperial, California

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LIST OF ACRONYMS AND ABBREVIATIONS

°F	Degrees Fahrenheit
µg/m^3	Micrograms per cubic meter; ppm = parts per million
1992 CO Plan	1992 Federal Attainment Plan for Carbon Monoxide
AB	Assembly Bill
AC	Alternating Current
AQMD	Air Quality Management District
BESS	Battery Electric Storage System
CAA	Clean Air Act
CAAQS	California Ambient Air Quality Standards
CalEEMod	California Emissions Estimator Model
Caltrans	California Department of Transportation
CAPCOA	California Air Pollution Control Officers Association
CARB	California Air Resources Board
CCAA	California Clean Air Act
CCR	California Code of Regulations
CEQA	California Environmental Quality Act
CH_4	Methane
CO_2	Carbon dioxide
CO_2e	Carbon dioxide equivalent
County	Imperial County
CUP	Conditional Use Permit
DPM	Diesel particulate matter

LIST OF ACRONYMS AND ABBREVIATIONS

EO	Executive Order
GHG	Greenhouse gas
GWP	Global warming potential
ICAPCD	Imperial County Air Pollution Control District
IID	Imperial Irrigation District
IPCC	Intergovernmental Panel on Climate Change
kV	Kilovolt
MDAQMD	Mojave Desert Air Quality Management District
MW	Megawatt
MWAC	Megawatt Alternating Current
N_2O	Nitrous oxide
NAAQS	National Ambient Air Quality Standards
NO_2	Nitrogen dioxide
NO_x	Nitric oxides
O_3	Ozone
PM	Particulate matter
PM_{10}	Coarse particulate matter
$PM_{2.5}$	Fine particulate matter
POI	point of interconnection
ppb	Parts per billion
Project	VEGA SES 4 Solar Energy Project
PV	Photovoltaic
ROGs	Reactive organic gases
RE	Renewable Energy
SB	Senate Bill
SCAQMD	South Coast Air Quality Management
SIP	State Implementation Plan
SO_2	Sulfur dioxide
SO_x	Sulfur oxides
SR	State Route
SRA	Source receptor area
SSAB	Salton Sea Air Basin
TACs	Toxic air contaminants
USEPA	U.S. Environmental Protection Agency
VOC	Volatile organic compound
VMT	Vehicle Miles Traveled

1.0 INTRODUCTION

This report documents the results of an assessment of both air quality and greenhouse gas (GHG) emissions completed for the VEGA SES 4 Solar Energy Project (Project), which includes the construction of a 100-megawatt (MW) alternating current (AC) solar field on approximately 451 acres of vacant land on two parcels in Imperial County, California (APN 059-300-015, 301.73 acres; APN 059-300-017, 148.88 acres). This assessment was prepared using methodologies and assumptions recommended in the rules and regulations promulgated by the Imperial County Air Pollution Control District (ICAPCD). Regional and local existing conditions are presented, along with pertinent emissions standards and regulations.

1.1 Project Location

The Project Site is located on approximately 451 acres of privately-owned land in the southernmost portion of Imperial County, California (see Figures 1-1 and 1-2). The Project Site is between the U.S./ Mexico international border and the All-American Canal, on the California side. It is approximately 10 miles east of the City of Calexico in Sections 10, 11, 14, 15, and 16 within Township 17 South, and Range 16 East of the San Bernardino Base and Meridian of the Bonds Corner topographic 7.5-minute quadrangle. The irregular shaped Project Site is bound by undeveloped land, portions of which have been disturbed associated with previous agricultural-related activities to the west and east, the All-American Canal running southwest on the northern border of the Project Site, and the U.S./Mexico international border to the south. The Project Site is currently characterized by flat and undeveloped land, portions of which have been disturbed associated with previous agricultural-related activities.

In 2016, the County adopted the Imperial County Renewable Energy and Transmission Element, which includes an RE Zone (RE Overlay Map). This General Plan element was created as part of the California Energy Commission Renewable Energy Grant Program to amend and update the County's General Plan to facilitate future development of renewable energy projects. The County Land Use Ordinance, Division 17, includes the RE Overlay Zone, which authorizes the development and operation of renewable energy projects with an approved conditional use permit (CUP). The RE Overlay Zone is concentrated in areas determined to be the most suitable for the development of renewable energy facilities while minimizing the impact on other established uses. As shown on Figure 1-1, the Project Site is located within the RE Overlay Zone. Therefore, no General Plan Amendment or Rezone would be required to implement the Proposed Project.

1.2 Project Overview

The Proposed Project consists of three primary components: 1) solar energy generation equipment and associated facilities including a substation and access roads (herein referred to as "solar energy facility"); 2) battery energy storage system (BESS); 3) generator intertie (gen-tie) that would connect the proposed onsite substation to the point of interconnection at the existing Imperial Irrigation District (IID) 92 kilovolt "P" line. The first component, a 100 MW AC photovoltaic (PV) solar energy facility, would span the majority of the Project Site. The BESS component would be located within the northeastern portion of the solar energy facility site and span two acres (APN 059-300-015). The electrical energy produced by the Project would be conducted through the Project's interconnection facilities to the proposed 92 kilovolt (kV) gen-tie line and

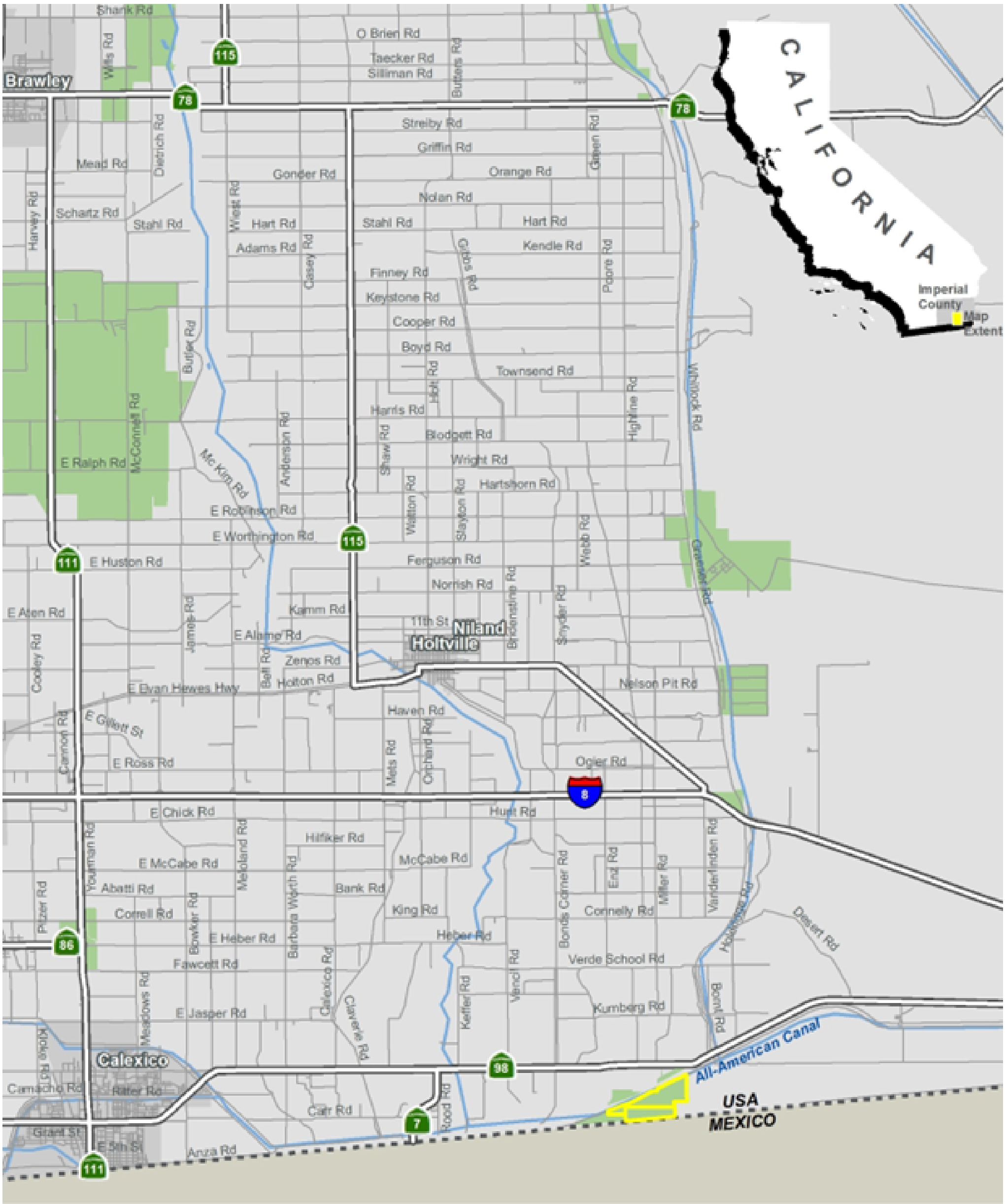
delivered to the existing IID approved point of interconnection (POI) on the 92 kV "P" Line located immediately north of the Project Site and the All-American Canal. Once fully constructed, the Project Site would be developed with a ground mounted PV solar power generating system, supporting structures, on-site substation spanning two acres, BESS, interconnection facilities, and internal access roads. The Project would employ the use of PV power systems to convert solar energy into electricity using non-reflective technology.

Construction activities would primarily involve demolition and grubbing, grading of the Project Site to establish access roads and pads for electrical equipment, trenching for underground electrical collection lines, and the installation of solar equipment and security fencing. Construction is estimated to take 12-18 months and would begin in late 2022 or 2023. The number of on-site construction workers for the solar facility is not expected to exceed 150 workers at any time. The number of on-site construction workers for the BESS and substation is not expected to exceed 100 workers at any one time.

All heavy-duty construction vehicles would cross the All-American Canal at Gordon Wells Road located approximately 20 miles east of the Project Site, then travel west along an existing dirt road paralleling the U.S./Mexico Border. Access for heavy construction vehicles to and from the Project Site requires crossing the All-American Canal, via two existing bridges, located along Gordon Wells Road. Gordon Wells Road has an interchange with Interstate 8. The bridges over the canal were constructed in 2009 and are rated as open with no restrictions and have a "Good" condition rating. An estimated two trucks would arrive at the Project Site each day during the first few weeks of construction of the solar facility. Construction workers would utilize an existing driveway off State Route 98 and then park their vehicles in a designated staging/parking area, approximately 3.5 acres in size, north of the All-American Canal. The staging/parking area is proposed to be improved to facilitate access and minimize parking conflicts. Construction workers would then walk across the All-American Canal at an existing crossing east of the Project Site. No vehicles or construction vehicles are allowed to travel across this existing crossing. Designated shuttles would pick up the construction workers at the south end of the crossing, and then travel west for approximately one mile along an existing dirt road to the Project Site. According to the Project Proponent, dust generated during construction would be controlled by watering and, as necessary, the use of other dust suppression methods and materials accepted by the ICAPCD.

Once construction is completed, the facility would be remotely operated, controlled and monitored and with no requirement for daily on-site employees. Security personnel may conduct unscheduled security rounds and would be dispatched to the Project Site in response to a fence breach or other alarm. Up to two to three people would be contracted (part-time) to perform all routine and emergency operational and maintenance activities. Such activities include inspections, equipment servicing, site and landscape clearing, and periodic washing of the PV modules if needed (up to two times per year) to maintain power generation efficiency. The amount of water needed for solar panel washing is estimated at approximately 5 acre-feet per washing, with up to two washings per year, or a total of up to 10 acre-feet per year. Vegetation growing on the solar energy facility site would periodically (approximately every 3 months) be removed manually and/or treated with herbicides. Workers during Project operations would utilize an existing driveway off State Route 98, park their vehicles in a designated staging/parking area north of the All-American Canal, and then walk across the All-American Canal at an existing crossing east of the Project

Site. No vehicles or construction vehicles are allowed to travel across this existing crossing. Designated shuttles would pick up workers at the south end of the crossing, and then travel west for approximately one mile along an existing dirt road to the Project Site.



Map Date: 10/26/2022
Photo (or Base) Source: HDR 2022

Figure 1-1. Regional Location Map

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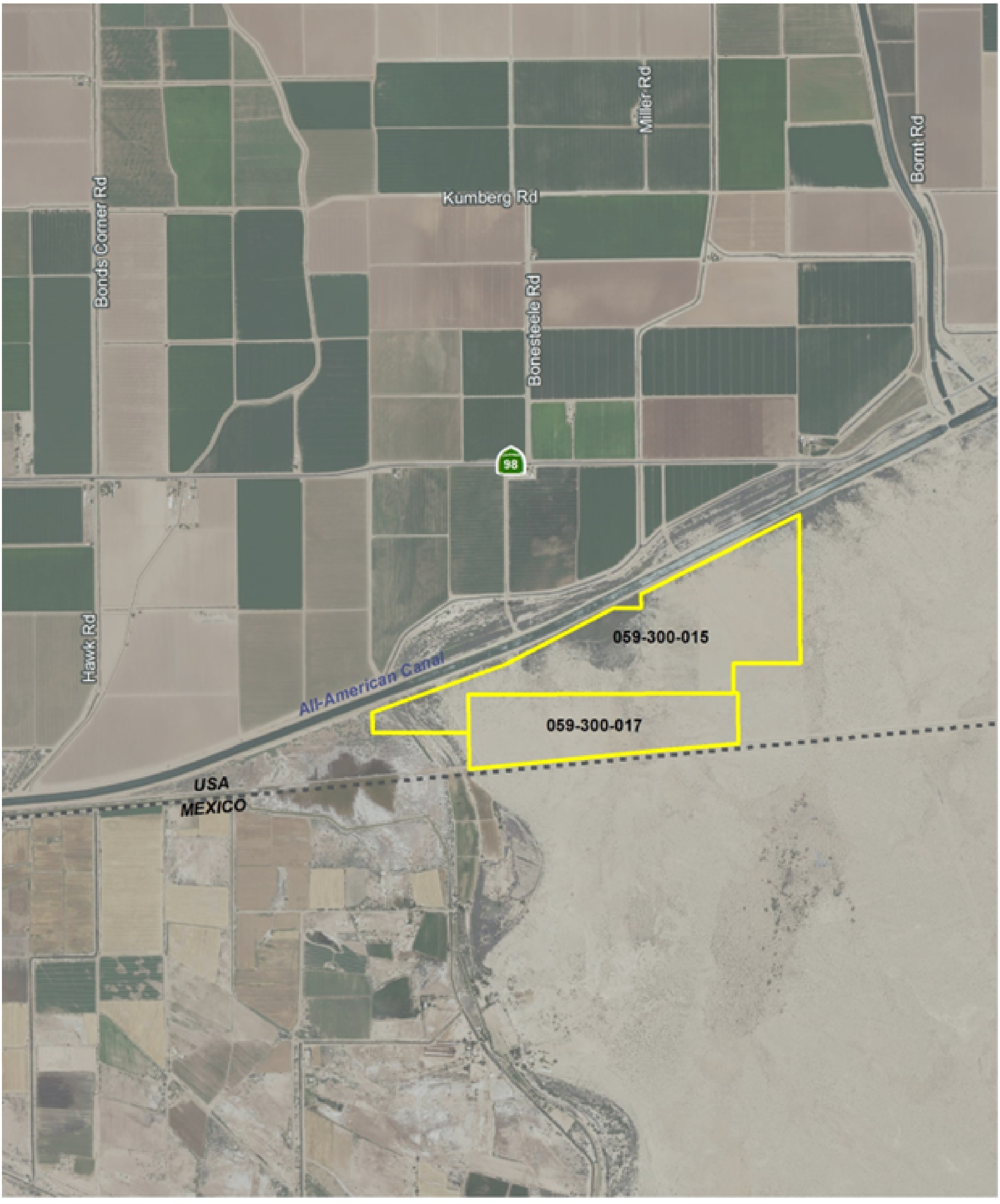

Map Date: 10/26/2022
Photo (or Base) Source: HDR 2022

Figure 1-2. Project Location Map

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2.0 AIR QUALITY

2.1 Air Quality Setting

Air quality in a region is determined by its topography, meteorology, and existing air pollutant sources. These factors are discussed below, along with the current regulatory structure that applies to the Salton Sea Air Basin (SSAB), which encompasses the Project Site, pursuant to the regulatory authority of the ICAPCD.

Ambient air quality is commonly characterized by climate conditions, the meteorological influences on air quality, and the quantity and type of pollutants released. The air basin is subject to a combination of topographical and climatic factors that reduce the potential for high levels of regional and local air pollutants. The following section describes the pertinent characteristics of the air basin and provides an overview of the physical conditions affecting pollutant dispersion in the Project Area.

2.1.1 Salton Sea Air Basin

The California Air Resources Board (CARB) divides the State into air basins that share similar meteorological and topographical features. Imperial County, which extends over 4,482 square miles in the southeastern corner of California, lies in the SSAB, which includes the Imperial Valley and the central part of Riverside County, including the Coachella Valley. The province is characterized by the large-scale sinking and warming of air within the semi-permanent subtropical high-pressure center over the Pacific Ocean. The elevation in Imperial County ranges from about 230 feet below sea level in the Salton Sea to more than 2,800 feet on the mountain summits to the east.

2.1.1.1 Temperature and Precipitation

The flat terrain near the Salton Sea, intense heat from the sun during the day, and strong radiational cooling at night create deep convective thermals during the daytime and equally strong surface-based temperature inversions at night. The temperature inversions and light nighttime winds trap any local air pollution emissions near the ground. The area is subject to frequent hazy conditions at sunrise, followed by rapid daytime dissipation as winds pick up and the temperature warms. The lack of clouds and atmospheric moisture creates strong diurnal and seasonal temperature variations ranging from an average summer maximum of 108 degrees Fahrenheit (° F) down to a winter morning minimum of 38° F. The most pleasant weather occurs from about mid-October to early May when daily highs are in the 70s and 80s with very infrequent cloudiness or rainfall. Imperial County experiences rainfall on an average of only four times per year (>0.10 inches in 24 hours). The local area usually has three days of rain in winter and one thunderstorm day in August. The annual rainfall in this region is less than three inches per year (ICAPCD 2010).

2.1.1.2 Wind

Winds in the area are driven by a complex pattern of local, regional and global forces, but primarily reflect the temperature difference between the cool ocean to the west and the heated interior of the entire desert southwest. For much of the year, winds flow predominantly from the west to the east. In summer, intense solar heating in the Imperial Valley creates a more localized wind pattern, as air comes up from the southeast

via the Gulf of California. During periods of strong solar heating and intense convection, turbulent motion creates good mixing and low levels of air pollution. However, even strong turbulent mixing is insufficient to overcome the limited air pollution controls on sources in the Mexicali, Mexico area. Imperial County is predominately agricultural land. This is a factor in the cumulative air quality of the SSAB. The agricultural production generates dust and small particulate matter through the use of agricultural equipment on unpaved roads, land preparation, and harvest practices. The Imperial County experiences unhealthful air quality from photochemical smog and from dust due to extensive surface disturbance and the very arid climate (ICAPCD 2010).

2.1.1.3 Inversion

The entire county is affected by inversion layers, where warm air overlays cooler air. Inversion layers trap pollutants close to the ground. In the winter, these pollutant-trapping, ground-based inversions are formed during windless, clear-sky conditions, as cold air collects in low-lying areas such as valleys and canyons. Imperial County experiences surface inversions almost every day of the year. Due to strong surface heating, these inversions are usually broken allowing pollutants to be more easily dispersed (ICAPCD 2010).

2.1.2 Criteria Air Pollutants

Criteria air pollutants are defined as those pollutants for which the federal and state governments have established air quality standards for outdoor or ambient concentrations to protect public health with a determined margin of safety. Ozone (O_3), coarse particulate matter (PM_{10}), and fine particulate matter ($PM_{2.5}$) are generally considered to be regional pollutants because they or their precursors affect air quality on a regional scale. Pollutants such as carbon monoxide (CO), nitrogen dioxide (NO_2), and sulfur dioxide (SO_2) are considered to be local pollutants because they tend to accumulate in the air locally. PM is also considered a local pollutant. Health effects commonly associated with criteria pollutants are summarized in Table 2-1.

Table 2-1. Criteria Air Pollutants- Summary of Common Sources and Effects

Pollutant	Major Manmade Sources	Human Health & Welfare Effects
CO	An odorless, colorless gas formed when carbon in fuel is not burned completely; a component of motor vehicle exhaust.	Reduces the ability of blood to deliver oxygen to vital tissues, effecting the cardiovascular and nervous system. Impairs vision, causes dizziness, and can lead to unconsciousness or death.
NO_2	A reddish-brown gas formed during fuel combustion for motor vehicles, energy utilities and industrial sources.	Respiratory irritant; aggravates lung and heart problems. Precursor to ozone and acid rain. Causes brown discoloration of the atmosphere.
O_3	Formed by a chemical reaction between reactive organic gases (ROGs) and nitrous oxides (N_2O) in the presence of sunlight. Common sources of these precursor pollutants include motor vehicle exhaust, industrial emissions, solvents, paints and landfills.	Irritates and causes inflammation of the mucous membranes and lung airways; causes wheezing, coughing and pain when inhaling deeply; decreases lung capacity; aggravates lung and heart problems. Damages plants; reduces crop yield.
PM_{10} & $PM_{2.5}$	Power plants, steel mills, chemical plants, unpaved roads and parking lots, wood-burning stoves and fireplaces, automobiles and others.	Increased respiratory symptoms, such as irritation of the airways, coughing, or difficulty breathing; aggravated asthma; development of chronic bronchitis; irregular heartbeat; nonfatal heart attacks; and premature death in people with heart or lung disease. Impairs visibility (haze).
SO_2	A colorless, nonflammable gas formed when fuel containing sulfur is burned. Examples are refineries, cement manufacturing, and locomotives.	Respiratory irritant. Aggravates lung and heart problems. Can damage crops and natural vegetation. Impairs visibility.

Source: California Air Pollution Control Officers Association (CAPCOA 2013)

2.1.2.1 Carbon Monoxide

CO in the urban environment is associated primarily with the incomplete combustion of fossil fuels in motor vehicles. CO combines with hemoglobin in the bloodstream and reduces the amount of oxygen that can be circulated through the body. High CO concentrations can cause headaches, aggravate cardiovascular disease and impair central nervous system functions. CO concentrations can vary greatly over comparatively short distances. Relatively high concentrations of CO are typically found near crowded intersections and along heavy roadways with slow moving traffic. Even under the most severe meteorological and traffic conditions, high concentrations of CO are limited to locations within relatively short distances of the source. Overall CO emissions are decreasing as a result of the Federal Motor Vehicle Control Program, which has mandated increasingly lower emission levels for vehicles manufactured since 1973. CO levels in the SSAB are in compliance with the state and federal one- and eight-hour standards.

2.1.2.2 Nitrogen Oxides

Nitrogen gas comprises about 80 percent of the air and is naturally occurring. At high temperatures and under certain conditions, nitrogen can combine with oxygen to form several different gaseous compounds

collectively called nitric oxides (NO_x). Motor vehicle emissions are the main source of NO_x in urban areas. NO_x is very toxic to animals and humans because of its ability to form nitric acid with water in the eyes, lungs, mucus membrane, and skin. In animals, long-term exposure to NO_x increases susceptibility to respiratory infections, and lowering resistance to such diseases as pneumonia and influenza. Laboratory studies show that susceptible humans, such as asthmatics, who are exposed to high concentrations can suffer from lung irritation or possible lung damage. Precursors of NO_x, such as NO and NO_2, attribute to the formation of O_3 and $PM_{2.5}$. Epidemiological studies have also shown associations between NO_2 concentrations and daily mortality from respiratory and cardiovascular causes and with hospital admissions for respiratory conditions.

2.1.2.3 Ozone

O_3 is a secondary pollutant, meaning it is not directly emitted. It is formed when volatile organic compounds (VOCs) or ROGs and NO_x undergo photochemical reactions that occur only in the presence of sunlight. The primary source of ROG emissions is unburned hydrocarbons in motor vehicle and other internal combustion engine exhaust. NO_x forms as a result of the combustion process, most notably due to the operation of motor vehicles. Sunlight and hot weather cause ground-level O_3 to form. Ground-level O_3 is the primary constituent of smog. Because O_3 formation occurs over extended periods of time, both O_3 and its precursors are transported by wind and high O_3 concentrations can occur in areas well away from sources of its constituent pollutants.

People with lung disease, children, older adults, and people who are active can be affected when O_3 levels exceed ambient air quality standards. Numerous scientific studies have linked ground-level O_3 exposure to a variety of problems including lung irritation, difficult breathing, permanent lung damage to those with repeated exposure, and respiratory illnesses.

2.1.2.4 Particulate Matter

PM includes both aerosols and solid particulates of a wide range of sizes and composition. Of concern are those particles smaller than or equal to 10 microns in diameter size (PM_{10}) and small than or equal to 2.5 microns in diameter ($PM_{2.5}$). Smaller particulates are of greater concern because they can penetrate deeper into the lungs than larger particles. PM_{10} is generally emitted directly as a result of mechanical processes that crush or grind larger particles or form the resuspension of dust, typically through construction activities and vehicular travel. PM_{10} generally settles out of the atmosphere rapidly and is not readily transported over large distances. $PM_{2.5}$ is directly emitted in combustion exhaust and is formed in atmospheric reactions between various gaseous pollutants, including NO_x, sulfur oxides (SO_x) and VOCs. $PM_{2.5}$ can remain suspended in the atmosphere for days and/or weeks and can be transported long distances.

The principal health effects of airborne PM are on the respiratory system. Short-term exposure of high $PM_{2.5}$ and PM_{10} levels are associated with premature mortality and increased hospital admissions and emergency room visits. Long-term exposure is associated with premature mortality and chronic respiratory disease. According to the U.S. Environmental Protection Agency (USEPA), some people are much more sensitive than others to breathing PM_{10} and $PM_{2.5}$. People with influenza, chronic respiratory and cardiovascular diseases, and the elderly may suffer worse illnesses; people with bronchitis can expect aggravated symptoms; and

children may experience decline in lung function due to breathing in PM_{10} and $PM_{2.5}$. Other groups considered sensitive include smokers and people who cannot breathe well through their noses. Exercising athletes are also considered sensitive because many breathe through their mouths.

2.1.3 Toxic Air Contaminants

In addition to the criteria pollutants discussed above, toxic air contaminants (TACs) are another group of pollutants of concern. TACs are considered either carcinogenic or noncarcinogenic based on the nature of the health effects associated with exposure to the pollutant. For regulatory purposes, carcinogenic TACs are assumed to have no safe threshold below which health impacts would not occur, and cancer risk is expressed as excess cancer cases per one million exposed individuals. Noncarcinogenic TACs differ in that there is generally assumed to be a safe level of exposure below which no negative health impact is believed to occur. These levels are determined on a pollutant-by-pollutant basis.

There are many different types of TACs, with varying degrees of toxicity. Sources of TACs include industrial processes such as petroleum refining and chrome plating operations, commercial operations such as gasoline stations and dry cleaners, and motor vehicle exhaust. Additionally, diesel engines emit a complex mixture of air pollutants composed of gaseous and solid material. The solid emissions in diesel exhaust are known as diesel particulate matter (DPM). In 1998, California identified DPM as a TAC based on its potential to cause cancer, premature death, and other health problems (e.g., asthma attacks and other respiratory symptoms). Those most vulnerable are children (whose lungs are still developing) and the elderly (who may have other serious health problems). Overall, diesel engine emissions are responsible for the majority of California's known cancer risk from outdoor air pollutants. Public exposure to TACs can result from emissions from normal operations, as well as from accidental releases of hazardous materials during upset conditions. The health effects of TACs include cancer, birth defects, neurological damage, and death.

2.1.3.1 Diesel Exhaust

Most recently, CARB identified DPM as a TAC. DPM differs from other TACs in that it is not a single substance but rather a complex mixture of hundreds of substances. Diesel exhaust is a complex mixture of particles and gases produced when an engine burns diesel fuel. DPM is a concern because it causes lung cancer; many compounds found in diesel exhaust are carcinogenic. DPM includes the particle-phase constituents in diesel exhaust. The chemical composition and particle sizes of DPM vary between different engine types (heavy-duty, light-duty), engine operating conditions (idle, accelerate, decelerate), fuel formulations (high/low sulfur fuel), and the year of the engine (USEPA 2002). Some short-term (acute) effects of diesel exhaust include eye, nose, throat, and lung irritation, and diesel exhaust can cause coughs, headaches, light-headedness, and nausea. DPM poses the greatest health risk among the TACs; due to their extremely small size, these particles can be inhaled and eventually trapped in the bronchial and alveolar regions of the lung.

2.1.4 Ambient Air Quality

Ambient air quality at the Project Site can be inferred from ambient air quality measurements conducted at nearby air quality monitoring stations. CARB maintains more than 60 monitoring stations throughout California. O_3, PM_{10} and $PM_{2.5}$ are the pollutant species most potently affecting the Project region. As

described in detail below, the Project region is designated as a nonattainment area for the federal O_3 and $PM_{2.5}$ standards and is also a nonattainment area for the state standards for O_3 and PM_{10} (CARB 2019). The Niland-English Road air quality monitoring station (7711 English Road, Niland), located approximately 23.0 miles northwest of the Project Site, monitors ambient concentrations of O_3 and PM_{10}. The Brawley-Main Street #2 air quality monitoring station (220 Main Street, Brawley), located 15.0 miles west of the Project Site, monitors ambient concentrations of $PM_{2.5}$. Ambient emission concentrations will vary due to localized variations in emission sources and climate and should be considered "generally" representative of ambient concentrations in the Project Area.

Table 2-2 summarizes the published data concerning O_3, $PM_{2.5}$ and PM_{10} from the Niland-English Road and Brawley-Main Street #2 monitoring stations for each year that the monitoring data is provided. O_3, PM_{10} and $PM_{2.5}$ are the pollutant species most potently affecting the Project region.

Table 2-2. Summary of Ambient Air Quality Data

Pollutant Standards	2018	2019	2020
O_3- Niland-English Road			
Max 1-hour concentration (ppm)	0.060	0.060	0.054
Max 8-hour concentration (ppm) (state/federal)	0.055 / 0.055	0.055 / 0.054	0.046 / 0.045
Number of days above 1-hour standard (state/federal)	0 / 0	0 / 0	0 / 0
Number of days above 8-hour standard (state/federal)	0 / 0	0 / 0	0 / 0
PM_{10}- Niland-English Road			
Max 24-hour concentration (µg/m^3) (state/federal)	333.8 / 331.5	156.3 / 155.7	241.3 / 239.8
Number of days above 24-hour standard (state/federal)	* / 10.1	49.3 / 1.0	68.9 / 1.0
$PM_{2.5}$- Brawley-Main Street			
Max 24-hour concentration (µg/m^3) (state/federal)	55.1 / 55.1	28.9 / 28.9	23.7 / 23.7
Number of days above federal 24-hour standard	6.1	0	0

Source: CARB 2021a
µg/m^3 = micrograms per cubic meter; ppm = parts per million
* = Insufficient data available

The USEPA and CARB designate air basins or portions of air basins and counties as being in "attainment" or "nonattainment" for each of the criteria pollutants. Areas that do not meet the standards are classified as nonattainment areas. The National Ambient Air Quality Standards (NAAQS) (other than O_3, PM_{10} and $PM_{2.5}$ and those based on annual averages or arithmetic mean) are not to be exceeded more than once per year. The NAAQS for O_3, PM_{10}, and $PM_{2.5}$ are based on statistical calculations over one- to three-year periods, depending on the pollutant. The California Ambient Air Quality Standards (CAAQS) are not to be exceeded during a three-year period. The attainment status for the portion of the SSAB encompassing the Project Site is included in Table 2-3.

Table 2-3. Attainment Status of Criteria Pollutants in the Imperial County Portion of the SSAB

Pollutant	State Designation	Federal Designation
O_3	Nonattainment	Nonattainment
PM_{10}	Nonattainment	Attainment
$PM_{2.5}$	Attainment	Nonattainment
CO	Attainment	Unclassified/Attainment
NO_2	Attainment	Unclassified/Attainment
SO_2	Attainment	Unclassified/Attainment

Source: CARB 2019

The determination of whether an area meets the state and federal standards is based on air quality monitoring data. Some areas are unclassified, which means there is insufficient monitoring data for determining attainment or nonattainment. Unclassified areas are typically treated as being in attainment. Because the attainment/nonattainment designation is pollutant-specific, an area may be classified as nonattainment for one pollutant and attainment for another. Similarly, because the state and federal standards differ, an area could be classified as attainment for the federal standards of a pollutant and as nonattainment for the state standards of the same pollutant. The region is designated as a nonattainment area for the federal O_3 and $PM_{2.5}$ standards and is also a nonattainment area for the state standards for O_3 and PM_{10} (CARB 2019).

2.1.5 Sensitive Receptors

Sensitive receptors are defined as facilities or land uses that include members of the population who are particularly sensitive to the effects of air pollutants, such as children, the elderly, and people with illnesses. Examples of these sensitive receptors are residences, schools, hospitals, and daycare centers. CARB has identified the following groups of individuals as the most likely to be affected by air pollution: the elderly over 65, children under 14, athletes, and persons with cardiovascular and chronic respiratory diseases such as asthma, emphysema, and bronchitis. The nearest existing sensitive receptor to the Project Site is a single-family residence located approximately 0.5 miles from the northeastern corner of the Project boundary.

2.2 Regulatory Framework

2.2.1 Federal

2.2.1.1 Clean Air Act

The Clean Air Act (CAA) of 1970 and the CAA Amendments of 1971 required the USEPA to establish the NAAQS, with states retaining the option to adopt more stringent standards or to include other specific pollutants. On April 2, 2007, the Supreme Court found that carbon dioxide (CO_2) is an air pollutant covered by the CAA; however, no NAAQS have been established for CO_2.

These standards are the levels of air quality considered safe, with an adequate margin of safety, to protect the public health and welfare. They are designed to protect those "sensitive receptors" most susceptible to further respiratory distress such as asthmatics, the elderly, very young children, people already weakened by other disease or illness, and persons engaged in strenuous work or exercise. Healthy adults can tolerate occasional exposure to air pollutant concentrations considerably above these minimum standards before adverse effects are observed.

The USEPA has classified air basins (or portions thereof) as being in attainment, nonattainment, or unclassified for each criteria air pollutant, based on whether or not the NAAQS have been achieved. If an area is designated unclassified, it is because inadequate air quality data were available as a basis for a nonattainment or attainment designation. Table 2-3 lists the federal attainment status of the SSAB for the criteria pollutants.

2.2.2 State

2.2.2.1 California Clean Air Act

The California Clean Air Act (CCAA) allows the state to adopt ambient air quality standards and other regulations provided that they are at least as stringent as federal standards. CARB, a part of the California Environmental Protection Agency, is responsible for the coordination and administration of both federal and state air pollution control programs within California, including setting the CAAQS. CARB also conducts research, compiles emission inventories, develops suggested control measures, and provides oversight of local programs. CARB establishes emissions standards for motor vehicles sold in California, consumer products (such as hairspray, aerosol paints, and barbecue lighter fluid), and various types of commercial equipment. It also sets fuel specifications to further reduce vehicular emissions. CARB also has primary responsibility for the development of California's State Implementation Plan (SIP), for which it works closely with the federal government and the local air districts.

2.2.2.2 California State Implementation Plan

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

Local air districts, such as the ICAPCD, prepare air quality attainment plans or air quality management plans and submit them to CARB for review, approval, and incorporation into the applicable SIP. The air districts develop the strategies stated in the SIPs for achieving air quality standards on a regional basis.

For 8-Hour O_3, the ICAPCD adopted the 2017 8-hour Ozone State Implementation Plan in October 2018. The plan includes control measures which are an integral part of how the ICAPCD currently controls the ROG and NO_X emissions within the O_3 nonattainment areas. The overall strategy includes programs and control measures which represent the implementation of Reasonable Available Control Technology (40 CFR 51.912) and the assurance that stationary sources maintain a net decrease in emissions.

For PM_{10}, the ICAPCD adopted the PM_{10} State Implementation Plan in 2018, which maintained previously adopted fugitive dust control measures (Regulation VIII). The USEPA had previously approved Regulation VIII fugitive dust rules into the Imperial County portion of the California SIP in 2013.

For $PM_{2.5}$, the ICAPCD adopted the $PM_{2.5}$ SIP in April 2018. This SIP concluded that the majority of the $PM_{2.5}$ emissions resulted from transport in nearby Mexico. Specifically, the SIP demonstrates attainment of the 2006 $PM_{2.5}$ NAAQS "but for" transport of international emissions from Mexicali, Mexico. In accordance with the CCAA, the $PM_{2.5}$ SIP satisfies the attainment demonstration requirement satisfying the provisions of the CCAA.

The ICAPCD is working cooperatively with counterparts from Mexico to implement emissions reductions strategies and projects for air quality improvements at the border. The two countries strive to achieve these goals through local input from states, County governments, and citizens. Within the Mexicali and Imperial Valley area, the Air Quality Task Force (AQTF) has been organized to address those issues unique to the border region known as the Mexicali/Imperial air shed. The AQTF membership includes representatives from Federal, State, and local governments from both sides of the border, as well as representatives from academia, environmental organizations, and the general public. This group was created to promote regional efforts to improve the air quality monitoring network, emissions inventories, and air pollution transport modeling development, as well as the creation of programs and strategies to improve air quality.

2.2.2.3 Tanner Air Toxics Act & Air Toxics "Hot Spots" Information and Assessment Act

CARB's Statewide comprehensive air toxics program was established in 1983 with Assembly Bill (AB) 1807, the Toxic Air Contaminant Identification and Control Act (Tanner Air Toxics Act of 1983). AB 1807 created California's program to reduce exposure to air toxics and sets forth a formal procedure for CARB to designate substances as TACs. Once a TAC is identified, CARB adopts an airborne toxics control measure (ATCM) for sources that emit designated TACs. If there is a safe threshold for a substance at which there is no toxic effect, the control measure must reduce exposure to below that threshold. If there is no safe threshold, the measure must incorporate toxics best available control technology to minimize emissions.

CARB also administers the state's mobile source emissions control program and oversees air quality programs established by state statute, such as AB 2588, the Air Toxics "Hot Spots" Information and Assessment Act of 1987. Under AB 2588, TAC emissions from individual facilities are quantified and prioritized by the air quality management district or air pollution control district. High priority facilities are required to perform a health risk assessment (HRA) and, if specific thresholds are exceeded, required to communicate the results to the public in the form of notices and public meetings. In September 1992, the "Hot Spots" Act was amended by Senate Bill (SB) 1731, which required facilities that pose a significant health risk to the community to reduce their risk through a risk management plan.

2.2.3 Local

2.2.3.1 Imperial County Air Pollution Control District

The ICAPCD is the local air quality agency and shares responsibility with CARB for ensuring that state and federal ambient air quality standards are achieved and maintained in the SSAB. Furthermore, ICAPCD adopts and enforces controls on stationary sources of air pollutants through its permit and inspection programs and regulates agricultural burning. Other ICAPCD responsibilities include monitoring ambient air quality, preparing clean air plans, planning activities such as modeling and maintenance of the emission inventory, and responding to citizen air quality complaints.

To achieve and maintain ambient air quality standards, the ICAPCD has adopted various rules and regulations for the control of airborne pollutants. The ICAPCD Rules and Regulations that are applicable to the Proposed Project include, but are not limited to, ICAPCD Regulation VIII (Fugitive Dust Rules). The purpose of this regulation is to reduce the amount of PM_{10} entrained in the ambient air as a result of emissions generated from construction and other earthmoving activities by requiring actions to prevent, reduce, or mitigate PM_{10} emissions. Regulation VIII requires the Project to adopt best available control measures to minimize emissions from surface-disturbing activities. These measures include the following (ICAPCD 2017):

- All disturbed areas, including bulk material storage which is not being actively utilized, shall be effectively stabilized and visible emissions shall be limited to no greater than 20 percent opacity for dust emissions by using water, chemical stabilizers, dust suppressants, tarps, or other suitable material such as vegetative ground cover.
- All on-site and off-site unpaved roads will be effectively stabilized, and visible emissions shall be limited to no greater than 20 percent opacity for dust emissions by paving, chemical stabilizers, or dust suppressants.
- All unpaved traffic areas of 1 acre or more with 75 or more average vehicle trips per day will be effectively stabilized and visible emissions shall be limited to no greater than 20 percent opacity for dust emissions by paving, chemical stabilizers, dust suppressants, and/or watering.
- The transport of bulk materials shall be completely covered unless 6 inches of freeboard space from the top of the container is maintained with no spillage and loss of bulk material. In addition, the cargo compartment of all haul trucks is to be cleaned and/or washed at the delivery site after removal of bulk material.
- All track-out or carry-out will be cleaned at the end of each workday or immediately when mud or dirt extends a cumulative distance of 50 linear feet or more onto a paved road within an urban area.
- Bulk material handling or transfer shall be stabilized prior to handling or at points of transfer with application of sufficient water, chemical stabilizers, or by sheltering or enclosing the operation and transfer line.

- The construction of any new unpaved road is prohibited within any area with a population of 500 or more unless the road meets the definition of a temporary unpaved road. Any temporary unpaved road shall be effectively stabilized and visible emissions shall be limited to no greater than 20 percent opacity for dust emission by paving, chemical stabilizers, dust suppressants and/or watering.

In addition, there are other ICAPCD rules and regulations, not detailed here, which may apply to the Proposed Project, but are administrative or descriptive in nature. These include rules associated with fees, enforcement and penalty actions, and variance procedures.

2.3 Air Quality Emissions Impact Assessment

2.3.1 Thresholds of Significance

The impact analysis provided below is based on the following California Environmental Quality Act (CEQA) Guidelines Appendix G thresholds of significance. The Project would result in a significant impact to air quality if it would do any of the following:

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

2.3.1.1 Imperial County Air Pollution Control District Thresholds

The significance criteria established by the applicable air quality management or air pollution control district (ICAPCD) may be relied upon to make the above determinations. The ICAPCD has identified significance thresholds for use in evaluating project impacts under CEQA. Accordingly, the ICAPCD-recommended thresholds of significance are used to determine whether implementation of the proposed Project would result in a significant air quality impact. Significance thresholds for evaluation construction and operational air quality impacts are listed in Table 2-4.

Table 2-4. ICAPCD Significance Thresholds – Pounds per Day			
Criteria Pollutant and Precursors	**Construction Activities**	**Operations**	
	Average Daily Emissions (lbs/day)	**Average Daily Emissions (lbs/day)**	
		Tier I Threshold	**Tier II Threshold**
ROG	75	<137	>137
NO_x	100	<137	>137
PM_{10}	150	<150	>150
$PM_{2.5}$	N/A	<550	>550
CO	550	<550	>550
SO_2	N/A	<150	>150

Source: ICAPCD 2017

Projects that are predicted to exceed Tier I thresholds require implementation of applicable ICAPCD standard mitigation measures to be considered less than significant. Projects exceeding Tier II thresholds are required to implement applicable ICAPCD standard mitigation measures, as well as applicable discretionary mitigation measures. Projects that exceed the Tier II thresholds after implementation of standard and discretionary mitigation measures would be considered to have a potentially significant impact to human health and welfare.

By its very nature, air pollution is largely a cumulative impact. No single project is sufficient in size, by itself, to result in nonattainment of ambient air quality standards. Instead, a project's individual emissions contribute to existing cumulatively significant adverse air quality impacts. If a project's individual emissions exceed its identified significance thresholds, the project would be cumulatively considerable. Projects that do not exceed significance thresholds would not be considered cumulative considerable.

2.3.2 Methodology

Air quality impacts were assessed in accordance with methodologies recommended by the ICAPCD. Where criteria air pollutant quantification was required, emissions were modeled using the California Emissions Estimator Model (CalEEMod), version 2020.4.0. CalEEMod is a statewide land use emissions computer model designed to quantify potential criteria pollutant emissions associated with both construction and operations from a variety of land use projects. Project construction-generated air pollutant emissions were calculated using CalEEMod model defaults for Imperial County coupled with information provided by the Project applicant. For instance, as described in the Section 1.2, *Project Overview*, construction activities would primarily involve demolition and grubbing, grading of the Project Site to establish access roads and pads for electrical equipment, trenching for underground electrical collection lines, and the installation of solar equipment and security fencing. Construction is estimated to take 12-18 months and would begin in late 2022 or 2023. The number of on-site construction workers for the solar facility is not expected to exceed 150 workers at any time. The number of on-site construction workers for the BESS and substation is not expected to exceed 100 workers at any one time. According to the Traffic Study prepared for the Project

(KOA 2020), Project construction would generate a maximum of 500 construction worker-commute trips in a single day.

Construction workers would utilize an existing driveway off State Route 98 and then park their vehicles in a designated staging/parking area, approximately 3.5 acres in size, north of the All-American Canal. The staging/parking area is proposed to be improved to facilitate access and minimize parking conflicts. Construction workers would then walk across the All-American Canal at an existing crossing east of the Project Site. No vehicles or construction vehicles are allowed to travel across this existing crossing. Designated shuttles would pick up the construction workers at the south end of the crossing, and then travel west for approximately one mile along an existing dirt road to the Project Site. The Traffic Impact Study prepared for the Project (KOA 2020) identifies the site trip distribution of construction worker commute traffic. It is noted that all of the roadways identified as construction worker commute routes are paved (KOA 2020). Thus, the PM emissions associated with construction workers traversing 1.15 miles of unpaved roads are accounted (0.15 mile of roadway at staging/parking area and 1.0 mile of dirt road south of the All-American Canal).

All heavy-duty construction vehicles would cross the All-American Canal at Gordon Wells Road located approximately 20 miles east of the Project Site. An estimated two trucks hauling construction equipment and Project materials would arrive at the Project Site each day during the first few weeks of construction via Gordon Wells Road and the 20 miles of existing dirt road paralleling the U.S./Mexico Border. The PM emissions associated with two haul trucks traversing this existing dirt road to and from the site daily are accounted for.

Operational air pollutant emissions account for the maximum three workers visiting the site in a single day. Such visits include inspections, equipment servicing, site and landscape clearing, and periodic washing of the PV modules if needed (up to two times per year) to maintain power generation efficiency. Therefore, operational onsite equipment use is accounted in addition to the consumption of 10 acre-feet (3,259,000 gallons) of water annually.

2.3.3 Impact Analysis

2.3.3.1 Project Construction-Generated Criteria Air Quality Emissions

Emissions associated with Project implementation would be temporary and short-term but have the potential to represent a significant air quality impact. Two basic sources of short-term emissions will be generated through Project implementation: operation of the heavy-duty equipment (i.e., excavators, loaders, haul trucks) and the creation of fugitive dust during clearing and grading. Construction activities such as excavation and grading operations, construction vehicle traffic, and wind blowing over exposed soils would generate exhaust emissions and fugitive PM emissions that affect local air quality at various times during construction. Effects would be variable depending on the weather, soil conditions, the amount of activity taking place, and the nature of dust control efforts. The dry climate of the area during the summer months creates a high potential for dust generation. Construction activities would be subject to ICAPCD Regulation VIII which, as previously described, requires taking reasonable precautions to reduce the amount of PM_{10} entrained in the ambient air as a result of emissions generated from construction and other

earthmoving activities by requiring actions to prevent, reduce, or mitigate PM_{10} emissions. Regulation VIII requires the Project to adopt best available control measures to minimize emissions from surface-disturbing activities to comply with ICAPCD Regulation VIII (Fugitive Dust Rules).

Emissions associated with Project off-road equipment, worker commute trips, and ground disturbance were calculated using the CARB-approved CalEEMod computer program, which is designed to model emissions for land use development projects, based on typical construction requirements. See Section 2.3.2, *Methodology*, and Attachment A for more information regarding the construction assumptions, including types of construction equipment used and Project duration used in this analysis.

Predicted maximum daily emissions attributable to Project construction are summarized in Table 2-5. Such emissions are short-term and of temporary duration, lasting only as long as Project construction activities occur, but would be considered a significant air quality impact if the volume of pollutants generated exceeds the ICAPCD thresholds of significance.

Table 2-5. Unmitigated Project Construction-Generated Emissions

Construction Year	Pollutant (pounds per day)					
	ROG	**NO_X**	**CO**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**
Construction in Calendar Year One	5.66	57.65	53.83	0.10	949.93	96.64
Construction in Calendar Year Two	5.18	30.12	52.46	0.09	949.82	96.54
ICAPCD Significance Threshold	*75*	*100*	*550*	*N/A*	*150*	*N/A*
Exceed ICAPCD Threshold?	**No**	**No**	**No**	**No**	**Yes**	**No**

Source: CalEEMod version 2020.4.0. Refer to Attachment A for Model Data Outputs.
Notes: Pounds per day taken from the season with the highest output.

As shown in Table 2-5, emissions generated during Project construction would exceed the ICAPCD significance threshold for PM_{10}. Project construction PM_{10} is generated primarily from construction worker commute-traffic and delivery trucks traversing dirt roads. As previously described, all heavy-duty construction vehicles would travel on 20 miles of existing dirt road paralleling the U.S./Mexico Border to reach the Project Site. Commuting construction workers would traverse 1.15 miles of unpaved roads (0.15 mile of roadway at staging/parking area and 1.0 mile of dirt road south of the All-American Canal). Fugitive PM10 emissions would also be generated on the Project construction site with grading operations, heavy-duty equipment moving over bare dirt, and wind blowing over exposed and freshly disturbed soils. Thus, mitigation measure AQ-1 is required to reduce impacts to less than significant levels.

AQ-1: Project Construction Dust Suppression

During construction activities the construction contractor shall employ the following PM_{10} reducing measures:

1. All unpaved roads associated with construction shall be effectively stabilized of dust emissions using Imperial County Air Pollution Control District-approved chemical stabilizers/suppressant before the commencement of construction, and every 30 days thereafter until the end of all construction activities. Unpaved roads associated with construction include:

    - The driveway entrance off State Route 98,
    - The Project designated 3.5-acre staging/parking area north of the All-American Canal,
    - The 1.0 mile of dirt road south of the All-American Canal,
    - The 20 miles of existing dirt road paralleling the U.S./Mexico Border from Gordon Wells Road to the Project Site.

    Monthly application of Imperial County Air Pollution Control District-approved chemical stabilizers/suppressant shall be applied at a rate of 0.1 gallon/ square yard of chemical dust suppressant.

2. Prior to any earthmoving activity, the applicant shall submit a construction dust control plan and obtain Imperial County Air Pollution Control District and Imperial County Planning and Development Services Department (ICPDS) approval.

3. Pursuant to ICAPCD, all construction sites, regardless of size, must comply with the requirements contained within Regulation VIII – Fugitive Dust Control Measures. Whereas these Regulation VIII measures are mandatory and are not considered project environmental mitigation measures, the ICAPCD CEQA Handbook's required additional standard and enhanced mitigation measures listed below shall be implemented prior to and during construction. ICAPCD will verify implementation and compliance with these measures as part of the grading permit review/approval process.

    ICAPCD Standard Measures for Fugitive Dust (PM_{10}) Control

    - All disturbed areas, including bulk material storage, which is not being actively utilized, shall be effectively stabilized and visible emissions shall be limited to no greater than 20 percent opacity for dust emissions by using water, chemical stabilizers, dust suppressants, tarps, or other suitable material, such as vegetative ground cover.
    - All on-site and offsite unpaved roads will be effectively stabilized, and visible emissions shall be limited to no greater than 20 percent opacity for dust emissions by paving, chemical stabilizers, dust suppressants, and/or watering.
    - All unpaved traffic areas 1 acre or more with 75 or more average vehicle trips per day will be effectively stabilized and visible emissions shall be limited to no greater than 20 percent opacity for dust emissions by paving, chemical stabilizers, dust suppressants, and/or watering.
    - The transport of bulk materials shall be completely covered unless 6 inches of freeboard space from the top of the container is maintained with no spillage and loss of bulk

material. In addition, the cargo compartment of all haul trucks is to be cleaned and/or washed at delivery site after removal of bulk material.

- All track-out or carry-out will be cleaned at the end of each workday or immediately when mud or dirt extends a cumulative distance of 50 linear feet or more onto a paved road within an urban area.
- Movement of bulk material handling or transfer shall be stabilized prior to handling or at points of transfer with application of sufficient water, chemical stabilizers, or by sheltering or enclosing the operation and transfer line.
- The construction of any new unpaved road is prohibited within any area with a population of 500 or more unless the road meets the definition of a temporary unpaved road. Any temporary unpaved road shall be effectively stabilized, and visible emissions shall be limited to no greater than 20 percent opacity for dust emission by paving, chemical stabilizers, dust suppressants, and/or watering.

ICAPCD "Discretionary" Measures for Fugitive Dust (PM_{10}) Control

- Water exposed soil only in those areas where active grading and vehicle movement occurs with adequate frequency to control dust.
- Replace ground cover in disturbed areas as quickly as possible.
- Automatic sprinkler system installed on all soil piles.
- Vehicle speed for all construction vehicles shall not exceed 15 miles per hour on any unpaved surface at the construction site.
- Develop a trip reduction plan to achieve a 1.5 average vehicle ridership for construction employees.
- Implement a shuttle service to and from retail services and food establishments during lunch hours.

Standard Mitigation Measures for Construction Combustion Equipment

- Use of alternative fueled or catalyst equipped diesel construction equipment, including all off-road and portable diesel-powered equipment.
- Minimize idling time either by shutting equipment off when not in use or reducing the time of idling to 5 minutes as a maximum.
- Limit, to the extent feasible, the hours of operation of heavy-duty equipment and/or the amount of equipment in use.
- Replace fossil fueled equipment with electrically driven equivalents (provided they are not run via a portable generator set).

Enhanced Mitigation Measures for Construction Equipment

To help provide a greater degree of reduction of PM emissions from construction combustion equipment, Imperial County Air Pollution Control District recommends the following enhanced measures.

- Curtail construction during periods of high ambient pollutant concentrations; this may include ceasing of construction activity during the peak hour of vehicular traffic on adjacent roadways.
- Implement activity management (e.g., rescheduling activities to reduce short-term impacts).

Table 2-6 shows the results of construction emissions with implementation of Mitigation Measure AQ-1.

Table 2-6. Mitigated Project Construction-Generated Emissions

Construction Year	Pollutant (pounds per day)					
	ROG	**NO_X**	**CO**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**
Construction in Calendar Year One	5.66	57.61	53.83	0.10	91.86	11.00
Construction in Calendar Year Two	5.18	30.03	52.46	0.09	91.75	10.90
ICAPCD Significance Threshold	*75*	*100*	*550*	*N/A*	*150*	*N/A*
Exceed ICAPCD Threshold?	**No**	**No**	**No**	**No**	**No**	**No**

Source: CalEEMod version 2020.4.0. Refer to Attachment A for Model Data Outputs.
Notes: Pounds per day taken from the season with the highest output. PM reduction values associated with the implementation of soil stabilizers on unpaved roads monthly over the course of construction per email communication with Monica Soucier of the ICAPCD (2021).

As shown in Table 2-6, emissions generated during Project construction would not exceed the ICAPCD's thresholds of significance with implementation of mitigation measure AQ-1. Therefore, criteria pollutant emissions generated during Project construction would not result in a cumulatively considerable net increase of any criteria pollutant for which the Project region is nonattainment under an applicable federal or state ambient air quality standard.

2.3.3.2 Operational Criteria Air Quality Emissions

Although limited, implementation of the Project would result in long-term operational emissions of criteria air pollutants such as PM_{10}, $PM_{2.5}$, CO, and SO_2 as well as O_3 precursors such as ROG and NO_X. Project-generated increases in emissions would be predominately associated with motor vehicle use for routine maintenance work and site security. Long-term operational emissions attributable to the Project are identified in Table 2-7 and compared to the operational significance thresholds promulgated by the ICAPCD.

Table 2-7. Operational-Related Emissions (Regional Significance Analysis)

Emission Source	Pollutant (pounds per day)					
	ROG	**NO_X**	**CO**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**
Summer Emissions						
Area	13.59	0.00	0.06	0.00	0.00	0.00
Energy	0.26	2.42	2.03	0.01	0.18	0.18
Mobile	0.02	0.03	0.31	0.00	4.84	0.49
Offroad Equipment	1.16	11.09	12.70	0.02	0.56	0.51
Total:	**15.04**	**13.55**	**15.11**	**0.03**	**5.59**	**1.19**
ICAPCD Significance Threshold	*137*	*137*	*150*	*550*	*550*	*150*
Exceed ICAPCD Significance Threshold?	**No**	**No**	**No**	**No**	**No**	**No**
Winter Emissions						
Area	13.59	0.00	0.06	0.00	0.00	0.00
Energy	0.26	2.42	2.03	0.01	0.18	0.18
Mobile	0.02	0.03	0.24	0.00	4.84	0.49
Offroad Equipment	1.16	11.09	12.70	0.02	0.56	0.51
Total:	**15.04**	**13.55**	**15.04**	**0.03**	**5.59**	**1.19**
ICAPCD Significance Threshold	*137*	*137*	*150*	*550*	*550*	*150*
Exceed ICAPCD Significance Threshold?	**No**	**No**	**No**	**No**	**No**	**No**

Source: CalEEMod version 2020.4.0. Refer to Attachment A for Model Data Outputs.

As shown in Table 2-7, the Project's emissions would not exceed any ICAPCD's thresholds for any criteria air pollutants during operation. Additionally, the purpose of the Project is the operation of a renewable energy and storage facility. Once in operation, it will decrease the need for energy from fossil fuel–based power plants in the state (see Table 2-8). Thus, once operational the Project would represent a beneficial impact to air quality.

2.3.3.3 Conflict with an Applicable Air Quality Management Plan

As previously described, the Project region is classified as nonattainment for federal O_3 and $PM_{2.5}$ standards (CARB 2019). The USEPA, under the provisions of the CAA, requires each state with regions that have not attained the federal air quality standards to prepare a SIP, detailing how these standards are to be met in each local area. The SIP is a legal agreement between each state and the federal government to commit resources to improving air quality. It serves as the template for conducting regional and project-level air

quality analysis. CARB is the lead agency for developing the SIP in California. Local air districts, such as the ICAPCD, prepare air quality attainment plans or air quality management plans and submit them to CARB for review, approval, and incorporation into the applicable SIP. The air districts develop the strategies stated in the SIPs for achieving air quality standards on a regional basis.

The region's SIP is constituted of the ICAPCD air quality plans: 2018 PM_{10} SIP, the 2018 Annual $PM_{2.5}$ SIP, the 2017 8-Hour Ozone SIP, 2013 24-Hour $PM_{2.5}$ SIP, the 2009 1997 8-hour Ozone RACT SIP, the 2009 PM_{10} SIP and the 2008 Ozone Early Progress Plans. Project compliance with all of the ICAPCD rules and regulations results in conformance with the ICAPCD air quality plans. These air quality attainment plans are a compilation of new and previously submitted plans, programs (such as monitoring, modeling, permitting, etc.), district rules, state regulations, and federal controls describing how the state will attain ambient air quality standards. These SIP plans and associated control measures are based on information derived from projected growth in Imperial County in order to project future emissions and then determine strategies and regulatory controls for the reduction of emissions. Growth projections are based on the general plans developed by Imperial County and the incorporated cities in the county.

As previously described, the Project consists of the construction of a 100-MW alternating current solar field, consisting of 226,800 tracker modules in 7,560 strings and associated collector and inverter facilities, and a 100 MW BESS, on approximately 585 acres of vacant land. The Project would not result in population growth and would not cause an increase in currently established population projections. The Project does not include residential development or large local or regional employment centers, and thus would not result in significant population or employment growth.

Furthermore, the operation of the Project would create renewable energy over its planned lifetime and decrease the need for energy from fossil fuel–based power plants in the state, which is considered a beneficial impact to statewide air quality. The energy produced by the Project would displace the criteria pollutant emissions which would otherwise be produced by existing business-as-usual power generation resources (including natural gas and coal).

Table 2-8 shows the emissions that would potentially be displaced by the Proposed Project. Note that this estimate only includes that associated with the combustion of fossil fuels; it does not include the vehicle trips associated with the Project's operations, and it similarly does not include operational employee trips associated with natural gas or coal combustion nor the emissions associated with extracting and transporting those power sources. In addition, this estimate only includes the displacement of that portion of the California market that comes from fossil fuels and does not include the approximate 50 percent of the California electricity generated by non-combustion sources (wind, solar, nuclear, hydro-electric) (California Energy Commission [CEC] 2020). Displacement of fossil fuel emissions has a direct beneficial effect on human health for those receptors downwind of the location of the fossil fuel power plants.

Table 2-8. Proposed Project Displaced Criteria Pollutant Emissions (Tons)

Construction Year	Emissions (Tons)					
	ROG	NO_X	CO	SO_2	PM_{10}	$PM_{2.5}$
Emissions Displaced Annually (tons)						
Displaced Natural Gas-Source Emissions	0.00	2.14	0.65	1.47	2.03	0.82
Displaced Coal-Source Emissions	0.00	13.97	0.58	0.66	0.10	0.07
Total	0.00	16.11	1.23	2.13	2.13	0.89
Emissions Displaced over 30 Years (tons)						
Total	0	483.37	36.93	64.03	63.93	26.75

Source: Displaced emissions calculated by ECORP using USEPA's AP-42 Fifth Edition Compilation of Air Emissions Factors 1995; 2015. See Attachment B.

Notes: In order to provide a conservative analysis, the proposed Project is assumed to generate electricity 25 percent of the time available (2,190 hours annually). Heat Rate indicates the energy generator efficiency of existing fossil-fuel based energy generators. The heat rate of a power plant measures the amount of fuel used to generate one unit of electricity. Power plants with lower heat rates are more efficient than plants with higher heat rates. The CEC's "Updated Thermal Power Plant Efficiency Measures and Operational Characteristics for Production Cost Modeling" (2019) estimates heat rates and operating ranges for thermal power plants supplying energy to California. The average heat rate of power plants types are as follows:
**Steam Boiler fueled by coal: 10,800 heat rate **Steam Boiler fueled by natural gas: 10,200 heat rate **Gas Turbine: 10,100 heat rate **Combined natural gas Boiler and Turbine: 7,640 heat rate.
By omitting steam boilers fueled by coal since so little of California's energy is derived from coal, the average heat rate = 9,313 [(10,100 + 10,200 + 7,640) ÷ 3 = 9,313]. 100 MW (219,000,000 annual kWH) x 9,313 heat rate = 2,039,547,000,000 Btu displaced from fossil fuel production. Fossil fuel-based energy consumption in California is predominately derived from natural gas (37.06 percent). Coal constitutes 2.74 percent of all fossil fuel-based energy. Therefore, 865,175,837,400 of the displaced Btu is displaced natural gas consumption and 55,883,587,800 of the displaced Btu is displaced coal. The heat content of coal is assumed at 24 million Btu per ton of coal burned. At a rate of 24 million Btu per ton of coal burned, the Project would displace 2,328 tons of burned coal annually.

As shown, the Project would potentially displace approximately 483 tons of NO_x, 37 tons of CO, 64 tons of SO_2, 64 tons of PM_{10}, and 27 tons of $PM_{2.5}$ over the course of 30 years. Furthermore, as demonstrated in Table 2-6 and Table 2-7, the Project would not exceed the applicable significance thresholds for construction or operational-source emissions.

2.3.3.4 Exposure of Sensitive Receptors to Toxic Air Contaminants

As previously described, sensitive receptors are defined as facilities or land uses that include members of the population that are particularly sensitive to the effects of air pollutants, such as children, the elderly, and people with illnesses. Examples of these sensitive receptors are residences, schools, hospitals, and daycare centers. CARB has identified the following groups of individuals as the most likely to be affected by air pollution: the elderly over age 65, children under age 14, athletes, and persons with cardiovascular and chronic respiratory diseases such as asthma, emphysema, and bronchitis. The nearest existing sensitive

land use to the Project Site is a single-family residence located approximately 0.5 miles from the northeastern corner of the Project boundary.

Construction-Generated Air Contaminants

Construction of the Project would result in temporary, short-term proposed Project-generated emissions of diesel particulate matter (DPM), ROG, NOx, CO, and PM_{10} from the exhaust of off-road, heavy-duty diesel equipment for Project construction; soil hauling truck traffic; paving; and other miscellaneous activities. The portion of the SSAB which encompasses the Project Area is designated as a nonattainment area for federal O_3 and $PM_{2.5}$ standards and is also a nonattainment area for the state standards for O_3 and PM_{10} (CARB 2019). Thus, existing O_3 and PM_{10} levels in the SSAB are at unhealthy levels during certain periods. However, as shown in Table 2-5, the Project would not exceed the ICAPCD significance thresholds for construction emissions.

The health effects associated with O_3 are generally associated with reduced lung function. Because the Project would not involve construction activities that would result in O_3 precursor emissions (ROG or NO_x) in excess of the ICAPCD thresholds, the Project is not anticipated to substantially contribute to regional O_3 concentrations and the associated health impacts.

CO tends to be a localized impact associated with congested intersections. In terms of adverse health effects, CO competes with oxygen, often replacing it in the blood, reducing the blood's ability to transport oxygen to vital organs. The results of excess CO exposure can include dizziness, fatigue, and impairment of central nervous system functions. The Project would not involve activities that would result in CO emissions in excess of the ICAPCD thresholds. Thus, the Project's CO emissions would not contribute to the health effects associated with this pollutant.

Particulate matter (PM_{10} and $PM_{2.5}$) contains microscopic solids or liquid droplets that are so small that they can get deep into the lungs and cause serious health problems. Particulate matter exposure has been linked to a variety of problems, including premature death in people with heart or lung disease, nonfatal heart attacks, irregular heartbeat, aggravated asthma, decreased lung function, and increased respiratory symptoms such as irritation of the airways, coughing, or difficulty breathing. For construction-type activity, DPM is the primary TAC of concern. PM_{10} exhaust is considered a surrogate for DPM as all diesel exhaust is considered to be DPM. Most PM_{10} exhaust derives from combustion, such as use of gasoline and diesel fuels by motor vehicles. As with O_3 and NOx, the Project would not generate emissions of PM_{10} or $PM_{2.5}$ that would exceed the ICAPCD's thresholds. Accordingly, the Project's PM_{10} and $PM_{2.5}$ emissions are not expected to cause any increase in related regional health effects for these pollutants.

In summary, Project construction would not result in a potentially significant contribution to regional concentrations of nonattainment pollutants and would not result in a significant contribution to the adverse health impacts associated with those pollutants.

Operational Air Contaminants

Operation of the Proposed Project would not result in the development of any substantial sources of air toxics. There would be no stationary sources associated Project operations; nor would the Project attract

additional mobile sources that spend long periods queuing and idling at the site. Onsite Project emissions would not result in significant concentrations of pollutants at the nearby sensitive receptor as the predominant operational emissions associated with the Proposed Project would be routine maintenance work, water deliveries, and site security. Therefore, the Project would not be a substantial source of TACs. The Project will not result in a high carcinogenic or non-carcinogenic risk during operation.

Carbon Monoxide Hot Spots

It has long been recognized that CO exceedances are caused by vehicular emissions, primarily when idling at intersections. Concentrations of CO are a direct function of the number of vehicles, length of delay, and traffic flow conditions. Under certain meteorological conditions, CO concentrations close to congested intersections that experience high levels of traffic and elevated background concentrations may reach unhealthy levels, affecting nearby sensitive receptors. Given the high traffic volume potential, areas of high CO concentrations, or "hot spots," are typically associated with intersections that are projected to operate at unacceptable levels of service during the peak commute hours. It has long been recognized that CO hotspots are caused by vehicular emissions, primarily when idling at congested intersections. However, transport of this criteria pollutant is extremely limited, and CO disperses rapidly with distance from the source under normal meteorological conditions. Furthermore, vehicle emissions standards have become increasingly more stringent in the last 20 years. Currently, the allowable CO emissions standard in California is a maximum of 3.4 grams/mile for passenger cars (there are requirements for certain vehicles that are more stringent). With the turnover of older vehicles, introduction of cleaner fuels, and implementation of increasingly sophisticated and efficient emissions control technologies, CO concentration in the SSAB is designated as an attainment area. Detailed modeling of Project-specific CO "hot spots" is not necessary and thus this potential impact is addressed qualitatively.

A CO "hot spot" would occur if an exceedance of the state one-hour standard of 20 parts per million (ppm) or the eight-hour standard of 9 ppm were to occur. The analysis prepared for CO attainment in the South Coast Air Quality Management District's (SCAQMD's) *1992 Federal Attainment Plan for Carbon Monoxide* in Los Angeles County and a Modeling and Attainment Demonstration prepared by the SCAQMD as part of the 2003 Air Quality Management Plan can be used to demonstrate the potential for CO exceedances of these standards. The SCAQMD is the air pollution control officer for much of southern California. The SCAQMD conducted a CO hot spot analysis as part of the 1992 CO Federal Attainment Plan at four busy intersections in Los Angeles County during the peak morning and afternoon time periods. The intersections evaluated included Long Beach Boulevard and Imperial Highway (Lynwood), Wilshire Boulevard and Veteran Avenue (Westwood), Sunset Boulevard and Highland Avenue (Hollywood), and La Cienega Boulevard and Century Boulevard (Inglewood). The busiest intersection evaluated was at Wilshire Boulevard and Veteran Avenue, which has a traffic volume of approximately 100,000 vehicles per day. Despite this level of traffic, the CO analysis concluded that there was no violation of CO standards (SCAQMD 1992). In order to establish a more accurate record of baseline CO concentrations, a CO "hot spot" analysis was conducted in 2003 at the same four busy intersections in Los Angeles at the peak morning and afternoon time periods. This "hot spot" analysis did not predict any violation of CO standards. The highest one-hour concentration was measured at 4.6 ppm at Wilshire Boulevard and Veteran Avenue and the highest eight-hour concentration

was measured at 8.4 ppm at Long Beach Boulevard and Imperial Highway. Thus, there was no violation of CO standards.

Similar considerations are also employed by other Air Districts when evaluating potential CO concentration impacts. More specifically, the Bay Area Air Quality Management District (BAAQMD), the air pollution control officer for the San Francisco Bay Area, concludes that under existing and future vehicle emission rates, a given project would have to increase traffic volumes at a single intersection by more than 44,000 vehicles per hour or 24,000 vehicles per hour where vertical and/or horizontal air does not mix—in order to generate a significant CO impact.

The Proposed Project is anticipated to result in no more than 6 daily traffic trips. It is noted that this is a conservative estimate, and many days will have no operational related vehicle trips. Thus, the Proposed Project would not generate traffic volumes at any intersection of more than 100,000 vehicles per day (or 44,000 vehicles per day) and there is no likelihood of the Project traffic exceeding CO values.

2.3.3.5 Odors

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

With respect to odors, the human nose is the sole sensing device. The ability to detect odors varies considerably among the population and overall is quite subjective. Some individuals have the ability to smell minute quantities of specific substances; others may not have the same sensitivity but may have sensitivities to odors of other substances. In addition, people may have different reactions to the same odor; in fact, an odor that is offensive to one person (e.g., from a fast-food restaurant) may be perfectly acceptable to another. It is also important to note that an unfamiliar odor is more easily detected and is more likely to cause complaints than a familiar one. This is because of the phenomenon known as odor fatigue, in which a person can become desensitized to almost any odor and recognition only occurs with an alteration in the intensity.

Quality and intensity are two properties present in any odor. The quality of an odor indicates the nature of the smell experience. For instance, if a person describes an odor as flowery or sweet, then the person is describing the quality of the odor. Intensity refers to the strength of the odor. For example, a person may use the word "strong" to describe the intensity of an odor. Odor intensity depends on the odorant concentration in the air. When an odorous sample is progressively diluted, the odorant concentration decreases. As this occurs, the odor intensity weakens and eventually becomes so low that the detection or recognition of the odor is quite difficult. At some point during dilution, the concentration of the odorant reaches a detection threshold. An odorant concentration below the detection threshold means that the concentration in the air is not detectable by the average human.

During construction, the Proposed Project presents the potential for generation of objectionable odors in the form of diesel exhaust in the immediate vicinity of the site. However, these emissions are short-term in nature and will rapidly dissipate and be diluted by the atmosphere downwind of the emission sources. Additionally, odors would be localized and generally confined to the Project Area, which is generally devoid

of surrounding receptors. Therefore, odors generated during Project construction would not adversely affect a substantial number of people to odor emissions.

Land uses commonly considered to be potential sources of obnoxious odorous emissions include agriculture (farming and livestock), wastewater treatment plants, food processing plants, chemical plants, composting facilities, refineries, landfills, dairies, and fiberglass molding. The Proposed Project does not include any uses identified as being associated with odors.

3.0 GREENHOUSE GAS EMISSIONS

3.1 Greenhouse Gas Setting

Certain gases in the earth's atmosphere, classified as GHGs, play a critical role in determining the earth's surface temperature. Solar radiation enters the earth's atmosphere from space. A portion of the radiation is absorbed by the earth's surface and a smaller portion of this radiation is reflected back toward space. This absorbed radiation is then emitted from the earth as low-frequency infrared radiation. The frequencies at which bodies emit radiation are proportional to temperature. Because the earth has a much lower temperature than the sun, it emits lower-frequency radiation. Most solar radiation passes through GHGs; however, infrared radiation is absorbed by these gases. As a result, radiation that otherwise would have escaped back into space is instead trapped, resulting in a warming of the atmosphere. This phenomenon, known as the greenhouse effect, is responsible for maintaining a habitable climate on earth. Without the greenhouse effect, the earth would not be able to support life as we know it.

Prominent GHGs contributing to the greenhouse effect are CO_2, methane (CH_4), and N_2O. Fluorinated gases also make up a small fraction of the GHGs that contribute to climate change. Fluorinated gases include chlorofluorocarbons, hydrofluorocarbons, perfluorocarbons, sulfur hexafluoride, and nitrogen trifluoride; however, it is noted that these gases are not associated with typical land use development. Human-caused emissions of these GHGs in excess of natural ambient concentrations are believed to be responsible for intensifying the greenhouse effect and leading to a trend of unnatural warming of the earth's climate, known as global climate change or global warming. It is "extremely likely" that more than half of the observed increase in global average surface temperature from 1951 to 2010 was caused by the anthropogenic increase in GHG concentrations and other anthropogenic factors together (Intergovernmental Panel on Climate Change [IPCC] 2014).

Table 3-1 describes the primary GHGs attributed to global climate change, including their physical properties, primary sources, and contributions to the greenhouse effect.

Each GHG differs in its ability to absorb heat in the atmosphere based on the lifetime, or persistence, of the gas molecule in the atmosphere. CH_4 traps over 25 times more heat per molecule than CO_2, and N_2O absorbs 298 times more heat per molecule than CO_2 (IPCC 2014). Often, estimates of GHG emissions are presented in carbon dioxide equivalents (CO_2e), which weight each gas by its global warming potential. Expressing GHG emissions in CO_2e takes the contribution of all GHG emissions to the greenhouse effect and converts them to a single unit equivalent to the effect that would occur if only CO_2 were being emitted.

Climate change is a global problem. GHGs are global pollutants, unlike criteria air pollutants and TACs, which are pollutants of regional and local concern. Whereas pollutants with localized air quality effects have relatively short atmospheric lifetimes (about one day), GHGs have long atmospheric lifetimes (one to several thousand years). GHGs persist in the atmosphere for long enough time periods to be dispersed around the globe. Although the exact lifetime of any particular GHG molecule is dependent on multiple variables and cannot be pinpointed, it is understood that more CO_2 is emitted into the atmosphere than is sequestered by ocean uptake, vegetation, or other forms. Of the total annual human-caused CO_2 emissions, approximately 55 percent is sequestered through ocean and land uptakes every year, averaged over the

last 50 years, whereas the remaining 45 percent of human-caused CO_2 emissions remains stored in the atmosphere (IPCC 2013).

Table 3-1. Greenhouse Gases

Greenhouse Gas	Description
CO_2	Carbon dioxide is a colorless, odorless gas. CO_2 is emitted in a number of ways, both naturally and through human activities. The largest source of CO_2 emissions globally is the combustion of fossil fuels such as coal, oil, and gas in power plants, automobiles, industrial facilities, and other sources. A number of specialized industrial production processes and product uses such as mineral production, metal production, and the use of petroleum-based products can also lead to CO_2 emissions. The atmospheric lifetime of CO_2 is variable because it is so readily exchanged in the atmosphere.[1]
CH_4	Methane is a colorless, odorless gas and is the major component of natural gas, about 87 percent by volume. It is also formed and released to the atmosphere by biological processes occurring in anaerobic environments. Methane is emitted from a variety of both human-related and natural sources. Human-related sources include fossil fuel production, animal husbandry (intestinal fermentation in livestock and manure management), rice cultivation, biomass burning, and waste management. These activities release significant quantities of CH_4 to the atmosphere. Natural sources of CH_4 include wetlands, gas hydrates, permafrost, termites, oceans, freshwater bodies, non-wetland soils, and other sources such as wildfires. The atmospheric lifetime of CH_4 is about12 years.[2]
N_2O	Nitrous oxide is a clear, colorless gas with a slightly sweet odor. Nitrous oxide is produced by both natural and human-related sources. Primary human-related sources of N_2O are agricultural soil management, animal manure management, sewage treatment, mobile and stationary combustion of fossil fuels, adipic acid production, and nitric acid production. N_2O is also produced naturally from a wide variety of biological sources in soil and water, particularly microbial action in wet tropical forests. The atmospheric lifetime of N_2O is approximately 120 years.[3]

Sources: [1]USEPA 2016a, [2] USEPA 2016b, [3] USEPA 2016c

The quantity of GHGs that it takes to ultimately result in climate change is not precisely known; it is sufficient to say the quantity is enormous, and no single project alone would measurably contribute to a noticeable incremental change in the global average temperature or to global, local, or microclimates. From the standpoint of CEQA, GHG impacts to global climate change are inherently cumulative.

3.1.1 Sources of Greenhouse Gas Emissions

In 2021, CARB released the 2021 edition of the California GHG inventory covering calendar year 2019 emissions. In 2019, California emitted 418.2 million gross metric tons of CO_2e including from imported electricity. Combustion of fossil fuel in the transportation sector was the single largest source of California's GHG emissions in 2019, accounting for approximately 40 percent of total GHG emissions in the State. When emissions from extracting, refining and moving transportation fuels in California are included, transportation is responsible for over 50 percent of statewide emissions in 2019. Continuing the downward trend from 2018, transportation emissions decreased 3.5 million metric tons of CO_2e in 2019, only being outpaced by electricity, which reduced emissions by 4.3 million metric tons of CO_2e in 2019. Emissions from

the electricity sector account for 14 percent of the inventory and have shown a substantial decrease in 2019 due to increases in renewables. California's industrial sector accounts for the second largest source of the State's GHG emissions in 2019, accounting for 21 percent (CARB 2021b).

3.2 Regulatory Framework

3.2.1 State

3.2.1.1 Executive Order S-3-05

Executive Order (EO) S-3-05, signed by Governor Arnold Schwarzenegger in 2005, proclaims that California is vulnerable to the impacts of climate change. It declares that increased temperatures could reduce the Sierra Nevada snowpack, further exacerbate California's air quality problems, and potentially cause a rise in sea levels. To combat those concerns, the EO established total GHG emission targets for the state. Specifically, emissions are to be reduced to the 2000 level by 2010, the 1990 level by 2020, and to 80 percent below the 1990 level by 2050.

3.2.1.2 Assembly Bill 32 Climate Change Scoping Plan and Updates

In 2006, the California legislature passed Assembly Bill (AB) 32 (Health and Safety Code § 38500 et seq., or AB 32), also known as the Global Warming Solutions Act. AB 32 required CARB to design and implement feasible and cost-effective emission limits, regulations, and other measures, such that statewide GHG emissions are reduced to 1990 levels by 2020 (representing a 25 percent reduction in emissions). Pursuant to AB 32, CARB adopted a Scoping Plan in December 2008, which outlined measures to meet the 2020 GHG reduction goals. California exceeded the target of reducing GHG emissions to 1990 levels by the year 2017.

The Scoping Plan is required by AB 32 to be updated at least every five years. The latest update, the 2017 Scoping Plan Update, addresses the 2030 target established by Senate Bill (SB) 32 as discussed below and establishes a proposed framework of action for California to meet a 40 percent reduction in GHG emissions by 2030 compared to 1990 levels. The key programs that the Scoping Plan Update builds on include increasing the use of renewable energy in the State, the Cap-and-Trade Regulation, the Low Carbon Fuel Standard, and reduction of methane emissions from agricultural and other wastes.

3.2.1.3 Senate Bill 32 and Assembly Bill 197 of 2016

In August 2016, Governor Brown signed SB 32 and AB 197, which serve to extend California's GHG reduction programs beyond 2020. SB 32 amended the Health and Safety Code to include § 38566, which contains language to authorize CARB to achieve a statewide GHG emission reduction of at least 40 percent below 1990 levels by no later than December 31, 2030.

3.2.1.4 Senate Bill 100 of 2018

In 2018, SB 100 was signed by Governor Brown, codifying a goal of 60 percent renewable procurement by 2030 and 100 percent by 2045 Renewables Portfolio Standard.

3.3 Greenhouse Gas Emissions Impact Assessment

3.3.1 Thresholds of Significance

The impact analysis provided below is based on the following CEQA Guidelines Appendix G thresholds of significance. The Project would result in a significant impact to GHG emissions if it would:

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

The Appendix G thresholds for GHG's do not prescribe specific methodologies for performing an assessment, do not establish specific thresholds of significance, and do not mandate specific mitigation measures. Rather, the CEQA Guidelines emphasize the lead agency's discretion to determine the appropriate methodologies and thresholds of significance consistent with the manner in which other impact areas are handled in CEQA. With respect to GHG emissions, the CEQA Guidelines § 15064.4(a) states that lead agencies "shall make a good-faith effort, based to the extent possible on scientific and factual data, to describe, calculate or estimate" GHG emissions resulting from a project. The CEQA Guidelines note that an agency has the discretion to either quantify a project's GHG emissions or rely on a "qualitative analysis or other performance-based standards." (14 California Code of Regulations [CCR] 15064.4(b)). A lead agency may use a "model or methodology" to estimate GHG emissions and has the discretion to select the model or methodology it considers "most appropriate to enable decision makers to intelligently take into account the project's incremental contribution to climate change." (14 CCR 15064.4(c)). Section 15064.4(b) provides that the lead agency should consider the following when determining the significance of impacts from GHG emissions on the environment:

1. The extent a project may increase or reduce GHG emissions as compared to the existing environmental setting.
2. Whether the project emissions exceed a threshold of significance that the lead agency determines applies to the project.
3. The extent to which the project complies with regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of GHG emissions (14 CCR 15064.4(b)).

In addition, Section 15064.7(c) of the CEQA Guidelines specifies that "[w]hen adopting or using thresholds of significance, a lead agency may consider thresholds of significance previously adopted or recommended by other public agencies, or recommended by experts, provided the decision of the lead agency to adopt such thresholds is supported by substantial evidence" (14 CCR 15064.7(c)). The CEQA Guidelines also clarify that the effects of GHG emissions are cumulative and should be analyzed in the context of CEQA's requirements for cumulative impact analysis (see CEQA Guidelines § 15130(f)). As a note, the CEQA Guidelines were amended in response to SB 97. In particular, the CEQA Guidelines were amended to specify that compliance with a GHG emissions reduction plan renders a cumulative impact insignificant.

Per CEQA Guidelines § 15064(h)(3), a project's incremental contribution to a cumulative impact can be found not cumulatively considerable if the project would comply with an approved plan or mitigation program that provides specific requirements that would avoid or substantially lessen the cumulative problem within the geographic area of the project. To qualify, such plans or programs must be specified in law or adopted by the public agency with jurisdiction over the affected resources through a public review process to implement, interpret, or make specific the law enforced or administered by the public agency. Examples of such programs include a "water quality control plan, air quality attainment or maintenance plan, integrated waste management plan, habitat conservation plan, natural community conservation plans [and] plans or regulations for the reduction of greenhouse gas emissions." Put another way, CEQA Guidelines § 15064(h)(3) allows a lead agency to make a finding of less than significant for GHG emissions if a project complies with adopted programs, plans, policies and/or other regulatory strategies to reduce GHG emissions.

The significance of the Project's GHG emissions is evaluated consistent with CEQA Guidelines § 15064.4(b)(2) by considering whether the Project complies with applicable plans, policies, regulations and requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of GHG emissions. The ICAPCD has not adopted a GHG significance threshold yet recommends the 100,000-metric ton of CO_2e threshold established by the Mojave Desert Air Quality Management District (MDAQMD). As previously described, Section 15064.7(c) of the CEQA Guidelines specifies that "[w]hen adopting or using thresholds of significance, a lead agency may consider thresholds of significance previously adopted or recommended by other public agencies, or recommended by experts, provided the decision of the lead agency to adopt such thresholds is supported by substantial evidence" (14 CCR 15064.7(c)). This ICAPCD-recommended threshold is appropriate as the MDAQMD GHG thresholds were formulated based on similar geography and climate patterns as found in Imperial County. Therefore, the 100,000-metric ton of CO_2e threshold is appropriate for this analysis.

In *Center for Biological Diversity v. Department of Fish and Wildlife* (2015) 62 Cal. 4th 2014, 213, 221, 227, following its review of various potential GHG thresholds proposed in an academic study [Crockett, *Addressing the Significance of Greenhouse Gas Emissions: California's Search for Regulatory Certainty in an Uncertain World* (July 2011), 4 Golden Gate U. Envtl. L. J. 203], the California Supreme Court identified the use of numeric bright-line thresholds as a potential pathway for compliance with CEQA GHG requirements. The study found numeric bright line thresholds designed to determine when small projects were so small as to not cause a cumulatively considerable impact on global climate change was consistent with CEQA. Specifically, Public Resources Code section 21003(f) provides it is a policy of the state that "[a]ll persons and public agencies involved in the environmental review process be responsible for carrying out the process in the most efficient, expeditious manner in order to conserve the available financial, governmental, physical and social resources with the objective that those resources may be better applied toward the mitigation of actual significant effects on the environment." The Supreme Court-reviewed study noted, "[s]ubjecting the smallest projects to the full panoply of CEQA requirements, even though the public benefit would be minimal, would not be consistent with implementing the statute in the most efficient, expeditious manner. Nor would it be consistent with applying lead agencies' scarce resources toward mitigating actual significant climate change impacts." (Crockett, *Addressing the Significance of Greenhouse Gas Emissions: California's Search for Regulatory Certainty in an Uncertain World* (July 2011), 4 Golden Gate U. Envtl. L. J. 203, 221, 227.)

3.3.2 Methodology

GHG-related impacts were assessed in accordance with methodologies recommended by the ICAPCD. Where GHG emission quantification was required, emissions were modeled using CalEEMod, version 2020.4.0. CalEEMod is a statewide land use emissions computer model designed to quantify potential GHG emissions associated with both construction and operations from a variety of land use projects. Project construction-generated GHG emissions were calculated using CalEEMod model defaults for Imperial County coupled with information provided by the Project applicant. For instance, as described in the Section 1.2, Project Overview, construction activities would primarily involve demolition and grubbing, grading of the Project Site to establish access roads and pads for electrical equipment, trenching for underground electrical collection lines, and the installation of solar equipment and security fencing. Construction is estimated to take 12-18 months and would begin in late 2022 or 2023. The number of on-site construction workers for the solar facility is not expected to exceed 150 workers at any time. The number of on-site construction workers for the BESS and substation is not expected to exceed 100 workers at any one time. According to the Traffic Study prepared for the Project (KOA 2020), Project construction would generate a maximum of 500 construction worker-commute trips in a single day.

Operational GHG emissions account for the maximum three workers visiting the site in a single day. Such visits include inspections, equipment servicing, site and landscape clearing, and periodic washing of the PV modules if needed (up to two times per year) to maintain power generation efficiency. Therefore, operational onsite equipment use is accounted in addition to the consumption of 10 acre-feet (3,259,000 gallons) of water annually.

3.3.3 Impact Analysis

3.3.3.1 Generation of GHG Emissions

Project Construction

Construction-related activities that would generate GHG emissions include worker commute trips, haul trucks carrying supplies and materials to and from the project site, and off-road construction equipment (e.g., dozers, loaders, excavators). Table 3-2 illustrates the specific construction generated GHG emissions that would result from construction of the Project. Consistent with SCAQMD recommendations, Project construction GHG emissions have been amortized over the expected life of the Project, which is considered to be 30 years for a solar energy generation facility. Once construction is complete, the generation of these GHG emissions would cease.

Table 3-2. Construction-Related Greenhouse Gas Emissions	
Emissions Source	**CO_2e (Metric Tons/Year)**
Construction Year One	913
Construction Year Two	611
Significance Threshold	*100,000*
Exceed Significance Threshold?	**No**

Source: CalEEMod version 2020.4.0. Refer to Attachment C for Model Data Outputs.

As shown in Table 3-2, Project would result in the generation of approximately 913 metric tons of CO_2e in the first calendar year of construction and 611 metric tons in the second calendar year of construction. Therefore, Project GHG emissions would not exceed the significance threshold.

Additionally, the Project proposes a solar energy generation facility intended to generate renewable energy. Solar plants generate far less GHG life-cycle emissions (approximately 83 to 94 percent less) than fossil-fueled energy plants. As identified in Table 3-5 below, the Project would potentially displace approximately 53,220 metric tons of CO_2e per year, and approximately 1,596,596 metric tons of CO_2e over the course of 30 years, which is considerably more than would be generated during construction.

Operations

Operation of the Project would result in an increase in GHG emissions. Long-term GHG emissions attributed to operations of the Project are identified in Table 3-3.

Table 3-3. Operational-Related Greenhouse Gas Emissions	
Emission Source	**CO_2e (Metric Tons/ Year)**
Area Source	0
Energy	1,088
Mobile	7
Offroad Equipment	8
Waste	82
Water	8
Total	**1,194**
Significance Threshold	*100,000*
Exceed Significance Threshold?	**No**

Source: CalEEMod version 2020.4.0. Refer to Attachment C for Model Data Outputs.

As shown in Table 3-3, operational-generated emissions would generate approximately 1,194 metric tons of GHG emissions and not exceed the significance threshold of 100,000 metric tons of CO_2e annually. As shown in Table 3-3, the majority of emissions are attributable to indirect energy consumption. The BESS component of the Project was modeled to account for HVAC use. However, this is potentially a conservative estimate since the energy source for the BESS HVAC could include the solar energy generated by the Project itself, which would be an emissions-free source of energy.

3.3.3.2 Conflict with any Applicable Plan, Policy, or Regulation of an Agency Adopted for the Purpose of Reducing the Emissions of Greenhouse Gases

The Project would not conflict with any adopted plans, policies, or regulations adopted for the purpose of reducing GHG emissions. The Proposed Project is subject to compliance with SB 32. As discussed previously, the Proposed Project-generated GHG emissions would not surpass either the ICAPCD-recommended GHG significance threshold, which was prepared with the purpose of complying with statewide GHG-reduction efforts. Additionally, once construction is complete, the Project would be a producer of renewable energy, which generates substantially less GHG emissions compared with the more common types of fossil-fueled energy generation facilities.

GHG emissions generated by energy sources account for all stages of the life cycle (including mining, construction, etc.), which are referred to as the cumulative GHG emissions and are usually expressed in grams of CO_2e per unit of busbar electricity (i.e., gCO_2/kWh_e). When comparing various fossil-fueled energy generators, the GHG emissions generated are dependent on the type of fuel (i.e., gas, oil, coal). GHG emissions generated by some of the more common types of fossil-fueled plants and solar-power plants are summarized in Table 3-4.

Table 3-4. Life-Cycle Greenhouse Gas Emissions for Various Types of Energy Generators	
Fossil Fueled	
Coal	950 to 1,250 gCO_2e/kWhe
Oil	500 to 1,200 gCO_2e/kWhe
Gas	440 to 780 gCO_2e/kWhe
Solar	43 to 73[3] gCO_2e/kWhe

Source: Weisser 2007
Notes:
1 gCO_2e/kWhe = grams of CO_2e per unit of busbar electricity.
2 Emissions are based on lifecycle of energy source including mining, construction, operation, etc.
3 Solar PV life-cycle emissions result from using fossil-fuel-based energy to produce the materials for solar cells, modules, and systems, as well as directly from smelting, production, and manufacturing facilities.

As shown in Table 3-4, solar plants generate far less GHG life-cycle emissions (approximately 83 to 94 percent less) than fossil-fueled energy plants. Therefore, the Proposed Project would contribute to the continued reduction of GHG emissions in the interconnected California and western U.S. electricity systems, as the energy produced by the Project would displace GHG emissions that would otherwise be produced by existing business-as-usual power generation resources (including natural gas, coal, arid renewable combustion resources).

Table 3-5 shows the emissions that would potentially be displaced by the Proposed Project. Note that this estimate only includes that associated with the combustion of fossil fuels; it does not include the vehicle trips associated with the Project's operations, and it similarly does not include operational employee trips associated with natural gas or coal combustion nor the emissions associated with extracting and transporting those power sources. In addition, this estimate only includes the displacement of that portion of the California market that comes from fossil fuels and does not include the approximate 50 percent of the California electricity generated by non-combustion sources (wind, solar, nuclear, hydro-electric) (CEC 2020).

Table 3-5. Proposed Project Displaced GHG Emissions (Metric Tons)

	Emissions (Metric Tons)			
	CO_2	CH_4	N_2O	CO_2e
Emissions Displaced Annually (metric tons)				
Displaced Natural Gas-Source Emissions	47,585	0.00	0.00	47,585
Displaced Coal-Source Emissions	5,626	0.037	0.028	5,635
Total	**53,210**	**0.037**	**0.028**	**53,220**
Emissions Displaced over 30 Years (metric tons)				
Total	**1,596,309**	**1.118**	**0.838**	**1,596,596**

Source: Displaced emissions calculated by ECORP using USEPA's AP-42 Fifth Edition Compilation of Air Emissions Factors 1995; 2015. See Attachment B.

Notes: In order to provide a conservative analysis, the proposed Project is assumed to generate electricity 25 percent of the time available (2,190 hours annually). Heat Rate indicates the energy generator efficiency of existing fossil-fuel based energy generators. The heat rate of a power plant measures the amount of fuel used to generate one unit of electricity. Power plants with lower heat rates are more efficient than plants with higher heat rates. The CEC's "Updated Thermal Power Plant Efficiency Measures and Operational Characteristics for Production Cost Modeling" (2019) estimates heat rates and operating ranges for thermal power plants supplying energy to California. The average heat rate of power plants types are as follows:
**Steam Boiler fueled by coal: 10,800 heat rate **Steam Boiler fueled by natural gas: 10,200 heat rate **Gas Turbine: 10,100 heat rate **Combined natural gas Boiler and Turbine: 7,640 heat rate.
By omitting steam boilers fueled by coal since so little of California's energy is derived from coal, the average heat rate = 9,313 [(10,100 + 10,200 + 7,640) ÷ 3 = 9,313]. 100 MW (219,000,000 annual kWH) x 9,313 heat rate = 2,039,547,000,000 Btu displaced from fossil fuel production. Fossil fuel-based energy consumption in California is predominately derived from natural gas (37.06 percent). Coal constitutes 2.74 percent of all fossil fuel-based energy. Therefore, 865,175,837,400 of the displaced Btu is displaced natural gas and unspecified nonrenewable sources consumption and 55,883,587,800 of the displaced Btu is displaced coal. The heat content of coal is assumed at 24 million Btu per ton of coal burned. At a rate of 24 million Btu per ton of coal burned, the Project would displace 2,328 tons of burned coal annually.

As shown, the Project would potentially displace approximately 53,220 metric tons of CO_2e per year, and approximately 1,596,596 metric tons of CO_2e over the course of 30 years.

While the Project would emit some GHG emissions during construction and a small amount during operations, the contribution of renewable resource energy production to meet the goals of the Renewable Portfolio Standard (Scoping Plan Measure E-3) would result in a net cumulative reduction of GHG emissions, a key environmental benefit. (Scoping Plan Measure E-3, Renewable Portfolio Standard, of the Climate Change Scoping Plan requires that all investor-owned utility companies generate 60 percent of their energy demand from renewable sources by year 2030.) Therefore, the short-term minor generation of GHG emissions during construction, which is necessary to create this new, low-GHG-emitting power-generating facility, as well as the negligible amount generated during ongoing maintenance operations, would be more than offset by GHG emission reductions associated with solar-generated energy during operation.

Increasing sources of solar energy is one of the measures identified under the Scoping Plan to reduce statewide GHG emissions. The Proposed Project would reduce GHG emissions in a manner consistent with SB 32 and other California GHG-reducing legislation by creating a new source of solar power to replace the current use of fossil-fuel power and reduce GHG emissions power generation and use.

The Project would not conflict with any applicable plan, policy, or regulation intended to reduce GHG emissions.

4.0 REFERENCES

California Air Pollution Control Officers Association (CAPCOA). 2021. California Emissions Estimator Model (CalEEMod), version 2020.4.0.

_____. 2013. Health Effects. http://www.capcoa.org/health-effects/.

California Air Resources Board (CARB). 2021a. Air Quality Data Statistics. http://www.arb.ca.gov/adam/index.html.

_____. 2021b. California Greenhouse Gas Emission Inventory 2021 Edition.

_____. 2020b. Air Quality and Land Use Handbook

_____. 2019. State and Federal Area Designation Maps. http://www.arb.ca.gov/desig/adm/adm.htm.

California Energy Commission (CEC). 2020. 2020 Total System Electric Generation. https://www.energy.ca.gov/data-reports/energy-almanac/california-electricity-data/2020-total-system-electric-generation

_____. 2019b. Updated Thermal Power Plant Efficiency Measures and Operational Characteristics for Production Cost Modeling.

Crockett, Alexander G. 2011. Addressing the Significance of Greenhouse Gas Emissions Under CEQA: California's Search for Regulatory Certainty in an Uncertain World.

Intergovernmental Panel on Climate Change (IPCC). 2014. Climate Change 2014 Synthesis Report: Approved Summary for Policymakers. http://www.ipcc.ch/.

_____. 2013. Carbon and Other Biogeochemical Cycles. In: Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change. http://www.climatechange2013.org/images/report/WG1AR5_ALL_FINAL.pdf.

Imperial County Air Pollution Control District (ICAPCD). 2021. Email communication with Monica Soucier.

_____. 2017. *Air Quality Handbook*.

_____. 2010. *Final 2009 1997 8-Hour Ozone Modified Air Quality Management Plan*.

KOA. 2020. Scoping Memorandum for Traffic Impact Study.

South Coast Air Quality Management District (SCAQMD). 2003. Air Quality Management Plan.

_____. 1992. 1992 Federal Attainment Plan for Carbon Monoxide.

U.S. Environmental Protection Agency (USEPA). 2016a. Climate Change – Greenhouse Gas Emissions: Carbon Dioxide. http://www.epa.gov/climatechange/emissions/co2.html.

_____. 2016b. Methane. https://www3.epa.gov/climatechange/ghgemissions/gases/ch4.html.

_____. 2016c. Nitrous Oxide. https://www3.epa.gov/climatechange/ghgemissions/gases/n2o.html.

_____. 2002. Health Assessment Document for Diesel Engine Exhaust. https://nepis.epa.gov/Exe/ZyPURL.cgi?Dockey=300055PV.TXT.

Weisser, Daniel. 2007. A Guide to Life-Cycle Greenhouse Gas (GHG) Emissions from Electric Supply Technologies. Energy 32 (9), 1543–1559.

LIST OF ATTACHMENTS

Attachment A – CalEEMod Output Files Criteria Air Pollutants

Attachment B – Renewable Energy Emissions Displacement

Attachment C – CalEEMod Output Files Greenhouse Gas Emissions

ATTACHMENT A

CalEEMod Output Files Criteria Air Pollutants

Vega SES 4 Solar Energy Storage Project - Imperial County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Vega SES 4 Solar Energy Storage Project

Imperial County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Non-Asphalt Surfaces	447.00	Acre	447.00	19,471,320.00	0
Refrigerated Warehouse-No Rail	87.12	1000sqft	2.00	87,120.00	0
Refrigerated Warehouse-No Rail	87.12	1000sqft	2.00	87,120.00	0
Other Non-Asphalt Surfaces	3.50	Acre	3.50	152,460.00	0

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	3.4	**Precipitation Freq (Days)**	12
Climate Zone	15			**Operational Year**	2023
Utility Company	Imperial Irrigation District				
CO2 Intensity (lb/MWhr)	189.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Land Uses account for 447 acres of solar field, 2 acres of BESS, 2 acres of Substation, and 3.5 acres of Staging/Parking Area

Construction Phase - Construction timing per Project Applicant

Off-road Equipment - Construction equipment per Project applicant. Plate compactor = pile driver.

Off-road Equipment - Ibid

Off-road Equipment - Construction equipment per Project applicant.

Trips and VMT - Maximun 500 worker commute trips per Traffic Study. 20.25 miles added to vendor route for extended access along border.

On-road Fugitive Dust - 89% paved roads for worker commutes [1.15 m dirt roads / 10.2 m trip length default = 89% paved roads]. Traffic Study identifies worker commute routes north of Staging/Parking Area as 100% paved. 37% paved for vendor/equipment hauling trips. Trips require additional 20.25 miles of distance on dirt roadway.

Vega SES 4 Solar Energy Storage Project - Imperial County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Grading -

Vehicle Trips - Maximum daily trips = 6 per Traffic Study

Road Dust - 92% paved roads for operational worker commutes [1.15 m dirt roads / 14.55 m trip length default weighted average = 92% paved roads].

Energy Use - Solar facility- no operational energy use.

Water And Wastewater - Water use being kept for light industrial land use as the solar panels may need to be cleaned.

Solid Waste - No solid waste- solar facility.

Construction Off-road Equipment Mitigation - Mitigation measure AQ-1 accounted. PM Reduction value for applying soil stabilizers to unpaved roadways per communication with ICAPCD (Monica Soucier via email correspondence).

Mobile Land Use Mitigation -

Energy Mitigation -

Operational Off-Road Equipment - Onsite maintenance expected 4 times annually.

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	40	15
tblConstructionPhase	NumDays	7,750.00	286.00
tblConstructionPhase	NumDays	775.00	66.00
tblConstructionPhase	NumDays	300.00	33.00
tblConstructionPhase	PhaseEndDate	9/30/2055	7/25/2024
tblConstructionPhase	PhaseEndDate	1/15/2026	6/21/2023
tblConstructionPhase	PhaseEndDate	1/26/2023	3/21/2023
tblConstructionPhase	PhaseStartDate	1/16/2026	6/22/2023
tblConstructionPhase	PhaseStartDate	1/27/2023	3/22/2023
tblConstructionPhase	PhaseStartDate	12/3/2021	2/3/2023
tblOffRoadEquipment	LoadFactor	0.36	0.36
tblOffRoadEquipment	LoadFactor	0.40	0.40
tblOffRoadEquipment	LoadFactor	0.42	0.42
tblOffRoadEquipment	LoadFactor	0.36	0.36
tblOffRoadEquipment	LoadFactor	0.50	0.50
tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	OffRoadEquipmentType		Rubber Tired Loaders

Vega SES 4 Solar Energy Storage Project - Imperial County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblOffRoadEquipment	OffRoadEquipmentType		Rough Terrain Forklifts
tblOffRoadEquipment	OffRoadEquipmentType		Pavers
tblOffRoadEquipment	OffRoadEquipmentType		Paving Equipment
tblOffRoadEquipment	OffRoadEquipmentType		Plate Compactors
tblOffRoadEquipment	OffRoadEquipmentType		Trenchers
tblOffRoadEquipment	OffRoadEquipmentType		Rollers
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	3.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOnRoadDust	VendorPercentPave	50.00	37.00
tblOnRoadDust	VendorPercentPave	50.00	37.00
tblOnRoadDust	VendorPercentPave	50.00	37.00
tblOnRoadDust	WorkerPercentPave	50.00	89.00
tblOnRoadDust	WorkerPercentPave	50.00	89.00
tblOnRoadDust	WorkerPercentPave	50.00	89.00
tblOperationalOffRoadEquipment	OperDaysPerYear	260.00	8.00
tblOperationalOffRoadEquipment	OperDaysPerYear	260.00	8.00
tblOperationalOffRoadEquipment	OperHoursPerDay	8.00	2.00
tblOperationalOffRoadEquipment	OperLoadFactor	0.42	0.42
tblOperationalOffRoadEquipment	OperLoadFactor	0.38	0.38
tblOperationalOffRoadEquipment	OperOffRoadEquipmentNumber	0.00	3.00
tblOperationalOffRoadEquipment	OperOffRoadEquipmentNumber	0.00	1.00

Vega SES 4 Solar Energy Storage Project - Imperial County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblProjectCharacteristics	UrbanizationLevel	Urban	Rural
tblRoadDust	RoadPercentPave	50	92
tblTripsAndVMT	VendorTripLength	11.90	32.15
tblTripsAndVMT	VendorTripLength	11.90	32.15
tblTripsAndVMT	VendorTripLength	11.90	32.15
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	3,245.00	4.00
tblTripsAndVMT	WorkerTripNumber	8,315.00	500.00
tblVehicleTrips	ST_TR	2.12	0.00
tblVehicleTrips	SU_TR	2.12	0.00
tblVehicleTrips	WD_TR	2.12	0.03
tblWater	IndoorWaterUseRate	40,293,000.00	3,259,000.00

2.0 Emissions Summary

Vega SES 4 Solar Energy Storage Project - Imperial County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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					
2023	5.6636	57.6100	53.8307	0.1062	948.4182	2.3569	949.9344	95.2426	2.1685	96.6408	0.0000	10,324.7167	10,324.7167	3.1545	0.1515	10,419.2084
2024	5.1830	30.0350	52.4623	0.0944	948.4182	1.4097	949.8279	95.2426	1.3002	96.5428	0.0000	9,265.7312	9,265.7312	1.8251	0.1426	9,353.8508
Maximum	**5.6636**	**57.6100**	**53.8307**	**0.1062**	**948.4182**	**2.3569**	**949.9344**	**95.2426**	**2.1685**	**96.6408**	**0.0000**	**10,324.7167**	**10,324.7167**	**3.1545**	**0.1515**	**10,419.2084**

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					
2023	5.6636	57.6100	53.8307	0.1062	90.3461	2.3569	91.8623	9.6062	2.1685	11.0044	0.0000	10,324.7167	10,324.7167	3.1545	0.1515	10,419.2084
2024	5.1830	30.0350	52.4623	0.0944	90.3461	1.4097	91.7558	9.6062	1.3002	10.9064	0.0000	9,265.7312	9,265.7312	1.8251	0.1426	9,353.8508
Maximum	**5.6636**	**57.6100**	**53.8307**	**0.1062**	**90.3461**	**2.3569**	**91.8623**	**9.6062**	**2.1685**	**11.0044**	**0.0000**	**10,324.7167**	**10,324.7167**	**3.1545**	**0.1515**	**10,419.2084**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	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**	**90.47**	**0.00**	**90.33**	**89.91**	**0.00**	**88.66**	**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	13.5919	5.8000e-004	0.0638	0.0000		2.3000e-004	2.3000e-004		2.3000e-004	2.3000e-004		0.1367	0.1367	3.6000e-004		0.1457
Energy	0.2663	2.4210	2.0337	0.0145		0.1840	0.1840		0.1840	0.1840		2,905.2168	2,905.2168	0.0557	0.0533	2,922.4811
Mobile	0.0294	0.0355	0.3113	6.4000e-004	4.8460	4.4000e-004	4.8464	0.4922	4.1000e-004	0.4927		64.8492	64.8492	2.6500e-003	2.7400e-003	65.7319
Offroad	1.1604	11.0968	12.7025	0.0217		0.5634	0.5634		0.5184	0.5184	0.0000	2,096.6998	2,096.6998	0.6781		2,113.6527
Total	**15.0481**	**13.5539**	**15.1112**	**0.0368**	**4.8460**	**0.7481**	**5.5941**	**0.4922**	**0.7030**	**1.1952**	**0.0000**	**5,066.9026**	**5,066.9026**	**0.7368**	**0.0560**	**5,102.0114**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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	lb/day										lb/day					
Area	13.5919	5.8000e-004	0.0638	0.0000		2.3000e-004	2.3000e-004		2.3000e-004	2.3000e-004		0.1367	0.1367	3.6000e-004		0.1457
Energy	0.2663	2.4210	2.0337	0.0145		0.1840	0.1840		0.1840	0.1840		2,905.2168	2,905.2168	0.0557	0.0533	2,922.4811
Mobile	0.0294	0.0355	0.3113	6.4000e-004	4.8460	4.4000e-004	4.8464	0.4922	4.1000e-004	0.4927		64.8492	64.8492	2.6500e-003	2.7400e-003	65.7319
Offroad	1.1604	11.0968	12.7025	0.0217		0.5634	0.5634		0.5184	0.5184	0.0000	2,096.6998	2,096.6998	0.6781		2,113.6527
Total	**15.0481**	**13.5539**	**15.1112**	**0.0368**	**4.8460**	**0.7481**	**5.5941**	**0.4922**	**0.7030**	**1.1952**	**0.0000**	**5,066.9026**	**5,066.9026**	**0.7368**	**0.0560**	**5,102.0114**

	ROG	NOx	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	2/3/2023	3/21/2023	5	33	
2	Grading	Grading	3/22/2023	6/21/2023	5	66	
3	Building Construction	Building Construction	6/22/2023	7/25/2024	5	286	

Acres of Grading (Site Preparation Phase): 0

Vega SES 4 Solar Energy Storage Project - Imperial County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Acres of Grading (Grading Phase): 297

Acres of Paving: 450.5

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	Rubber Tired Dozers	0	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Grading	Excavators	4	8.00	158	0.38
Grading	Graders	3	8.00	187	0.41
Grading	Rubber Tired Dozers	2	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	0	8.00	89	0.20
Building Construction	Generator Sets	0	8.00	84	0.74
Site Preparation	Rubber Tired Loaders	2	8.00	203	0.36
Building Construction	Rough Terrain Forklifts	4	8.00	100	0.40
Building Construction	Pavers	1	8.00	130	0.42
Building Construction	Tractors/Loaders/Backhoes	4	7.00	97	0.37
Building Construction	Paving Equipment	2	8.00	132	0.36
Building Construction	Welders	0	8.00	46	0.45
Building Construction	Plate Compactors	4	8.00	8	0.43
Building Construction	Trenchers	2	8.00	78	0.50
Building Construction	Rollers	2	8.00	80	0.38

Trips and VMT

Vega SES 4 Solar Energy Storage Project - Imperial County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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	4	10.00	4.00	0.00	10.20	32.15	20.00	LD_Mix	HDT_Mix	HHDT
Grading	15	38.00	4.00	0.00	10.20	32.15	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	20	500.00	4.00	0.00	10.20	32.15	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Soil Stabilizer

Water Exposed Area

Water Unpaved Roads

Reduce Vehicle Speed on Unpaved Roads

3.2 Site Preparation - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.8464	8.4073	7.4973	0.0188		0.3303	0.3303		0.3039	0.3039		1,820.3309	1,820.3309	0.5887		1,835.0492
Total	**0.8464**	**8.4073**	**7.4973**	**0.0188**	**0.0000**	**0.3303**	**0.3303**	**0.0000**	**0.3039**	**0.3039**		**1,820.3309**	**1,820.3309**	**0.5887**		**1,835.0492**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.2 Site Preparation - 2023

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	0.0000
Vendor	0.0199	0.4045	0.1319	3.0800e-003	119.2980	5.2500e-003	119.3033	11.9190	5.0300e-003	11.9240		324.2947	324.2947	9.3000e-004	0.0443	337.5192
Worker	0.0501	0.0232	0.3497	7.2000e-004	16.5824	3.8000e-004	16.5828	1.6665	3.5000e-004	1.6668		72.8603	72.8603	2.3100e-003	2.1400e-003	73.5570
Total	**0.0700**	**0.4277**	**0.4816**	**3.8000e-003**	**135.8804**	**5.6300e-003**	**135.8860**	**13.5855**	**5.3800e-003**	**13.5909**		**397.1550**	**397.1550**	**3.2400e-003**	**0.0464**	**411.0761**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.8464	8.4073	7.4973	0.0188		0.3303	0.3303		0.3039	0.3039	0.0000	1,820.3309	1,820.3309	0.5887		1,835.0492
Total	**0.8464**	**8.4073**	**7.4973**	**0.0188**	**0.0000**	**0.3303**	**0.3303**	**0.0000**	**0.3039**	**0.3039**	**0.0000**	**1,820.3309**	**1,820.3309**	**0.5887**		**1,835.0492**

Vega SES 4 Solar Energy Storage Project - Imperial County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.2 Site Preparation - 2023

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	0.0000
Vendor	0.0199	0.4045	0.1319	3.0800e-003	11.0155	5.2500e-003	11.0208	1.1123	5.0300e-003	1.1173		324.2947	324.2947	9.3000e-004	0.0443	337.5192
Worker	0.0501	0.0232	0.3497	7.2000e-004	1.5866	3.8000e-004	1.5870	0.1699	3.5000e-004	0.1702		72.8603	72.8603	2.3100e-003	2.1400e-003	73.5570
Total	**0.0700**	**0.4277**	**0.4816**	**3.8000e-003**	**12.6022**	**5.6300e-003**	**12.6078**	**1.2822**	**5.3800e-003**	**1.2876**		**397.1550**	**397.1550**	**3.2400e-003**	**0.0464**	**411.0761**

3.3 Grading - 2023

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					16.8164	0.0000	16.8164	7.1358	0.0000	7.1358			0.0000			0.0000
Off-Road	5.4534	57.1174	45.5209	0.1004		2.3502	2.3502		2.1621	2.1621		9,723.5530	9,723.5530	3.1448		9,802.1729
Total	**5.4534**	**57.1174**	**45.5209**	**0.1004**	**16.8164**	**2.3502**	**19.1666**	**7.1358**	**2.1621**	**9.2979**		**9,723.5530**	**9,723.5530**	**3.1448**		**9,802.1729**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.3 Grading - 2023

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	0.0000
Vendor	0.0199	0.4045	0.1319	3.0800e-003	119.2980	5.2500e-003	119.3033	11.9190	5.0300e-003	11.9240		324.2947	324.2947	9.3000e-004	0.0443	337.5192
Worker	0.1903	0.0881	1.3288	2.7400e-003	63.0131	1.4600e-003	63.0146	6.3326	1.3500e-003	6.3339		276.8690	276.8690	8.7600e-003	8.1500e-003	279.5164
Total	**0.2102**	**0.4926**	**1.4607**	**5.8200e-003**	**182.3111**	**6.7100e-003**	**182.3179**	**18.2516**	**6.3800e-003**	**18.2580**		**601.1637**	**601.1637**	**9.6900e-003**	**0.0525**	**617.0356**

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					6.5584	0.0000	6.5584	2.7829	0.0000	2.7829			0.0000			0.0000
Off-Road	5.4534	57.1174	45.5209	0.1004		2.3502	2.3502		2.1621	2.1621	0.0000	9,723.5530	9,723.5530	3.1448		9,802.1729
Total	**5.4534**	**57.1174**	**45.5209**	**0.1004**	**6.5584**	**2.3502**	**8.9086**	**2.7829**	**2.1621**	**4.9451**	**0.0000**	**9,723.5530**	**9,723.5530**	**3.1448**		**9,802.1729**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.3 Grading - 2023

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	0.0000
Vendor	0.0199	0.4045	0.1319	3.0800e-003	11.0155	5.2500e-003	11.0208	1.1123	5.0300e-003	1.1173		324.2947	324.2947	9.3000e-004	0.0443	337.5192
Worker	0.1903	0.0881	1.3288	2.7400e-003	6.0291	1.4600e-003	6.0306	0.6455	1.3500e-003	0.6469		276.8690	276.8690	8.7600e-003	8.1500e-003	279.5164
Total	**0.2102**	**0.4926**	**1.4607**	**5.8200e-003**	**17.0447**	**6.7100e-003**	**17.0514**	**1.7578**	**6.3800e-003**	**1.7642**		**601.1637**	**601.1637**	**9.6900e-003**	**0.0525**	**617.0356**

3.4 Building Construction - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.9498	30.0468	36.2147	0.0564		1.4917	1.4917		1.3755	1.3755		5,412.1870	5,412.1870	1.7201		5,455.1901
Total	**2.9498**	**30.0468**	**36.2147**	**0.0564**		**1.4917**	**1.4917**		**1.3755**	**1.3755**		**5,412.1870**	**5,412.1870**	**1.7201**		**5,455.1901**

Vega SES 4 Solar Energy Storage Project - Imperial County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Building Construction - 2023

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	0.0000
Vendor	0.0199	0.4045	0.1319	3.0800e-003	119.2980	5.2500e-003	119.3033	11.9190	5.0300e-003	11.9240		324.2947	324.2947	9.3000e-004	0.0443	337.5192
Worker	2.5037	1.1587	17.4841	0.0360	829.1202	0.0192	829.1395	83.3236	0.0177	83.3413		3,643.0131	3,643.0131	0.1153	0.1072	3,677.8475
Total	**2.5236**	**1.5632**	**17.6160**	**0.0391**	**948.4182**	**0.0245**	**948.4427**	**95.2426**	**0.0227**	**95.2653**		**3,967.3078**	**3,967.3078**	**0.1162**	**0.1515**	**4,015.3666**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.9498	30.0468	36.2147	0.0564		1.4917	1.4917		1.3755	1.3755	0.0000	5,412.1870	5,412.1870	1.7201		5,455.1901
Total	**2.9498**	**30.0468**	**36.2147**	**0.0564**		**1.4917**	**1.4917**		**1.3755**	**1.3755**	**0.0000**	**5,412.1870**	**5,412.1870**	**1.7201**		**5,455.1901**

Vega SES 4 Solar Energy Storage Project - Imperial County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Building Construction - 2023

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	0.0000
Vendor	0.0199	0.4045	0.1319	3.0800e-003	11.0155	5.2500e-003	11.0208	1.1123	5.0300e-003	1.1173		324.2947	324.2947	9.3000e-004	0.0443	337.5192
Worker	2.5037	1.1587	17.4841	0.0360	79.3306	0.0192	79.3498	8.4939	0.0177	8.5116		3,643.0131	3,643.0131	0.1153	0.1072	3,677.8475
Total	**2.5236**	**1.5632**	**17.6160**	**0.0391**	**90.3461**	**0.0245**	**90.3706**	**9.6062**	**0.0227**	**9.6289**		**3,967.3078**	**3,967.3078**	**0.1162**	**0.1515**	**4,015.3666**

3.4 Building Construction - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.8438	28.6031	36.2160	0.0564		1.3862	1.3862		1.2785	1.2785		5,412.5100	5,412.5100	1.7202		5,455.5157
Total	**2.8438**	**28.6031**	**36.2160**	**0.0564**		**1.3862**	**1.3862**		**1.2785**	**1.2785**		**5,412.5100**	**5,412.5100**	**1.7202**		**5,455.5157**

Vega SES 4 Solar Energy Storage Project - Imperial County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Building Construction - 2024

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	0.0000
Vendor	0.0189	0.4030	0.1231	3.0400e-003	119.2980	5.2400e-003	119.3032	11.9190	5.0100e-003	11.9240		319.8973	319.8973	8.8000e-004	0.0435	332.8703
Worker	2.3203	1.0290	16.1232	0.0350	829.1202	0.0182	829.1384	83.3236	0.0168	83.3404		3,533.3239	3,533.3239	0.1039	0.0991	3,565.4648
Total	**2.3392**	**1.4319**	**16.2463**	**0.0380**	**948.4182**	**0.0235**	**948.4417**	**95.2426**	**0.0218**	**95.2644**		**3,853.2212**	**3,853.2212**	**0.1048**	**0.1426**	**3,898.3351**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.8438	28.6031	36.2160	0.0564		1.3862	1.3862		1.2785	1.2785	0.0000	5,412.5100	5,412.5100	1.7202		5,455.5157
Total	**2.8438**	**28.6031**	**36.2160**	**0.0564**		**1.3862**	**1.3862**		**1.2785**	**1.2785**	**0.0000**	**5,412.5100**	**5,412.5100**	**1.7202**		**5,455.5157**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Building Construction - 2024

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	0.0000
Vendor	0.0189	0.4030	0.1231	3.0400e-003	11.0155	5.2400e-003	11.0208	1.1123	5.0100e-003	1.1173		319.8973	319.8973	8.8000e-004	0.0435	332.8703
Worker	2.3203	1.0290	16.1232	0.0350	79.3306	0.0182	79.3488	8.4939	0.0168	8.5107		3,533.3239	3,533.3239	0.1039	0.0991	3,565.4648
Total	**2.3392**	**1.4319**	**16.2463**	**0.0380**	**90.3461**	**0.0235**	**90.3696**	**9.6062**	**0.0218**	**9.6280**		**3,853.2212**	**3,853.2212**	**0.1048**	**0.1426**	**3,898.3351**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Vega SES 4 Solar Energy Storage Project - Imperial County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	CO	SO2	Fugitive 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	0.0294	0.0355	0.3113	6.4000e-004	4.8460	4.4000e-004	4.8464	0.4922	4.1000e-004	0.4927		64.8492	64.8492	2.6500e-003	2.7400e-003	65.7319
Unmitigated	0.0294	0.0355	0.3113	6.4000e-004	4.8460	4.4000e-004	4.8464	0.4922	4.1000e-004	0.4927		64.8492	64.8492	2.6500e-003	2.7400e-003	65.7319

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Refrigerated Warehouse-No Rail	2.96	0.00	0.00	10,455	10,455
Refrigerated Warehouse-No Rail	2.96	0.00	0.00	10,455	10,455
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Total	5.92	0.00	0.00	20,910	20,910

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
Refrigerated Warehouse-No	16.40	9.50	11.90	59.00	0.00	41.00	92	5	3
Refrigerated Warehouse-No	16.40	9.50	11.90	59.00	0.00	41.00	92	5	3
Other Non-Asphalt Surfaces	16.40	9.50	11.90	0.00	0.00	0.00	0	0	0
Other Non-Asphalt Surfaces	16.40	9.50	11.90	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Refrigerated Warehouse-No Rail	0.521846	0.059402	0.180067	0.151114	0.027614	0.006908	0.008276	0.016396	0.000918	0.000121	0.022925	0.000779	0.003633
Other Non-Asphalt Surfaces	0.521846	0.059402	0.180067	0.151114	0.027614	0.006908	0.008276	0.016396	0.000918	0.000121	0.022925	0.000779	0.003633

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Percent of Electricity Use Generated with Renewable Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.2663	2.4210	2.0337	0.0145		0.1840	0.1840		0.1840	0.1840		2,905.2168	2,905.2168	0.0557	0.0533	2,922.4811
NaturalGas Unmitigated	0.2663	2.4210	2.0337	0.0145		0.1840	0.1840		0.1840	0.1840		2,905.2168	2,905.2168	0.0557	0.0533	2,922.4811

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Refrigerated Warehouse-No Rail	12347.2	0.2663	2.4210	2.0337	0.0145		0.1840	0.1840		0.1840	0.1840		2,905.2168	2,905.2168	0.0557	0.0533	2,922.4811
Total		**0.2663**	**2.4210**	**2.0337**	**0.0145**		**0.1840**	**0.1840**		**0.1840**	**0.1840**		**2,905.2168**	**2,905.2168**	**0.0557**	**0.0533**	**2,922.4811**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Refrigerated Warehouse-No Rail	12.3472	0.2663	2.4210	2.0337	0.0145		0.1840	0.1840		0.1840	0.1840		2,905.2168	2,905.2168	0.0557	0.0533	2,922.4811
Total		**0.2663**	**2.4210**	**2.0337**	**0.0145**		**0.1840**	**0.1840**		**0.1840**	**0.1840**		**2,905.2168**	**2,905.2168**	**0.0557**	**0.0533**	**2,922.4811**

6.0 Area Detail

Vega SES 4 Solar Energy Storage Project - Imperial County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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	13.5919	5.8000e-004	0.0638	0.0000		2.3000e-004	2.3000e-004		2.3000e-004	2.3000e-004		0.1367	0.1367	3.6000e-004		0.1457
Unmitigated	13.5919	5.8000e-004	0.0638	0.0000		2.3000e-004	2.3000e-004		2.3000e-004	2.3000e-004		0.1367	0.1367	3.6000e-004		0.1457

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	2.9065					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	10.6795					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	5.9100e-003	5.8000e-004	0.0638	0.0000		2.3000e-004	2.3000e-004		2.3000e-004	2.3000e-004		0.1367	0.1367	3.6000e-004		0.1457
Total	**13.5919**	**5.8000e-004**	**0.0638**	**0.0000**		**2.3000e-004**	**2.3000e-004**		**2.3000e-004**	**2.3000e-004**		**0.1367**	**0.1367**	**3.6000e-004**		**0.1457**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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	2.9065					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	10.6795					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	5.9100e-003	5.8000e-004	0.0638	0.0000		2.3000e-004	2.3000e-004		2.3000e-004	2.3000e-004		0.1367	0.1367	3.6000e-004		0.1457
Total	**13.5919**	**5.8000e-004**	**0.0638**	**0.0000**		**2.3000e-004**	**2.3000e-004**		**2.3000e-004**	**2.3000e-004**		**0.1367**	**0.1367**	**3.6000e-004**		**0.1457**

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
Other Construction Equipment	3	8.00	8	172	0.42	Diesel
Off-Highway Trucks	1	2.00	8	402	0.38	Diesel

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

UnMitigated/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
Equipment Type	lb/day										lb/day					
Off-Highway Trucks	0.1266	0.8964	0.8262	3.3200e-003		0.0324	0.0324		0.0298	0.0298	0.0000	321.5720	321.5720	0.1040		324.1721
Other Construction Equipment	1.0338	10.2004	11.8763	0.0183		0.5310	0.5310		0.4885	0.4885	0.0000	1,775.1278	1,775.1278	0.5741		1,789.4806
Total	**1.1604**	**11.0968**	**12.7025**	**0.0217**		**0.5634**	**0.5634**		**0.5184**	**0.5184**	**0.0000**	**2,096.6998**	**2,096.6998**	**0.6781**		**2,113.6527**

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

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Vega SES 4 Solar Energy Storage Project

Imperial County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Non-Asphalt Surfaces	447.00	Acre	447.00	19,471,320.00	0
Refrigerated Warehouse-No Rail	87.12	1000sqft	2.00	87,120.00	0
Refrigerated Warehouse-No Rail	87.12	1000sqft	2.00	87,120.00	0
Other Non-Asphalt Surfaces	3.50	Acre	3.50	152,460.00	0

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	3.4	**Precipitation Freq (Days)**	12
Climate Zone	15			**Operational Year**	2023
Utility Company	Imperial Irrigation District				
CO2 Intensity (lb/MWhr)	189.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Land Uses account for 447 acres of solar field, 2 acres of BESS, 2 acres of Substation, and 3.5 acres of Staging/Parking Area

Construction Phase - Construction timing per Project Applicant

Off-road Equipment - Construction equipment per Project applicant. Plate compactor = pile driver.

Off-road Equipment - Ibid

Off-road Equipment - Construction equipment per Project applicant.

Trips and VMT - Maximun 500 worker commute trips per Traffic Study. 20.25 miles added to vendor route for extended access along border.

On-road Fugitive Dust - 89% paved roads for worker commutes [1.15 m dirt roads / 10.2 m trip length default = 89% paved roads]. Traffic Study identifies worker commute routes north of Staging/Parking Area as 100% paved. 37% paved for vendor/equipment hauling trips. Trips require additional 20.25 miles of distance on dirt roadway.

Vega SES 4 Solar Energy Storage Project - Imperial County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Grading -

Vehicle Trips - Maximum daily trips = 6 per Traffic Study

Road Dust - 92% paved roads for operational worker commutes [1.15 m dirt roads / 14.55 m trip length default weighted average = 92% paved roads].

Energy Use - Solar facility- no operational energy use.

Water And Wastewater - Water use being kept for light industrial land use as the solar panels may need to be cleaned.

Solid Waste - No solid waste- solar facility.

Construction Off-road Equipment Mitigation - Mitigation measure AQ-1 accounted. PM Reduction value for applying soil stabilizers to unpaved roadways per communication with ICAPCD (Monica Soucier via email correspondence).

Mobile Land Use Mitigation -

Energy Mitigation -

Operational Off-Road Equipment - Onsite maintenance expected 4 times annually.

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	40	15
tblConstructionPhase	NumDays	7,750.00	286.00
tblConstructionPhase	NumDays	775.00	66.00
tblConstructionPhase	NumDays	300.00	33.00
tblConstructionPhase	PhaseEndDate	9/30/2055	7/25/2024
tblConstructionPhase	PhaseEndDate	1/15/2026	6/21/2023
tblConstructionPhase	PhaseEndDate	1/26/2023	3/21/2023
tblConstructionPhase	PhaseStartDate	1/16/2026	6/22/2023
tblConstructionPhase	PhaseStartDate	1/27/2023	3/22/2023
tblConstructionPhase	PhaseStartDate	12/3/2021	2/3/2023
tblOffRoadEquipment	LoadFactor	0.36	0.36
tblOffRoadEquipment	LoadFactor	0.40	0.40
tblOffRoadEquipment	LoadFactor	0.42	0.42
tblOffRoadEquipment	LoadFactor	0.36	0.36
tblOffRoadEquipment	LoadFactor	0.50	0.50
tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	OffRoadEquipmentType		Rubber Tired Loaders

Vega SES 4 Solar Energy Storage Project - Imperial County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblOffRoadEquipment	OffRoadEquipmentType		Rough Terrain Forklifts
tblOffRoadEquipment	OffRoadEquipmentType		Pavers
tblOffRoadEquipment	OffRoadEquipmentType		Paving Equipment
tblOffRoadEquipment	OffRoadEquipmentType		Plate Compactors
tblOffRoadEquipment	OffRoadEquipmentType		Trenchers
tblOffRoadEquipment	OffRoadEquipmentType		Rollers
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	3.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOnRoadDust	VendorPercentPave	50.00	37.00
tblOnRoadDust	VendorPercentPave	50.00	37.00
tblOnRoadDust	VendorPercentPave	50.00	37.00
tblOnRoadDust	WorkerPercentPave	50.00	89.00
tblOnRoadDust	WorkerPercentPave	50.00	89.00
tblOnRoadDust	WorkerPercentPave	50.00	89.00
tblOperationalOffRoadEquipment	OperDaysPerYear	260.00	8.00
tblOperationalOffRoadEquipment	OperDaysPerYear	260.00	8.00
tblOperationalOffRoadEquipment	OperHoursPerDay	8.00	2.00
tblOperationalOffRoadEquipment	OperLoadFactor	0.42	0.42
tblOperationalOffRoadEquipment	OperLoadFactor	0.38	0.38
tblOperationalOffRoadEquipment	OperOffRoadEquipmentNumber	0.00	3.00
tblOperationalOffRoadEquipment	OperOffRoadEquipmentNumber	0.00	1.00

Vega SES 4 Solar Energy Storage Project - Imperial County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblProjectCharacteristics	UrbanizationLevel	Urban	Rural
tblRoadDust	RoadPercentPave	50	92
tblTripsAndVMT	VendorTripLength	11.90	32.15
tblTripsAndVMT	VendorTripLength	11.90	32.15
tblTripsAndVMT	VendorTripLength	11.90	32.15
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	3,245.00	4.00
tblTripsAndVMT	WorkerTripNumber	8,315.00	500.00
tblVehicleTrips	ST_TR	2.12	0.00
tblVehicleTrips	SU_TR	2.12	0.00
tblVehicleTrips	WD_TR	2.12	0.03
tblWater	IndoorWaterUseRate	40,293,000.00	3,259,000.00

2.0 Emissions Summary

Vega SES 4 Solar Energy Storage Project - Imperial County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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					
2023	5.6158	57.6586	48.8527	0.1058	948.4182	2.3569	949.9344	95.2426	2.1685	96.6408	0.0000	10,283.4013	10,283.4013	3.1545	0.1542	10,377.9989
2024	4.6139	30.1241	47.8943	0.0892	948.4182	1.4097	949.8279	95.2426	1.3002	96.5428	0.0000	8,737.1317	8,737.1317	1.8264	0.1449	8,825.9843
Maximum	**5.6158**	**57.6586**	**48.8527**	**0.1058**	**948.4182**	**2.3569**	**949.9344**	**95.2426**	**2.1685**	**96.6408**	**0.0000**	**10,283.4013**	**10,283.4013**	**3.1545**	**0.1542**	**10,377.9989**

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					
2023	5.6158	57.6586	48.8527	0.1058	90.3461	2.3569	91.8623	9.6062	2.1685	11.0044	0.0000	10,283.4013	10,283.4013	3.1545	0.1542	10,377.9989
2024	4.6139	30.1241	47.8943	0.0892	90.3461	1.4097	91.7558	9.6062	1.3002	10.9064	0.0000	8,737.1317	8,737.1317	1.8264	0.1449	8,825.9843
Maximum	**5.6158**	**57.6586**	**48.8527**	**0.1058**	**90.3461**	**2.3569**	**91.8623**	**9.6062**	**2.1685**	**11.0044**	**0.0000**	**10,283.4013**	**10,283.4013**	**3.1545**	**0.1542**	**10,377.9989**

Vega SES 4 Solar Energy Storage Project - Imperial County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	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**	**90.47**	**0.00**	**90.33**	**89.91**	**0.00**	**88.66**	**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	13.5919	5.8000e-004	0.0638	0.0000		2.3000e-004	2.3000e-004		2.3000e-004	2.3000e-004		0.1367	0.1367	3.6000e-004		0.1457
Energy	0.2663	2.4210	2.0337	0.0145		0.1840	0.1840		0.1840	0.1840		2,905.2168	2,905.2168	0.0557	0.0533	2,922.4811
Mobile	0.0206	0.0393	0.2405	5.6000e-004	4.8460	4.4000e-004	4.8464	0.4922	4.1000e-004	0.4927		57.0593	57.0593	2.6600e-003	2.8300e-003	57.9690
Offroad	1.1604	11.0968	12.7025	0.0217		0.5634	0.5634		0.5184	0.5184	0.0000	2,096.6998	2,096.6998	0.6781		2,113.6527
Total	**15.0393**	**13.5577**	**15.0404**	**0.0367**	**4.8460**	**0.7481**	**5.5941**	**0.4922**	**0.7030**	**1.1952**	**0.0000**	**5,059.1127**	**5,059.1127**	**0.7368**	**0.0561**	**5,094.2485**

Vega SES 4 Solar Energy Storage Project - Imperial County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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	lb/day										lb/day					
Area	13.5919	5.8000e-004	0.0638	0.0000		2.3000e-004	2.3000e-004		2.3000e-004	2.3000e-004		0.1367	0.1367	3.6000e-004		0.1457
Energy	0.2663	2.4210	2.0337	0.0145		0.1840	0.1840		0.1840	0.1840		2,905.2168	2,905.2168	0.0557	0.0533	2,922.4811
Mobile	0.0206	0.0393	0.2405	5.6000e-004	4.8460	4.4000e-004	4.8464	0.4922	4.1000e-004	0.4927		57.0593	57.0593	2.6600e-003	2.8300e-003	57.9690
Offroad	1.1604	11.0968	12.7025	0.0217		0.5634	0.5634		0.5184	0.5184	0.0000	2,096.6998	2,096.6998	0.6781		2,113.6527
Total	**15.0393**	**13.5577**	**15.0404**	**0.0367**	**4.8460**	**0.7481**	**5.5941**	**0.4922**	**0.7030**	**1.1952**	**0.0000**	**5,059.1127**	**5,059.1127**	**0.7368**	**0.0561**	**5,094.2485**

	ROG	NOx	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	2/3/2023	3/21/2023	5	33	
2	Grading	Grading	3/22/2023	6/21/2023	5	66	
3	Building Construction	Building Construction	6/22/2023	7/25/2024	5	286	

Acres of Grading (Site Preparation Phase): 0

Vega SES 4 Solar Energy Storage Project - Imperial County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Acres of Grading (Grading Phase): 297

Acres of Paving: 450.5

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	Rubber Tired Dozers	0	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Grading	Excavators	4	8.00	158	0.38
Grading	Graders	3	8.00	187	0.41
Grading	Rubber Tired Dozers	2	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	0	8.00	89	0.20
Building Construction	Generator Sets	0	8.00	84	0.74
Site Preparation	Rubber Tired Loaders	2	8.00	203	0.36
Building Construction	Rough Terrain Forklifts	4	8.00	100	0.40
Building Construction	Pavers	1	8.00	130	0.42
Building Construction	Tractors/Loaders/Backhoes	4	7.00	97	0.37
Building Construction	Paving Equipment	2	8.00	132	0.36
Building Construction	Welders	0	8.00	46	0.45
Building Construction	Plate Compactors	4	8.00	8	0.43
Building Construction	Trenchers	2	8.00	78	0.50
Building Construction	Rollers	2	8.00	80	0.38

Trips and VMT

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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	4	10.00	4.00	0.00	10.20	32.15	20.00	LD_Mix	HDT_Mix	HHDT
Grading	15	38.00	4.00	0.00	10.20	32.15	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	20	500.00	4.00	0.00	10.20	32.15	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Soil Stabilizer

Water Exposed Area

Water Unpaved Roads

Reduce Vehicle Speed on Unpaved Roads

3.2 Site Preparation - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.8464	8.4073	7.4973	0.0188		0.3303	0.3303		0.3039	0.3039		1,820.3309	1,820.3309	0.5887		1,835.0492
Total	**0.8464**	**8.4073**	**7.4973**	**0.0188**	**0.0000**	**0.3303**	**0.3303**	**0.0000**	**0.3039**	**0.3039**		**1,820.3309**	**1,820.3309**	**0.5887**		**1,835.0492**

Vega SES 4 Solar Energy Storage Project - Imperial County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.2 Site Preparation - 2023

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	0.0000
Vendor	0.0195	0.4491	0.1329	3.0900e-003	119.2980	5.2600e-003	119.3033	11.9190	5.0300e-003	11.9240		324.5098	324.5098	9.0000e-004	0.0445	337.7815
Worker	0.0376	0.0242	0.2501	6.1000e-004	16.5824	3.8000e-004	16.5828	1.6665	3.5000e-004	1.6668		61.9312	61.9312	2.3300e-003	2.1900e-003	62.6433
Total	**0.0571**	**0.4733**	**0.3830**	**3.7000e-003**	**135.8804**	**5.6400e-003**	**135.8861**	**13.5855**	**5.3800e-003**	**13.5909**		**386.4410**	**386.4410**	**3.2300e-003**	**0.0467**	**400.4248**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.8464	8.4073	7.4973	0.0188		0.3303	0.3303		0.3039	0.3039	0.0000	1,820.3309	1,820.3309	0.5887		1,835.0492
Total	**0.8464**	**8.4073**	**7.4973**	**0.0188**	**0.0000**	**0.3303**	**0.3303**	**0.0000**	**0.3039**	**0.3039**	**0.0000**	**1,820.3309**	**1,820.3309**	**0.5887**		**1,835.0492**

Vega SES 4 Solar Energy Storage Project - Imperial County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.2 Site Preparation - 2023

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	0.0000
Vendor	0.0195	0.4491	0.1329	3.0900e-003	11.0155	5.2600e-003	11.0208	1.1123	5.0300e-003	1.1173		324.5098	324.5098	9.0000e-004	0.0445	337.7815
Worker	0.0376	0.0242	0.2501	6.1000e-004	1.5866	3.8000e-004	1.5870	0.1699	3.5000e-004	0.1702		61.9312	61.9312	2.3300e-003	2.1900e-003	62.6433
Total	**0.0571**	**0.4733**	**0.3830**	**3.7000e-003**	**12.6022**	**5.6400e-003**	**12.6078**	**1.2822**	**5.3800e-003**	**1.2876**		**386.4410**	**386.4410**	**3.2300e-003**	**0.0467**	**400.4248**

3.3 Grading - 2023

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					16.8164	0.0000	16.8164	7.1358	0.0000	7.1358			0.0000			0.0000
Off-Road	5.4534	57.1174	45.5209	0.1004		2.3502	2.3502		2.1621	2.1621		9,723.5530	9,723.5530	3.1448		9,802.1729
Total	**5.4534**	**57.1174**	**45.5209**	**0.1004**	**16.8164**	**2.3502**	**19.1666**	**7.1358**	**2.1621**	**9.2979**		**9,723.5530**	**9,723.5530**	**3.1448**		**9,802.1729**

Vega SES 4 Solar Energy Storage Project - Imperial County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.3 Grading - 2023

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	0.0000
Vendor	0.0195	0.4491	0.1329	3.0900e-003	119.2980	5.2600e-003	119.3033	11.9190	5.0300e-003	11.9240		324.5098	324.5098	9.0000e-004	0.0445	337.7815
Worker	0.1429	0.0921	0.9504	2.3300e-003	63.0131	1.4600e-003	63.0146	6.3326	1.3500e-003	6.3339		235.3385	235.3385	8.8400e-003	8.3400e-003	238.0445
Total	**0.1624**	**0.5412**	**1.0832**	**5.4200e-003**	**182.3111**	**6.7200e-003**	**182.3179**	**18.2516**	**6.3800e-003**	**18.2580**		**559.8483**	**559.8483**	**9.7400e-003**	**0.0528**	**575.8260**

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					6.5584	0.0000	6.5584	2.7829	0.0000	2.7829			0.0000			0.0000
Off-Road	5.4534	57.1174	45.5209	0.1004		2.3502	2.3502		2.1621	2.1621	0.0000	9,723.5530	9,723.5530	3.1448		9,802.1729
Total	**5.4534**	**57.1174**	**45.5209**	**0.1004**	**6.5584**	**2.3502**	**8.9086**	**2.7829**	**2.1621**	**4.9451**	**0.0000**	**9,723.5530**	**9,723.5530**	**3.1448**		**9,802.1729**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.3 Grading - 2023

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	0.0000
Vendor	0.0195	0.4491	0.1329	3.0900e-003	11.0155	5.2600e-003	11.0208	1.1123	5.0300e-003	1.1173		324.5098	324.5098	9.0000e-004	0.0445	337.7815
Worker	0.1429	0.0921	0.9504	2.3300e-003	6.0291	1.4600e-003	6.0306	0.6455	1.3500e-003	0.6469		235.3385	235.3385	8.8400e-003	8.3400e-003	238.0445
Total	**0.1624**	**0.5412**	**1.0832**	**5.4200e-003**	**17.0447**	**6.7200e-003**	**17.0514**	**1.7578**	**6.3800e-003**	**1.7642**		**559.8483**	**559.8483**	**9.7400e-003**	**0.0528**	**575.8260**

3.4 Building Construction - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.9498	30.0468	36.2147	0.0564		1.4917	1.4917		1.3755	1.3755		5,412.1870	5,412.1870	1.7201		5,455.1901
Total	**2.9498**	**30.0468**	**36.2147**	**0.0564**		**1.4917**	**1.4917**		**1.3755**	**1.3755**		**5,412.1870**	**5,412.1870**	**1.7201**		**5,455.1901**

Vega SES 4 Solar Energy Storage Project - Imperial County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Building Construction - 2023

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	0.0000
Vendor	0.0195	0.4491	0.1329	3.0900e-003	119.2980	5.2600e-003	119.3033	11.9190	5.0300e-003	11.9240		324.5098	324.5098	9.0000e-004	0.0445	337.7815
Worker	1.8807	1.2119	12.5052	0.0306	829.1202	0.0192	829.1395	83.3236	0.0177	83.3413		3,096.5589	3,096.5589	0.1163	0.1097	3,132.1648
Total	**1.9002**	**1.6610**	**12.6380**	**0.0337**	**948.4182**	**0.0245**	**948.4427**	**95.2426**	**0.0227**	**95.2653**		**3,421.0687**	**3,421.0687**	**0.1172**	**0.1542**	**3,469.9463**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.9498	30.0468	36.2147	0.0564		1.4917	1.4917		1.3755	1.3755	0.0000	5,412.1870	5,412.1870	1.7201		5,455.1901
Total	**2.9498**	**30.0468**	**36.2147**	**0.0564**		**1.4917**	**1.4917**		**1.3755**	**1.3755**	**0.0000**	**5,412.1870**	**5,412.1870**	**1.7201**		**5,455.1901**

Vega SES 4 Solar Energy Storage Project - Imperial County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Building Construction - 2023

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	0.0000
Vendor	0.0195	0.4491	0.1329	3.0900e-003	11.0155	5.2600e-003	11.0208	1.1123	5.0300e-003	1.1173		324.5098	324.5098	9.0000e-004	0.0445	337.7815
Worker	1.8807	1.2119	12.5052	0.0306	79.3306	0.0192	79.3498	8.4939	0.0177	8.5116		3,096.5589	3,096.5589	0.1163	0.1097	3,132.1648
Total	**1.9002**	**1.6610**	**12.6380**	**0.0337**	**90.3461**	**0.0245**	**90.3706**	**9.6062**	**0.0227**	**9.6289**		**3,421.0687**	**3,421.0687**	**0.1172**	**0.1542**	**3,469.9463**

3.4 Building Construction - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.8438	28.6031	36.2160	0.0564		1.3862	1.3862		1.2785	1.2785		5,412.5100	5,412.5100	1.7202		5,455.5157
Total	**2.8438**	**28.6031**	**36.2160**	**0.0564**		**1.3862**	**1.3862**		**1.2785**	**1.2785**		**5,412.5100**	**5,412.5100**	**1.7202**		**5,455.5157**

Vega SES 4 Solar Energy Storage Project - Imperial County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Building Construction - 2024

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	0.0000
Vendor	0.0185	0.4471	0.1245	3.0400e-003	119.2980	5.2400e-003	119.3032	11.9190	5.0200e-003	11.9240		320.1130	320.1130	8.5000e-004	0.0436	333.1296
Worker	1.7515	1.0739	11.5538	0.0297	829.1202	0.0182	829.1384	83.3236	0.0168	83.3404		3,004.5087	3,004.5087	0.1053	0.1013	3,037.3390
Total	**1.7700**	**1.5211**	**11.6783**	**0.0328**	**948.4182**	**0.0235**	**948.4417**	**95.2426**	**0.0218**	**95.2644**		**3,324.6217**	**3,324.6217**	**0.1062**	**0.1449**	**3,370.4686**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.8438	28.6031	36.2160	0.0564		1.3862	1.3862		1.2785	1.2785	0.0000	5,412.5100	5,412.5100	1.7202		5,455.5157
Total	**2.8438**	**28.6031**	**36.2160**	**0.0564**		**1.3862**	**1.3862**		**1.2785**	**1.2785**	**0.0000**	**5,412.5100**	**5,412.5100**	**1.7202**		**5,455.5157**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Building Construction - 2024

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	0.0000
Vendor	0.0185	0.4471	0.1245	3.0400e-003	11.0155	5.2400e-003	11.0208	1.1123	5.0200e-003	1.1173		320.1130	320.1130	8.5000e-004	0.0436	333.1296
Worker	1.7515	1.0739	11.5538	0.0297	79.3306	0.0182	79.3488	8.4939	0.0168	8.5107		3,004.5087	3,004.5087	0.1053	0.1013	3,037.3390
Total	**1.7700**	**1.5211**	**11.6783**	**0.0328**	**90.3461**	**0.0235**	**90.3696**	**9.6062**	**0.0218**	**9.6280**		**3,324.6217**	**3,324.6217**	**0.1062**	**0.1449**	**3,370.4686**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Vega SES 4 Solar Energy Storage Project - Imperial County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	CO	SO2	Fugitive 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	0.0206	0.0393	0.2405	5.6000e-004	4.8460	4.4000e-004	4.8464	0.4922	4.1000e-004	0.4927		57.0593	57.0593	2.6600e-003	2.8300e-003	57.9690
Unmitigated	0.0206	0.0393	0.2405	5.6000e-004	4.8460	4.4000e-004	4.8464	0.4922	4.1000e-004	0.4927		57.0593	57.0593	2.6600e-003	2.8300e-003	57.9690

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Refrigerated Warehouse-No Rail	2.96	0.00	0.00	10,455	10,455
Refrigerated Warehouse-No Rail	2.96	0.00	0.00	10,455	10,455
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Total	5.92	0.00	0.00	20,910	20,910

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
Refrigerated Warehouse-No	16.40	9.50	11.90	59.00	0.00	41.00	92	5	3
Refrigerated Warehouse-No	16.40	9.50	11.90	59.00	0.00	41.00	92	5	3
Other Non-Asphalt Surfaces	16.40	9.50	11.90	0.00	0.00	0.00	0	0	0
Other Non-Asphalt Surfaces	16.40	9.50	11.90	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Refrigerated Warehouse-No Rail	0.521846	0.059402	0.180067	0.151114	0.027614	0.006908	0.008276	0.016396	0.000918	0.000121	0.022925	0.000779	0.003633
Other Non-Asphalt Surfaces	0.521846	0.059402	0.180067	0.151114	0.027614	0.006908	0.008276	0.016396	0.000918	0.000121	0.022925	0.000779	0.003633

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Percent of Electricity Use Generated with Renewable Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.2663	2.4210	2.0337	0.0145		0.1840	0.1840		0.1840	0.1840		2,905.2168	2,905.2168	0.0557	0.0533	2,922.4811
NaturalGas Unmitigated	0.2663	2.4210	2.0337	0.0145		0.1840	0.1840		0.1840	0.1840		2,905.2168	2,905.2168	0.0557	0.0533	2,922.4811

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Refrigerated Warehouse-No Rail	12347.2	0.2663	2.4210	2.0337	0.0145		0.1840	0.1840		0.1840	0.1840		2,905.2168	2,905.2168	0.0557	0.0533	2,922.4811
Total		**0.2663**	**2.4210**	**2.0337**	**0.0145**		**0.1840**	**0.1840**		**0.1840**	**0.1840**		**2,905.2168**	**2,905.2168**	**0.0557**	**0.0533**	**2,922.4811**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Refrigerated Warehouse-No Rail	12.3472	0.2663	2.4210	2.0337	0.0145		0.1840	0.1840		0.1840	0.1840		2,905.2168	2,905.2168	0.0557	0.0533	2,922.4811
Total		**0.2663**	**2.4210**	**2.0337**	**0.0145**		**0.1840**	**0.1840**		**0.1840**	**0.1840**		**2,905.2168**	**2,905.2168**	**0.0557**	**0.0533**	**2,922.4811**

6.0 Area Detail

Vega SES 4 Solar Energy Storage Project - Imperial County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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	13.5919	5.8000e-004	0.0638	0.0000		2.3000e-004	2.3000e-004		2.3000e-004	2.3000e-004		0.1367	0.1367	3.6000e-004		0.1457
Unmitigated	13.5919	5.8000e-004	0.0638	0.0000		2.3000e-004	2.3000e-004		2.3000e-004	2.3000e-004		0.1367	0.1367	3.6000e-004		0.1457

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	2.9065					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	10.6795					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	5.9100e-003	5.8000e-004	0.0638	0.0000		2.3000e-004	2.3000e-004		2.3000e-004	2.3000e-004		0.1367	0.1367	3.6000e-004		0.1457
Total	**13.5919**	**5.8000e-004**	**0.0638**	**0.0000**		**2.3000e-004**	**2.3000e-004**		**2.3000e-004**	**2.3000e-004**		**0.1367**	**0.1367**	**3.6000e-004**		**0.1457**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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	2.9065					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	10.6795					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	5.9100e-003	5.8000e-004	0.0638	0.0000		2.3000e-004	2.3000e-004		2.3000e-004	2.3000e-004		0.1367	0.1367	3.6000e-004		0.1457
Total	**13.5919**	**5.8000e-004**	**0.0638**	**0.0000**		**2.3000e-004**	**2.3000e-004**		**2.3000e-004**	**2.3000e-004**		**0.1367**	**0.1367**	**3.6000e-004**		**0.1457**

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
Other Construction Equipment	3	8.00	8	172	0.42	Diesel
Off-Highway Trucks	1	2.00	8	402	0.38	Diesel

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

UnMitigated/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
Equipment Type	lb/day										lb/day					
Off-Highway Trucks	0.1266	0.8964	0.8262	3.3200e-003		0.0324	0.0324		0.0298	0.0298	0.0000	321.5720	321.5720	0.1040		324.1721
Other Construction Equipment	1.0338	10.2004	11.8763	0.0183		0.5310	0.5310		0.4885	0.4885	0.0000	1,775.1278	1,775.1278	0.5741		1,789.4806
Total	**1.1604**	**11.0968**	**12.7025**	**0.0217**		**0.5634**	**0.5634**		**0.5184**	**0.5184**	**0.0000**	**2,096.6998**	**2,096.6998**	**0.6781**		**2,113.6527**

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

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

Boilers

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

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

ATTACHMENT B

Renewable Energy Emissions Displacement

CRITERIA AIR POLLUTANT DISPLACEMENT

Table A-1. Renewable Energy Generator Specifications

Megawatt Project	**100**
Operational Time[1]	**25**
Annual Hours of Generation[1]	**2,190**
Annual Kilowatt Hours	**219,000,000**
Heat Rate[2]	**9,313**
Btu Displaced[3]	**2,039,547,000,000**

Notes:

[1] The Project is assumed to generate electricity 25 percent of the time available (2,190 hours annually).

[2] Heat Rate indicate the enery generator efficiency of existing fossil-fuel based energy generators. The heat rate of a power plant measures the amount of fuel used to generate one unit of electricity. Power plants with lower heat rates are more efficient than plants with highter heat rates. The CEC's "Updated Thermal Power Plant Efficiency Measures and Operational Characteristics for Production Cost Modeling" (2019) estimates heat rates and operating ranges for thermal power plants supplying energy to California. the average heat rate of power plant types are as follows:

Table A-2. Heat Rates

Steam Boiler Fueled by Coal:	10,800
Steam Boiler Fueled by Natural Gas:	10,200
Gas Turbine:	10,100
Combined Natural Gas Boiler & Turbine:	7,640

Omitting steam boilers fueled by cola since so little of California's energy is derived from coal, the average heat rate = 9313

[3] The annual kilowatt hours multipled by the average heat rate of existing fossil fuel based energy generators equals the amount of Btu displaced from fossil fuel production, as shown in Table A-3.

Table A-3. Btu Displacement

Annual Kilowatt Hours	219,000,000
Average Heat Rate	9,313
Btu Displaced from Fossil Fuel Based Energy Production	2,039,547,000,000

Energy consumption in California is predominately derived from natural gas, followed by renewables, nuclear, unspecified nonrenewable sources, and coal, as shown in Table A-4.

Table A-4. California Energy Mix (percentages)

Natural Gas	37.06
Coal	2.74
Renewables (not including hydroelctric generators)	33.09
Nuclear	9.33
Unspecified nonrenewable sources	5.36

Source: California Energy Commission. 2021. "2020 Total System Electric Generation." https://www.energy.ca.gov/data-reports/energy-almanac/california-electricity-data/2020-total-system-electric-generation

For the purposes of this anlaysis, the percentage of California energy derived from natural gas is added to unspecificed nonrewable sources. Table A-5 identifies the displaced Btu attributable to displaced natural gas and displaced coal.

Table A-5. Btu Displacement by Fossil Fuel Type - Annually

Natural Gas & Unspecified Nonrewable Sources	865,175,837,400
Coal	55,883,587,800

The heat content of coal is assumed at 24 million Btu per ton of coal burned. Table A-6 shows the tons of displaced burned coal based on this heat content.

Table A-6. Tons of Displaced Burned Coal - Annually

Displaced Coal Burn	2,328

Table A-7. Emissions Displacement - Tons per Year[4]

Natural Gas	
Nitrogen Oxide	2.14
Carbon Monoxide	0.65
Coarse Particulate Matter	2.03
Fine Particulate Matter	0.82
Sulfur Dioxide	1.47

Coal	
Nitrogen Oxide	13.97
Carbon Monoxide	0.58
Coarse Particulate Matter	0.10
Fine Particulate Matter	0.07
Sulfur Dioxide	0.66

Table A-8. Total Combined Emissions Displacement - Tons per Year

Natural Gas & Coal	
Nitrogen Oxide	16.11
Carbon Monoxide	1.23
Coarse Particulate Matter	2.13
Fine Particulate Matter	0.89
Sulfur Dioxide	2.13

Table A-9. Total Combined Emissions Displacement over the Life of the Project (30 years) - Tons per Year

Natural Gas & Coal	
Nitrogen Oxide	**483.37**
Carbon Monoxide	**36.93**
Coarse Particulate Matter	**63.93**
Fine Particulate Matter	**26.75**
Sulfur Dioxide	**64.03**

[4]Source: Displaced emissions calculated by ECORP Consulting using U.S. EPA's AP-42 Fifth Edition Compilation of Air Emissions Factors 1995; 2015.

GREENHOUSE GAS EMISSIONS DISPLACEMENT

Table B-1. Renewable Energy Generator Specifications

Megawatt Project	**100**
Operational Time[1]	**25**
Annual Hours of Generation[1]	**2,190**
Annual Kilowatt Hours	**219,000,000**
Heat Rate[2]	**9,313**
Btu Displaced[3]	**2,039,547,000,000**

Notes:

[1] The Project is assumed to generate electricity 25 percent of the time available (2,190 hours annually).

[2] Heat Rate indicate the enery generator efficiency of existing fossil-fuel based energy generators. The heat rate of a power plant measures the amount of fuel used to generate one unit of electricity. Power plants with lower heat rates are more efficient than plants with highter heat rates. The CEC's "Updated Thermal Power Plant Efficiency Measures and Operational Characteristics for Production Cost Modeling" (2019) estimates heat rates and operating ranges for thermal power plants supplying energy to California. the average heat rate of power plant types are as follows:

Table B-2. Heat Rates

Steam Boiler Fueled by Coal:	10,800
Steam Boiler Fueled by Natural Gas:	10,200
Gas Turbine:	10,100
Combined Natural Gas Boiler & Turbine:	7,640

Omitting steam boilers fueled by cola since so little of California's energy is derived from coal, the average heat rate = 9313

[3] The annual kilowatt hours multipled by the average heat rate of existing fossil fuel based energy generators equals the amount of Btu displaced from fossil fuel production, as shown in Table A-3.

Table B-3. Btu Displacement

Annual Kilowatt Hours	219,000,000
Average Heat Rate	9,313
Btu Displaced from Fossil Fuel Based Energy Production	2,039,547,000,000

Energy consumption in California is predominately derived from natural gas, followed by renewables, nuclear, unspecified nonrenewable sources, and coal, as shown in Table A-4.

Table B-4. California Energy Mix (percentages)

Natural Gas	37.06
Coal	2.74
Renewables (not including hydroelctric generators)	33.09
Nuclear	9.33
Unspecified nonrenewable sources	5.36

Source: California Energy Commission. 2021. "2020 Total System Electric Generation." https://www.energy.ca.gov/data-reports/energy-almanac/california-electricity-data/2020-total-system-electric-generation

For the purposes of this anlaysis, the percentage of California energy derived from natural gas is added to unspecificed nonrewable sources. Table A-5 identifies the displaced Btu attributable to displaced natural gas and displaced coal.

Table B-5. Btu Displacement by Fossil Fuel Type - Annually

Natural Gas & Unspecified Nonrewable Sources	865,175,837,400
Coal	55,883,587,800

The heat content of coal is assumed at 24 million Btu per ton of coal burned. Table A-6 shows the tons of displaced burned coal based on this heat content.

Table B-6. Tons of Displaced Burned Coal - Annually

Displaced Coal Burn	2,328

Table B-7. Emissions Displacement - Metric Tons per Year[4]

Natural Gas	
Carbon Dioxide	47,585
Methane	0.000
Nitrous Oxide	0.000
Carbon Dioxide Equivalents	47,585

Coal	
Carbon Dioxide	5626
Methane	0.037
Nitrous Oxide	0.028
Carbon Dioxide Equivalents	5635

Table B-8. Total Combined Emissions Displacement - Metric Tons per Year

Natural Gas & Coal	
Carbon Dioxide	53,210
Methane	0.037
Nitrous Oxide	0.028
Carbon Dioxide Equivalents	53,220

Table B-9. Total Combined Emissions Displacement over the Life of the Project (30 years) - Metric Tons per Year

Natural Gas & Coal	
Carbon Dioxide	1,596,309
Methane	1.118
Nitrous Oxide	0.838
Carbon Dioxide Equivalents	**1,596,596**

[4]Source: Displaced emissions calculated by ECORP Consulting using U.S. EPA's AP-42 Fifth Edition Compilation of Air Emissions Factors 1995; 2015.

ATTACHMENT C

Attachment C – CalEEMod Output Files Greenhouse Gas Emissions

Vega SES 4 Solar Energy Storage Project - Imperial County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Vega SES 4 Solar Energy Storage Project

Imperial County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Non-Asphalt Surfaces	447.00	Acre	447.00	19,471,320.00	0
Refrigerated Warehouse-No Rail	87.12	1000sqft	2.00	87,120.00	0
Refrigerated Warehouse-No Rail	87.12	1000sqft	2.00	87,120.00	0
Other Non-Asphalt Surfaces	3.50	Acre	3.50	152,460.00	0

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	3.4	**Precipitation Freq (Days)**	12
Climate Zone	15			**Operational Year**	2023
Utility Company	Imperial Irrigation District				
CO2 Intensity (lb/MWhr)	189.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Land Uses account for 447 acres of solar field, 2 acres of BESS, 2 acres of Substation, and 3.5 acres of Staging/Parking Area

Construction Phase - Construction timing per Project Applicant

Off-road Equipment - Construction equipment per Project applicant. Plate compactor = pile driver.

Off-road Equipment - Ibid

Off-road Equipment - Construction equipment per Project applicant.

Trips and VMT - Maximun 500 worker commute trips per Traffic Study. 20.25 miles added to vendor route for extended access along border.

On-road Fugitive Dust - 89% paved roads for worker commutes [1.15 m dirt roads / 10.2 m trip length default = 89% paved roads]. Traffic Study identifies worker commute routes north of Staging/Parking Area as 100% paved. 37% paved for vendor/equipment hauling trips. Trips require additional 20.25 miles of distance on dirt roadway.

Vega SES 4 Solar Energy Storage Project - Imperial County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Grading -

Vehicle Trips - Maximum daily trips = 6 per Traffic Study

Road Dust - 92% paved roads for operational worker commutes [1.15 m dirt roads / 14.55 m trip length default weighted average = 92% paved roads].

Energy Use - Solar facility- no operational energy use.

Water And Wastewater - Water use being kept for light industrial land use as the solar panels may need to be cleaned.

Solid Waste - No solid waste- solar facility.

Construction Off-road Equipment Mitigation - Mitigation measure AQ-1 accounted. PM Reduction value for applying soil stabilizers to unpaved roadways per communication with ICAPCD (Monica Soucier via email correspondence).

Mobile Land Use Mitigation -

Energy Mitigation -

Operational Off-Road Equipment - Onsite maintenance expected 4 times annually.

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	40	15
tblConstructionPhase	NumDays	7,750.00	286.00
tblConstructionPhase	NumDays	775.00	66.00
tblConstructionPhase	NumDays	300.00	33.00
tblConstructionPhase	PhaseEndDate	9/30/2055	7/25/2024
tblConstructionPhase	PhaseEndDate	1/15/2026	6/21/2023
tblConstructionPhase	PhaseEndDate	1/26/2023	3/21/2023
tblConstructionPhase	PhaseStartDate	1/16/2026	6/22/2023
tblConstructionPhase	PhaseStartDate	1/27/2023	3/22/2023
tblConstructionPhase	PhaseStartDate	12/3/2021	2/3/2023
tblOffRoadEquipment	LoadFactor	0.36	0.36
tblOffRoadEquipment	LoadFactor	0.40	0.40
tblOffRoadEquipment	LoadFactor	0.42	0.42
tblOffRoadEquipment	LoadFactor	0.36	0.36
tblOffRoadEquipment	LoadFactor	0.50	0.50
tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	OffRoadEquipmentType		Rubber Tired Loaders

Vega SES 4 Solar Energy Storage Project - Imperial County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblOffRoadEquipment	OffRoadEquipmentType		Rough Terrain Forklifts
tblOffRoadEquipment	OffRoadEquipmentType		Pavers
tblOffRoadEquipment	OffRoadEquipmentType		Paving Equipment
tblOffRoadEquipment	OffRoadEquipmentType		Plate Compactors
tblOffRoadEquipment	OffRoadEquipmentType		Trenchers
tblOffRoadEquipment	OffRoadEquipmentType		Rollers
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	3.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOnRoadDust	VendorPercentPave	50.00	37.00
tblOnRoadDust	VendorPercentPave	50.00	37.00
tblOnRoadDust	VendorPercentPave	50.00	37.00
tblOnRoadDust	WorkerPercentPave	50.00	89.00
tblOnRoadDust	WorkerPercentPave	50.00	89.00
tblOnRoadDust	WorkerPercentPave	50.00	89.00
tblOperationalOffRoadEquipment	OperDaysPerYear	260.00	8.00
tblOperationalOffRoadEquipment	OperDaysPerYear	260.00	8.00
tblOperationalOffRoadEquipment	OperHoursPerDay	8.00	2.00
tblOperationalOffRoadEquipment	OperLoadFactor	0.42	0.42
tblOperationalOffRoadEquipment	OperLoadFactor	0.38	0.38
tblOperationalOffRoadEquipment	OperOffRoadEquipmentNumber	0.00	3.00
tblOperationalOffRoadEquipment	OperOffRoadEquipmentNumber	0.00	1.00

Vega SES 4 Solar Energy Storage Project - Imperial County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblProjectCharacteristics	UrbanizationLevel	Urban	Rural
tblRoadDust	RoadPercentPave	50	92
tblTripsAndVMT	VendorTripLength	11.90	32.15
tblTripsAndVMT	VendorTripLength	11.90	32.15
tblTripsAndVMT	VendorTripLength	11.90	32.15
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	3,245.00	4.00
tblTripsAndVMT	WorkerTripNumber	8,315.00	500.00
tblVehicleTrips	ST_TR	2.12	0.00
tblVehicleTrips	SU_TR	2.12	0.00
tblVehicleTrips	WD_TR	2.12	0.03
tblWater	IndoorWaterUseRate	40,293,000.00	3,259,000.00

2.0 Emissions Summary

Vega SES 4 Solar Energy Storage Project - Imperial County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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					
2023	0.5427	4.2187	5.1222	0.0102	71.3792	0.1872	71.5664	7.3462	0.1724	7.5187	0.0000	904.2814	904.2814	0.2172	0.0118	913.2157
2024	0.3534	2.2421	3.6710	6.8000e-003	68.3411	0.1050	68.4461	6.8642	0.0969	6.9611	0.0000	605.1367	605.1367	0.1231	9.7000e-003	611.1068
Maximum	**0.5427**	**4.2187**	**5.1222**	**0.0102**	**71.3792**	**0.1872**	**71.5664**	**7.3462**	**0.1724**	**7.5187**	**0.0000**	**904.2814**	**904.2814**	**0.2172**	**0.0118**	**913.2157**

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					
2023	0.5427	4.2187	5.1222	0.0102	6.9534	0.1872	7.1406	0.8066	0.1724	0.9791	0.0000	904.2807	904.2807	0.2172	0.0118	913.2149
2024	0.3534	2.2421	3.6710	6.8000e-003	6.5164	0.1050	6.6214	0.6940	0.0969	0.7909	0.0000	605.1363	605.1363	0.1231	9.7000e-003	611.1063
Maximum	**0.5427**	**4.2187**	**5.1222**	**0.0102**	**6.9534**	**0.1872**	**7.1406**	**0.8066**	**0.1724**	**0.9791**	**0.0000**	**904.2807**	**904.2807**	**0.2172**	**0.0118**	**913.2149**

Vega SES 4 Solar Energy Storage Project - Imperial County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	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**	**90.36**	**0.00**	**90.17**	**89.44**	**0.00**	**87.78**	**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)
5	**12-3-2022**	**3-2-2023**	0.0978	0.0978
6	**3-3-2023**	**6-2-2023**	1.7160	1.7160
7	**6-3-2023**	**9-2-2023**	1.3962	1.3962
8	**9-3-2023**	**12-2-2023**	1.1934	1.1934
9	**12-3-2023**	**3-2-2024**	1.1478	1.1478
10	**3-3-2024**	**6-2-2024**	1.1522	1.1522
11	**6-3-2024**	**9-2-2024**	0.6666	0.6666
		Highest	1.7160	1.7160

Vega SES 4 Solar Energy Storage Project - Imperial County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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	2.4800	5.0000e-005	5.7400e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.0112	0.0112	3.0000e-005	0.0000	0.0119
Energy	0.0486	0.4418	0.3711	2.6500e-003		0.0336	0.0336		0.0336	0.0336	0.0000	1,079.1835	1,079.1835	0.1131	0.0214	1,088.3928
Mobile	3.0600e-003	4.9800e-003	0.0337	8.0000e-005	0.6299	6.0000e-005	0.6300	0.0640	5.0000e-005	0.0640	0.0000	7.0965	7.0965	3.0000e-004	3.3000e-004	7.2024
Offroad	4.6400e-003	0.0444	0.0508	9.0000e-005		2.2500e-003	2.2500e-003		2.0700e-003	2.0700e-003	0.0000	7.6084	7.6084	2.4600e-003	0.0000	7.6699
Waste						0.0000	0.0000		0.0000	0.0000	33.2479	0.0000	33.2479	1.9649	0.0000	82.3702
Water						0.0000	0.0000		0.0000	0.0000	1.0339	3.6568	4.6907	0.1068	2.5800e-003	8.1317
Total	**2.5363**	**0.4913**	**0.4614**	**2.8200e-003**	**0.6299**	**0.0359**	**0.6658**	**0.0640**	**0.0357**	**0.0997**	**34.2818**	**1,097.5564**	**1,131.8382**	**2.1876**	**0.0243**	**1,193.7789**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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	2.4800	5.0000e-005	5.7400e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.0112	0.0112	3.0000e-005	0.0000	0.0119
Energy	0.0486	0.4418	0.3711	2.6500e-003		0.0336	0.0336		0.0336	0.0336	0.0000	480.9912	480.9912	9.2200e-003	8.8200e-003	483.8495
Mobile	3.0600e-003	4.9800e-003	0.0337	8.0000e-005	0.6299	6.0000e-005	0.6300	0.0640	5.0000e-005	0.0640	0.0000	7.0965	7.0965	3.0000e-004	3.3000e-004	7.2024
Offroad	4.6400e-003	0.0444	0.0508	9.0000e-005		2.2500e-003	2.2500e-003		2.0700e-003	2.0700e-003	0.0000	7.6084	7.6084	2.4600e-003	0.0000	7.6699
Waste						0.0000	0.0000		0.0000	0.0000	33.2479	0.0000	33.2479	1.9649	0.0000	82.3702
Water						0.0000	0.0000		0.0000	0.0000	1.0339	3.6568	4.6907	0.1068	2.5800e-003	8.1317
Total	**2.5363**	**0.4913**	**0.4614**	**2.8200e-003**	**0.6299**	**0.0359**	**0.6658**	**0.0640**	**0.0357**	**0.0997**	**34.2818**	**499.3641**	**533.6459**	**2.0837**	**0.0117**	**589.2356**

	ROG	NOx	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**	**54.50**	**52.85**	**4.75**	**51.77**	**50.64**

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	2/3/2023	3/21/2023	5	33	
2	Grading	Grading	3/22/2023	6/21/2023	5	66	

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3	Building Construction	Building Construction	6/22/2023	7/25/2024	5	286	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 297

Acres of Paving: 450.5

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	Rubber Tired Dozers	0	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Grading	Excavators	4	8.00	158	0.38
Grading	Graders	3	8.00	187	0.41
Grading	Rubber Tired Dozers	2	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	0	8.00	89	0.20
Building Construction	Generator Sets	0	8.00	84	0.74
Site Preparation	Rubber Tired Loaders	2	8.00	203	0.36
Building Construction	Rough Terrain Forklifts	4	8.00	100	0.40
Building Construction	Pavers	1	8.00	130	0.42
Building Construction	Tractors/Loaders/Backhoes	4	7.00	97	0.37
Building Construction	Paving Equipment	2	8.00	132	0.36
Building Construction	Welders	0	8.00	46	0.45
Building Construction	Plate Compactors	4	8.00	8	0.43
Building Construction	Trenchers	2	8.00	78	0.50
Building Construction	Rollers	2	8.00	80	0.38

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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	4	10.00	4.00	0.00	10.20	32.15	20.00	LD_Mix	HDT_Mix	HHDT
Grading	15	38.00	4.00	0.00	10.20	32.15	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	20	500.00	4.00	0.00	10.20	32.15	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Soil Stabilizer

Water Exposed Area

Water Unpaved Roads

Reduce Vehicle Speed on Unpaved Roads

3.2 Site Preparation - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0140	0.1387	0.1237	3.1000e-004		5.4500e-003	5.4500e-003		5.0100e-003	5.0100e-003	0.0000	27.2477	27.2477	8.8100e-003	0.0000	27.4680
Total	**0.0140**	**0.1387**	**0.1237**	**3.1000e-004**	**0.0000**	**5.4500e-003**	**5.4500e-003**	**0.0000**	**5.0100e-003**	**5.0100e-003**	**0.0000**	**27.2477**	**27.2477**	**8.8100e-003**	**0.0000**	**27.4680**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.2 Site Preparation - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	3.2000e-004	7.2900e-003	2.1800e-003	5.0000e-005	1.9037	9.0000e-005	1.9038	0.1902	8.0000e-005	0.1903	0.0000	4.8556	4.8556	1.0000e-005	6.6000e-004	5.0540
Worker	6.7000e-004	3.9000e-004	4.6300e-003	1.0000e-005	0.2646	1.0000e-005	0.2647	0.0266	1.0000e-005	0.0266	0.0000	0.9941	0.9941	3.0000e-005	3.0000e-005	1.0045
Total	**9.9000e-004**	**7.6800e-003**	**6.8100e-003**	**6.0000e-005**	**2.1684**	**1.0000e-004**	**2.1685**	**0.2168**	**9.0000e-005**	**0.2169**	**0.0000**	**5.8496**	**5.8496**	**4.0000e-005**	**6.9000e-004**	**6.0586**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0140	0.1387	0.1237	3.1000e-004		5.4500e-003	5.4500e-003		5.0100e-003	5.0100e-003	0.0000	27.2477	27.2477	8.8100e-003	0.0000	27.4680
Total	**0.0140**	**0.1387**	**0.1237**	**3.1000e-004**	**0.0000**	**5.4500e-003**	**5.4500e-003**	**0.0000**	**5.0100e-003**	**5.0100e-003**	**0.0000**	**27.2477**	**27.2477**	**8.8100e-003**	**0.0000**	**27.4680**

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3.2 Site Preparation - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	3.2000e-004	7.2900e-003	2.1800e-003	5.0000e-005	0.1758	9.0000e-005	0.1759	0.0178	8.0000e-005	0.0178	0.0000	4.8556	4.8556	1.0000e-005	6.6000e-004	5.0540
Worker	6.7000e-004	3.9000e-004	4.6300e-003	1.0000e-005	0.0254	1.0000e-005	0.0254	2.7200e-003	1.0000e-005	2.7200e-003	0.0000	0.9941	0.9941	3.0000e-005	3.0000e-005	1.0045
Total	**9.9000e-004**	**7.6800e-003**	**6.8100e-003**	**6.0000e-005**	**0.2012**	**1.0000e-004**	**0.2013**	**0.0205**	**9.0000e-005**	**0.0206**	**0.0000**	**5.8496**	**5.8496**	**4.0000e-005**	**6.9000e-004**	**6.0586**

3.3 Grading - 2023

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					0.5549	0.0000	0.5549	0.2355	0.0000	0.2355	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1800	1.8849	1.5022	3.3100e-003		0.0776	0.0776		0.0714	0.0714	0.0000	291.0949	291.0949	0.0942	0.0000	293.4486
Total	**0.1800**	**1.8849**	**1.5022**	**3.3100e-003**	**0.5549**	**0.0776**	**0.6325**	**0.2355**	**0.0714**	**0.3068**	**0.0000**	**291.0949**	**291.0949**	**0.0942**	**0.0000**	**293.4486**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.3 Grading - 2023

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	6.3000e-004	0.0146	4.3700e-003	1.0000e-004	3.8075	1.7000e-004	3.8076	0.3804	1.7000e-004	0.3806	0.0000	9.7112	9.7112	3.0000e-005	1.3300e-003	10.1080
Worker	5.0800e-003	2.9800e-003	0.0352	8.0000e-005	2.0113	5.0000e-005	2.0113	0.2022	4.0000e-005	0.2022	0.0000	7.5548	7.5548	2.5000e-004	2.5000e-004	7.6345
Total	**5.7100e-003**	**0.0176**	**0.0395**	**1.8000e-004**	**5.8188**	**2.2000e-004**	**5.8190**	**0.5826**	**2.1000e-004**	**0.5828**	**0.0000**	**17.2659**	**17.2659**	**2.8000e-004**	**1.5800e-003**	**17.7426**

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					0.2164	0.0000	0.2164	0.0918	0.0000	0.0918	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1800	1.8849	1.5022	3.3100e-003		0.0776	0.0776		0.0714	0.0714	0.0000	291.0946	291.0946	0.0942	0.0000	293.4483
Total	**0.1800**	**1.8849**	**1.5022**	**3.3100e-003**	**0.2164**	**0.0776**	**0.2940**	**0.0918**	**0.0714**	**0.1632**	**0.0000**	**291.0946**	**291.0946**	**0.0942**	**0.0000**	**293.4483**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.3 Grading - 2023

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	6.3000e-004	0.0146	4.3700e-003	1.0000e-004	0.3516	1.7000e-004	0.3518	0.0355	1.7000e-004	0.0357	0.0000	9.7112	9.7112	3.0000e-005	1.3300e-003	10.1080
Worker	5.0800e-003	2.9800e-003	0.0352	8.0000e-005	0.1927	5.0000e-005	0.1927	0.0207	4.0000e-005	0.0207	0.0000	7.5548	7.5548	2.5000e-004	2.5000e-004	7.6345
Total	**5.7100e-003**	**0.0176**	**0.0395**	**1.8000e-004**	**0.5443**	**2.2000e-004**	**0.5445**	**0.0562**	**2.1000e-004**	**0.0564**	**0.0000**	**17.2659**	**17.2659**	**2.8000e-004**	**1.5800e-003**	**17.7426**

3.4 Building Construction - 2023

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	0.2021	2.0582	2.4807	3.8600e-003		0.1022	0.1022		0.0942	0.0942	0.0000	336.3250	336.3250	0.1069	0.0000	338.9973
Total	**0.2021**	**2.0582**	**2.4807**	**3.8600e-003**		**0.1022**	**0.1022**		**0.0942**	**0.0942**	**0.0000**	**336.3250**	**336.3250**	**0.1069**	**0.0000**	**338.9973**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Building Construction - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.3200e-003	0.0303	9.0700e-003	2.1000e-004	7.9034	3.6000e-004	7.9037	0.7897	3.4000e-004	0.7900	0.0000	20.1580	20.1580	6.0000e-005	2.7600e-003	20.9818
Worker	0.1387	0.0813	0.9602	2.2500e-003	54.9337	1.3200e-003	54.9350	5.5217	1.2100e-003	5.5229	0.0000	206.3403	206.3403	6.9400e-003	6.7300e-003	208.5188
Total	**0.1400**	**0.1116**	**0.9692**	**2.4600e-003**	**62.8371**	**1.6800e-003**	**62.8388**	**6.3114**	**1.5500e-003**	**6.3129**	**0.0000**	**226.4983**	**226.4983**	**7.0000e-003**	**9.4900e-003**	**229.5007**

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	0.2021	2.0582	2.4807	3.8600e-003		0.1022	0.1022		0.0942	0.0942	0.0000	336.3246	336.3246	0.1069	0.0000	338.9969
Total	**0.2021**	**2.0582**	**2.4807**	**3.8600e-003**		**0.1022**	**0.1022**		**0.0942**	**0.0942**	**0.0000**	**336.3246**	**336.3246**	**0.1069**	**0.0000**	**338.9969**

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3.4 Building Construction - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.3200e-003	0.0303	9.0700e-003	2.1000e-004	0.7299	3.6000e-004	0.7303	0.0737	3.4000e-004	0.0741	0.0000	20.1580	20.1580	6.0000e-005	2.7600e-003	20.9818
Worker	0.1387	0.0813	0.9602	2.2500e-003	5.2617	1.3200e-003	5.2630	0.5644	1.2100e-003	0.5656	0.0000	206.3403	206.3403	6.9400e-003	6.7300e-003	208.5188
Total	**0.1400**	**0.1116**	**0.9692**	**2.4600e-003**	**5.9916**	**1.6800e-003**	**5.9933**	**0.6381**	**1.5500e-003**	**0.6397**	**0.0000**	**226.4983**	**226.4983**	**7.0000e-003**	**9.4900e-003**	**229.5007**

3.4 Building Construction - 2024

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	0.2119	2.1309	2.6981	4.2000e-003		0.1033	0.1033		0.0952	0.0952	0.0000	365.8059	365.8059	0.1163	0.0000	368.7125
Total	**0.2119**	**2.1309**	**2.6981**	**4.2000e-003**		**0.1033**	**0.1033**		**0.0952**	**0.0952**	**0.0000**	**365.8059**	**365.8059**	**0.1163**	**0.0000**	**368.7125**

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3.4 Building Construction - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.3600e-003	0.0328	9.2200e-003	2.3000e-004	8.5956	3.9000e-004	8.5960	0.8588	3.7000e-004	0.8592	0.0000	21.6265	21.6265	6.0000e-005	2.9400e-003	22.5053
Worker	0.1402	0.0784	0.9637	2.3700e-003	59.7454	1.3600e-003	59.7468	6.0054	1.2500e-003	6.0066	0.0000	217.7043	217.7043	6.8200e-003	6.7600e-003	219.8890
Total	**0.1415**	**0.1112**	**0.9729**	**2.6000e-003**	**68.3411**	**1.7500e-003**	**68.3428**	**6.8642**	**1.6200e-003**	**6.8658**	**0.0000**	**239.3308**	**239.3308**	**6.8800e-003**	**9.7000e-003**	**242.3943**

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	0.2119	2.1309	2.6981	4.2000e-003		0.1033	0.1033		0.0952	0.0952	0.0000	365.8055	365.8055	0.1163	0.0000	368.7120
Total	**0.2119**	**2.1309**	**2.6981**	**4.2000e-003**		**0.1033**	**0.1033**		**0.0952**	**0.0952**	**0.0000**	**365.8055**	**365.8055**	**0.1163**	**0.0000**	**368.7120**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Building Construction - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.3600e-003	0.0328	9.2200e-003	2.3000e-004	0.7938	3.9000e-004	0.7942	0.0802	3.7000e-004	0.0806	0.0000	21.6265	21.6265	6.0000e-005	2.9400e-003	22.5053
Worker	0.1402	0.0784	0.9637	2.3700e-003	5.7226	1.3600e-003	5.7239	0.6138	1.2500e-003	0.6151	0.0000	217.7043	217.7043	6.8200e-003	6.7600e-003	219.8890
Total	**0.1415**	**0.1112**	**0.9729**	**2.6000e-003**	**6.5164**	**1.7500e-003**	**6.5181**	**0.6940**	**1.6200e-003**	**0.6957**	**0.0000**	**239.3308**	**239.3308**	**6.8800e-003**	**9.7000e-003**	**242.3943**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	CO	SO2	Fugitive 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	3.0600e-003	4.9800e-003	0.0337	8.0000e-005	0.6299	6.0000e-005	0.6300	0.0640	5.0000e-005	0.0640	0.0000	7.0965	7.0965	3.0000e-004	3.3000e-004	7.2024
Unmitigated	3.0600e-003	4.9800e-003	0.0337	8.0000e-005	0.6299	6.0000e-005	0.6300	0.0640	5.0000e-005	0.0640	0.0000	7.0965	7.0965	3.0000e-004	3.3000e-004	7.2024

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Refrigerated Warehouse-No Rail	2.96	0.00	0.00	10,455	10,455
Refrigerated Warehouse-No Rail	2.96	0.00	0.00	10,455	10,455
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Total	5.92	0.00	0.00	20,910	20,910

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
Refrigerated Warehouse-No	16.40	9.50	11.90	59.00	0.00	41.00	92	5	3
Refrigerated Warehouse-No	16.40	9.50	11.90	59.00	0.00	41.00	92	5	3
Other Non-Asphalt Surfaces	16.40	9.50	11.90	0.00	0.00	0.00	0	0	0
Other Non-Asphalt Surfaces	16.40	9.50	11.90	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Refrigerated Warehouse-No Rail	0.521846	0.059402	0.180067	0.151114	0.027614	0.006908	0.008276	0.016396	0.000918	0.000121	0.022925	0.000779	0.003633
Other Non-Asphalt Surfaces	0.521846	0.059402	0.180067	0.151114	0.027614	0.006908	0.008276	0.016396	0.000918	0.000121	0.022925	0.000779	0.003633

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Percent of Electricity Use Generated with Renewable Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	598.1923	598.1923	0.1039	0.0126	604.5433
NaturalGas Mitigated	0.0486	0.4418	0.3711	2.6500e-003		0.0336	0.0336		0.0336	0.0336	0.0000	480.9912	480.9912	9.2200e-003	8.8200e-003	483.8495
NaturalGas Unmitigated	0.0486	0.4418	0.3711	2.6500e-003		0.0336	0.0336		0.0336	0.0336	0.0000	480.9912	480.9912	9.2200e-003	8.8200e-003	483.8495

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Refrigerated Warehouse-No Rail	4.50672e+006	0.0486	0.4418	0.3711	2.6500e-003		0.0336	0.0336		0.0336	0.0336	0.0000	480.9912	480.9912	9.2200e-003	8.8200e-003	483.8495
Total		**0.0486**	**0.4418**	**0.3711**	**2.6500e-003**		**0.0336**	**0.0336**		**0.0336**	**0.0336**	**0.0000**	**480.9912**	**480.9912**	**9.2200e-003**	**8.8200e-003**	**483.8495**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Refrigerated Warehouse-No Rail	4.50672e+006	0.0486	0.4418	0.3711	2.6500e-003		0.0336	0.0336		0.0336	0.0336	0.0000	480.9912	480.9912	9.2200e-003	8.8200e-003	483.8495
Total		**0.0486**	**0.4418**	**0.3711**	**2.6500e-003**		**0.0336**	**0.0336**		**0.0336**	**0.0336**	**0.0000**	**480.9912**	**480.9912**	**9.2200e-003**	**8.8200e-003**	**483.8495**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Refrigerated Warehouse-No Rail	3.47086e+006	598.1923	0.1039	0.0126	604.5433
Total		**598.1923**	**0.1039**	**0.0126**	**604.5433**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Refrigerated Warehouse-No Rail	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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	2.4800	5.0000e-005	5.7400e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.0112	0.0112	3.0000e-005	0.0000	0.0119
Unmitigated	2.4800	5.0000e-005	5.7400e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.0112	0.0112	3.0000e-005	0.0000	0.0119

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.5304					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	1.9490					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	5.3000e-004	5.0000e-005	5.7400e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.0112	0.0112	3.0000e-005	0.0000	0.0119
Total	**2.4800**	**5.0000e-005**	**5.7400e-003**	**0.0000**		**2.0000e-005**	**2.0000e-005**		**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.0112**	**0.0112**	**3.0000e-005**	**0.0000**	**0.0119**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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	0.5304					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	1.9490					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	5.3000e-004	5.0000e-005	5.7400e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.0112	0.0112	3.0000e-005	0.0000	0.0119
Total	**2.4800**	**5.0000e-005**	**5.7400e-003**	**0.0000**		**2.0000e-005**	**2.0000e-005**		**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.0112**	**0.0112**	**3.0000e-005**	**0.0000**	**0.0119**

7.0 Water Detail

7.1 Mitigation Measures Water

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	4.6907	0.1068	2.5800e-003	8.1317
Unmitigated	4.6907	0.1068	2.5800e-003	8.1317

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Other Non-Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Refrigerated Warehouse-No Rail	3.259 / 0	4.6907	0.1068	2.5800e-003	8.1317
Total		**4.6907**	**0.1068**	**2.5800e-003**	**8.1317**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Other Non-Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Refrigerated Warehouse-No Rail	3.259 / 0	4.6907	0.1068	2.5800e-003	8.1317
Total		**4.6907**	**0.1068**	**2.5800e-003**	**8.1317**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	33.2479	1.9649	0.0000	82.3702
Unmitigated	33.2479	1.9649	0.0000	82.3702

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Refrigerated Warehouse-No Rail	163.79	33.2479	1.9649	0.0000	82.3702
Total		**33.2479**	**1.9649**	**0.0000**	**82.3702**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Refrigerated Warehouse-No Rail	163.79	33.2479	1.9649	0.0000	82.3702
Total		**33.2479**	**1.9649**	**0.0000**	**82.3702**

9.0 Operational Offroad

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type
Other Construction Equipment	3	8.00	8	172	0.42	Diesel
Off-Highway Trucks	1	2.00	8	402	0.38	Diesel

UnMitigated/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
Equipment Type	tons/yr										MT/yr					
Off-Highway Trucks	5.1000e-004	3.5900e-003	3.3000e-003	1.0000e-005		1.3000e-004	1.3000e-004		1.2000e-004	1.2000e-004	0.0000	1.1669	1.1669	3.8000e-004	0.0000	1.1763
Other Construction Equipment	4.1400e-003	0.0408	0.0475	7.0000e-005		2.1200e-003	2.1200e-003		1.9500e-003	1.9500e-003	0.0000	6.4415	6.4415	2.0800e-003	0.0000	6.4936
Total	**4.6500e-003**	**0.0444**	**0.0508**	**8.0000e-005**		**2.2500e-003**	**2.2500e-003**		**2.0700e-003**	**2.0700e-003**	**0.0000**	**7.6084**	**7.6084**	**2.4600e-003**	**0.0000**	**7.6699**

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

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied