Appendix C
Air Quality

ESA

Air Quality and
Global Climate Change Technical Report

for the

Palo Verde Mesa Solar Project

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1.0 Introduction

The purpose of this Air Quality Technical Report is to describe the existing regional air quality in the air basin of the Project area; to provide a discussion of applicable federal, state, and local air quality regulations; to assess the potential air quality impacts associated with construction and operation of the Project; and to identify measures that would be required to mitigate air quality impacts or minimize emissions.

The Project's potential for air quality impacts would be mainly associated with construction activities. Construction of the project would result in tailpipe emissions from vehicles and heavy construction equipment, and in emissions of fugitive dust from site construction activities. Operational activities would also result in emissions from vehicles and inspection and maintenance activities.

This report also provides an evaluation of emissions of greenhouse gases (GHGs) from construction and operation activities, and an evaluation of the potential for cumulative impacts associated with GHG emissions.

1.1 Study Personnel

This Air Quality Technical Report was prepared by Valorie L. Thompson, Ph.D., Principal of Scientific Resources Associated. Scientific Resources Associated specializes in Air Quality and Global Climate Change technical studies.

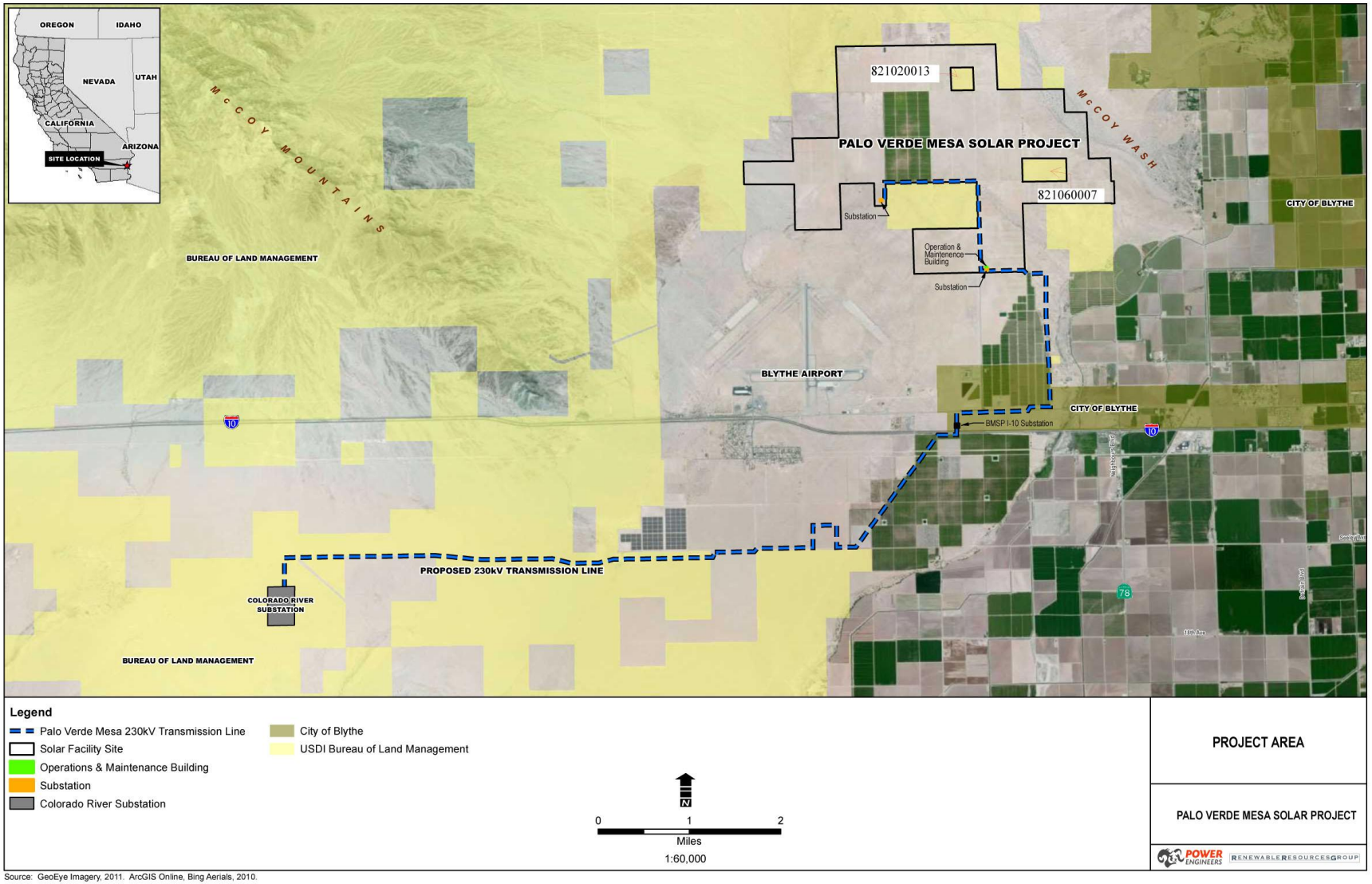
1.2 Project Description

The proposed Palo Verde Mesa Solar Project (Project) is located in the Palo Verde Valley area of eastern Riverside County, approximately five miles northwest of the of Blythe city center (Figure 1) and bounded on the north by McCoy Wash, on the east by agricultural lands, on the west by U.S. Department of the Interior, Bureau of Land Management (BLM)-managed public lands, and on the south by the Blythe Airport and other private lands that include agricultural and utility uses. The site consists primarily of agricultural land, including citrus orchards. Interstate 10 is just south of the Project area.

The proposed 470 megawatt (MW) photovoltaic (PV) solar power plant and an approximately 14.5-mile 230 kilovolt (kV) transmission line (gen-tie line) would occupy 3,400 acres. The power produced by the Project would be conveyed to the local power grid via interconnection to the Southern California Edison Colorado River Substation (CRS), an approved new substation located south of Interstate 10. The Project would consist of the following components:

- Solar array field utilizing single-axis solar PV trackers (3,250 acres total)
    - System of interior collection power lines located between inverters and substations
    - Two on-site substations (each approximately 300 feet long by 300 feet wide)
    - One operation and maintenance (O&M) building (approximately 3,500 square feet)
    - Several interior access roads
- Approximately 14.5 miles of new 230 kV transmission line
    - Approximately 2.7 miles would be located within the solar array field
    - Approximately 11.8 miles would extend outside of the solar array field and would be placed within a 100-foot-wide right-of-way (ROW) and occupy 143.1 acres

Figure 1. Project Area



Source: GeoEye Imagery, 2011. ArcGIS Online, Bing Aerials, 2010.

All of the solar panels, substations, and inverters and the O&M facility would be located on lands in private ownership. The transmission line easement, from the northwestern Project substation to the CRS, would be located on 6.1 miles of County of Riverside jurisdiction 1.7 miles of City of Blythe jurisdiction (21 acres), and 4.0 miles of BLM-managed lands (approximately 48 acres). Over 90% of the private land comprises agricultural land and developed or disturbed land.

The objectives for the Palo Verde Mesa Solar Project are as follows:

- Construct a solar energy facility in order to meet state and federal renewable energy standards and goals.
- Assist with greenhouse gas reduction objectives to the maximum extent possible.
- Locate the Project facilities as near as possible to electrical transmission facilities with anticipated capacity and reserved CASIO interconnection position.
- Site the Project in an area with excellent solar energy resource, in order to maximize productivity from the PV panels.
- To the extent feasible, site the Project on disturbed land and locate the facility on land with compatible topography in a manner that minimizes environmental impacts.
- Use a proven and available solar PV technology.

2.0 Regulatory Framework

Air quality is defined by ambient air concentrations of specific pollutants determined by the United States Environmental Protection Agency (USEPA) to be of concern with respect to the health and welfare of the general public. Seven major pollutants of concern, called "criteria pollutants," are carbon monoxide (CO), sulfur dioxide (SO_2), nitrogen dioxide (NO_2), ozone (O_3), suspended particulate matter less than or equal to 10 microns in diameter (PM_{10}), fine particulate matter less than or equal to 2.5 microns in diameter ($PM_{2.5}$), and lead (Pb). The USEPA has established National Ambient Air Quality Standards (NAAQS) for these pollutants. Areas that violate a federal air quality standard are designated as non-attainment areas.

Ambient air quality refers to the atmospheric concentration of a specific compound (amount of pollutants in a specified volume of air) that occurs at a particular geographic location. The ambient air quality levels measured at a particular location are determined by the interactions of emissions, meteorology, and chemistry. Emission considerations include the types, amounts, and locations of pollutants emitted into the atmosphere. Meteorological considerations include wind and precipitation patterns affecting the distribution, dilution, and removal of pollutant emissions. Chemical reactions can transform pollutant emissions into other chemical substances. Ambient air quality data are generally reported as a mass per unit volume (e.g., micrograms per cubic meter of air) or as a volume fraction (e.g., parts per million [ppm] by volume).

Pollutant emissions typically refer to the amount of pollutants or pollutant precursors introduced into the atmosphere by a source or group of sources. Pollutant emissions contribute to the ambient air concentrations of criteria pollutants, either by directly affecting the pollutant concentrations measured in the ambient air or by interacting in the atmosphere to form criteria pollutants. Primary pollutants, such as CO, SO_2, Pb, and some particulates, are emitted directly into the atmosphere from emission sources.

Secondary pollutants, such as O_3, NO_2, and some particulates, are formed through atmospheric chemical reactions that are influenced by meteorology, ultraviolet light, and other atmospheric processes. PM_{10} and

$PM_{2.5}$ are generated as primary pollutants by various mechanical processes (for example, abrasion, erosion, mixing, or atomization) or combustion processes. However, PM_{10} and $PM_{2.5}$ can also be formed as secondary pollutants through chemical reactions or by gaseous pollutants condensing into fine aerosols. In general, emissions that are considered "precursors" to secondary pollutants in the atmosphere (such as reactive organic gases [ROG] and oxides of nitrogen [NOx], which are considered precursors for O_3), are the pollutants for which emissions are evaluated to control the level of O_3 in the ambient air.

The following specific descriptions of health effects for each of the criteria air pollutants associated with project construction and operations are based on information from the California Air Resources Board (ARB) (ARB 2012).

Ozone. O_3 is considered a photochemical oxidant, which is a chemical that is formed when reactive organic gases (ROG) and oxides of nitrogen (NOx), both by-products of combustion, react in the presence of ultraviolet light. O_3 is considered a respiratory irritant and prolonged exposure can reduce lung function, aggravate asthma and increase susceptibility to respiratory infections. Exposure to levels of ozone above the current ambient air quality standard can lead to human health effects such as lung inflammation and tissue damage and impaired lung functioning. Ozone exposure is also associated with symptoms such as coughing, chest tightness, shortness of breath, and the worsening of asthma symptoms. The greatest risk for harmful health effects belongs to outdoor workers, athletes, children and others who spend greater amounts of time outdoors during smoggy periods. Elevated ozone levels can reduce crop and timber yields, as well as damage native plants. Ozone can also damage materials such as rubber, fabrics and plastics. Children and those with existing respiratory diseases are at greatest risk from exposure to O_3.

Carbon Monoxide. CO is a product of combustion, and the main source of CO in the SDAB is from motor vehicle exhaust. CO is an odorless, colorless gas. Exposure to CO near the levels of the ambient air quality standards can lead to fatigue, headaches, confusion, and dizziness. CO interferes with the blood's ability to carry oxygen. Exposure to CO is especially harmful to those with heart disease, because the heart has to pump harder to get enough oxygen to the body. CO exposure has been associated with aggravation of angina pectoris and other aspects of coronary heart disease, decreased exercise tolerance in people with peripheral vascular disease and lung disease, impairment of central nervous system functions, and possible increased risk to fetuses. At high altitudes (such as in the Lake Tahoe Air Basin), these effects are worsened. CO affects red blood cells in the body by binding to hemoglobin and reducing the amount of oxygen that can be carried to the body's organs and tissues.

Nitrogen Dioxide. NO_2 is also a by-product of fuel combustion, and is formed both directly as a product of combustion and in the atmosphere through the reaction of nitrogen oxide (NO) with oxygen. NO_2 is a respiratory irritant and may affect those with existing respiratory illness, including asthma. Exposure to NO_2 along with other traffic-related pollutants, is associated with respiratory symptoms, episodes of respiratory illness and impaired lung functioning. Studies in animals have reported biochemical, structural, and cellular changes in the lung when exposed to NO_2 above the level of the current state air quality standard. Clinical studies of human subjects suggest that NO_2 exposure to levels near the current standard may worsen the effect of allergens in allergic asthmatics, especially in children.

Respirable Particulate Matter and Fine Particulate Matter. Respirable particulate matter, or PM_{10}, refers to particulate matter with an aerodynamic diameter of 10 microns or less. Fine particulate matter, or $PM_{2.5}$, refers to particulate matter with an aerodynamic diameter of 2.5 microns or less. Particulate matter in this size range has been determined to have the potential to lodge in the lungs and contribute to respiratory problems. PM_{10} and $PM_{2.5}$ arise from a variety of sources, including road dust, diesel exhaust, combustion, tire and brake wear, construction operations and windblown dust. Extensive research indicates that exposure to outdoor PM_{10} and $PM_{2.5}$ levels exceeding current air quality standards is

associated with increased risk of hospitalization for lung and heart-related respiratory illness, including emergency room visits for asthma. PM exposure is also associated with increased risk of premature deaths, especially in the elderly and people with pre-existing cardiopulmonary disease. In children, studies have shown associations between PM exposure and reduced lung function and increased respiratory symptoms and illnesses. Besides reducing visibility, the acidic portion of PM (nitrates, sulfates) can harm crops, forests, aquatic and other ecosystems.

Sulfur dioxide. SO_2 is a colorless, reactive gas that is produced from the burning of sulfur-containing fuels such as coal and oil, and by other industrial processes. Generally, the highest concentrations of SO_2 are found near large industrial sources. Effects from SO_2 exposures at levels near the one-hour standard include bronchoconstriction accompanied by symptoms, which may include wheezing, shortness of breath and chest tightness, especially during exercise or physical activity. Children, the elderly, and people with asthma, cardiovascular disease or chronic lung disease (such as bronchitis or emphysema) are most susceptible to these symptoms. Continued exposure at elevated levels of SO_2 results in increased incidence of pulmonary symptoms and disease, decreased pulmonary function, and increased risk of mortality. SO_2 is a respiratory irritant that can cause narrowing of the airways leading to wheezing and shortness of breath. Long-term exposure to SO_2 can cause respiratory illness and aggravate existing cardiovascular disease.

Lead. Lead in the atmosphere occurs as particulate matter. Lead has historically been emitted from vehicles combusting leaded gasoline, as well as from industrial sources. With the phase-out of leaded gasoline, large manufacturing facilities are the sources of the largest amounts of lead emissions. Because lead is only slowly excreted, exposures to small amounts of lead from a variety of sources can accumulate to harmful levels. Effects from inhalation of lead near the level of the ambient air quality standard include impaired blood formation and nerve conduction. Lead can adversely affect the nervous, reproductive, digestive, immune, and blood-forming systems. Symptoms can include fatigue, anxiety, short-term memory loss, depression, weakness in the extremities, and learning disabilities in children. Lead is also classified as a probable human carcinogen.

Sulfates. Sulfates are the fully oxidized ionic form of sulfur. In California, emissions of sulfur compounds occur primarily from the combustion of petroleum-derived fuels (e.g., gasoline and diesel fuel) that contain sulfur. This sulfur is oxidized to sulfur dioxide (SO_2) during the combustion process and subsequently converted to sulfate compounds in the atmosphere. The conversion of SO_2 to sulfates takes place comparatively rapidly and completely in urban areas of California due to regional meteorological features. The ARB's sulfates standard is designed to prevent aggravation of respiratory symptoms. Effects of sulfate exposure at levels above the standard include a decrease in ventilatory function, aggravation of asthmatic symptoms and an increased risk of cardio-pulmonary disease. Sulfates are particularly effective in degrading visibility, and due to fact that they are usually acidic, can harm ecosystems and damage materials and property.

Hydrogen Sulfide. H_2S is a colorless gas with the odor of rotten eggs. It is formed during bacterial decomposition of sulfur-containing organic substances. Also, it can be present in sewer gas and some natural gas, and can be emitted as the result of geothermal energy exploitation. Breathing H_2S at levels above the standard would result in exposure to a very disagreeable odor. In 1984, an ARB committee concluded that the ambient standard for H_2S is adequate to protect public health and to significantly reduce odor annoyance.

Vinyl Chloride. Vinyl chloride, a chlorinated hydrocarbon, is a colorless gas with a mild, sweet odor. Most vinyl chloride is used to make polyvinyl chloride (PVC) plastic and vinyl products. Vinyl chloride has been detected near landfills, sewage plants and hazardous waste sites, due to microbial breakdown of chlorinated solvents. Short-term exposure to high levels of vinyl chloride in air causes central nervous

system effects, such as dizziness, drowsiness and headaches. Long-term exposure to vinyl chloride through inhalation and oral exposure causes liver damage. Cancer is a major concern from exposure to vinyl chloride via inhalation. Vinyl chloride exposure has been shown to increase the risk of angiosarcoma, a rare form of liver cancer, in humans.

Visibility Reducing Particles. Visibility-reducing particles consist of suspended particulate matter, which is a complex mixture of tiny particles that consists of dry solid fragments, solid cores with liquid coatings, and small droplets of liquid. These particles vary greatly in shape, size and chemical composition, and can be made up of many different materials such as metals, soot, soil, dust, and salt. The CAAQS is intended to limit the frequency and severity of visibility impairment due to regional haze. A separate standard for visibility-reducing particles that is applicable only in the Lake Tahoe Air Basin is based on reduction in scenic quality.

Toxic air contaminants (TACs) are substances that have the potential to be emitted into the ambient air that have been determined to present some level of acute or chronic health risk (cancer or non-cancer) to the general public. These pollutants may be emitted in trace amounts from various types of sources, including combustion sources.

TACs do not have ambient air quality standards. Since no safe levels of TACs can be determined, there are no air quality standards for TACs. Instead, TAC impacts are evaluated by calculating the health risks associated with a given exposure. The requirements of the Air Toxic "Hot Spots" Information and Assessment Act apply to facilities that use, produce, or emit toxic chemicals. Facilities that are subject to the toxic emission inventory requirements of the act must prepare and submit toxic emission inventory plans and reports and periodically update those reports.

The main TACs that are emitted from mobile sources such as those that would be used to construct and operate the Palo Verde Mesa Solar Project include those substances that the USEPA and the Federal Highway Administration (FHWA) have identified as Mobile Source Air Toxics. The USEPA reviewed the list of TACs and identified a group of 21 TACs as Mobile Source Air Toxics (MSATs), which are compounds emitted from highway vehicles and non-road equipment. Some toxic compounds are present in fuel and are emitted to the air when the fuel evaporates or passes through the engine unburned. Other toxics are emitted from the incomplete combustion of fuels or as secondary combustion products. Metal air toxics also result from engine wear or from impurities in oil or gasoline. The USEPA also extracted a subset of this list of 21 MSATs that it now labels as the seven priority MSATs. These are *benzene, formaldehyde, diesel particulate matter/diesel exhaust organic gases, acrolein, 1,3-butadiene, naphthalene, and polycyclic organic matter (POM)* (FHWA 2009). While these MSATs are considered the priority transportation toxics, the USEPA stresses that the lists are subject to change and may be adjusted in future rules (FHWA 2009).

The following specific descriptions of health effects for each of the criteria air pollutants associated with project construction and operations are based on information on health effects of TACs from the California Office of Environmental Health Hazard Assessment (OEHHA 2012) and the USEPA (USEPA 2012).

Benzene. Approximately 84 percent of the benzene emitted in California comes from motor vehicles, including evaporative leakage and unburned fuel exhaust. Currently, the benzene content of gasoline is less than one percent.

Benzene is found in the air from the combustion of coal and oil, gasoline service stations, and motor vehicle exhaust. Acute (short-term) inhalation exposure of humans to benzene may cause drowsiness, dizziness, headaches, as well as eye, skin, and respiratory tract irritation, and, at high levels,

unconsciousness. Chronic (long-term) inhalation exposure has caused various disorders in the blood, including reduced numbers of red blood cells and aplastic anemia, in occupational settings. Reproductive effects have been reported for women exposed by inhalation to high levels, and adverse effects on the developing fetus have been observed in animal tests. Increased incidence of leukemia (cancer of the tissues that form white blood cells) have been observed in humans occupationally exposed to benzene. The USEPA has classified benzene as a Group A, human carcinogen.

Formaldehyde. Exposure to formaldehyde may occur by breathing contaminated indoor air, tobacco smoke, or ambient urban air. Acute (short-term) and chronic (long-term) inhalation exposure to formaldehyde in humans can result in respiratory symptoms, and eye, nose, and throat irritation. Limited human studies have reported an association between formaldehyde exposure and lung and nasopharyngeal cancer. Animal inhalation studies have reported an increased incidence of nasal squamous cell cancer. The USEPA considers formaldehyde a probable human carcinogen (Group B1).

The non-cancer adverse health effects of formaldehyde are largely a manifestation of its ability to irritate mucous membranes. As a result of its solubility in water and high reactivity, formaldehyde is efficiently absorbed into the mucus layers protecting the eyes and respiratory tract where it rapidly reacts, leading primarily to localized irritation. Acute high exposure may lead to eye, nose and throat irritation, and in the respiratory tract, nasal obstruction, pulmonary edema and dyspnea. Prolonged or repeated exposures have been associated with allergic sensitization, respiratory symptoms (coughing, wheezing, shortness of breath), histopathological changes in respiratory epithelium, and decrements in lung function. Children, especially those with diagnosed asthma, may be more likely to show impaired pulmonary function and symptoms than are adults following chronic exposure to formaldehyde.

Diesel Particulate Matter. Diesel particulate matter is emitted from both mobile and stationary sources. In California, onroad diesel-fueled engines contribute approximately 24 percent of the statewide total, with an additional 71 percent attributed to other mobile sources such as construction and mining equipment, agricultural equipment, and transport refrigeration units. Stationary sources contribute about five percent of total diesel particulate matter.

Diesel exhaust includes over 40 substances that are listed by the USEPA as hazardous air pollutants and by the ARB as toxic air contaminants. Fifteen of these substances are listed by the

International Agency for Research on Cancer (IARC) as carcinogenic to humans, or as a probable or possible human carcinogen. Some of these substances are: acetaldehyde; antimony compounds; arsenic; benzene; beryllium compounds; bis(2-ethylhexyl)phthalate; dioxins and dibenzofurans; formaldehyde; inorganic lead; mercury compounds; nickel; POM (including PAHs); and styrene. Almost all of the diesel particle mass is in the fine particle range of 10 microns or less in diameter (PM_{10}). Approximately 94 percent of the mass of these particles are less than 2.5 microns in diameter. Because of their small size, these particles can be inhaled and a portion will eventually become trapped within the small airways and alveolar regions of the lung.

A number of adverse short-term health effects have been associated with exposures to diesel exhaust. Occupational exposures to diesel exhaust particles have been associated with significant cross-shift decreases in lung function. Increased cough, labored breathing, chest tightness, and wheezing have been associated with exposure to diesel exhaust in bus garage workers. A significant increase in airway resistance and increases in eye and nasal irritation were observed in human volunteers following one-hour chamber exposure to diesel exhaust. In acute or subchronic animal studies, exposure to diesel exhaust particles induced inflammatory airway changes, lung function changes, and increased the animals' susceptibility to infection.

A number of adverse long-term noncancer effects have been associated with exposure to diesel exhaust. Occupational studies have shown that there may be a greater incidence of cough, phlegm and chronic bronchitis among those exposed to diesel exhaust than among those not exposed. Reductions in pulmonary function have also been reported following occupational exposures in chronic studies. Exposure to diesel exhaust has also shown cellular changes in laboratory animals.

Over 30 human epidemiological studies have investigated the potential carcinogenicity of diesel exhaust. These studies, on average, found that long-term occupational exposures to diesel exhaust were associated with a 40 percent increase in the relative risk of lung cancer. The lung cancer findings are consistent and the association is unlikely to be due to chance. These epidemiological studies strongly suggest a causal relationship between occupational diesel exhaust exposure and lung cancer.

Acrolein. Acrolein is a powerful irritant. Due to its highly reactive nature, the effects of acrolein are generally limited to the site of contact; skin, eyes and mucous membranes. Inhalation exposure to low levels ($\leq$ 1 ppm) causes irritation of the eyes, nose and throat. Acute exposures to levels above 1 ppm result in mucous hypersecretion and exacerbation of allergic airway response in animal models. Moderately higher exposures may result in severe lacrimation, and irritation of the mucous membranes of the respiratory tract. Death due to respiratory failure has been associated with high level exposures. Long term exposure to acrolein may result in structural and functional changes in the respiratory tract, including lesions in the nasal mucosa, and pulmonary inflammation.

1,3–Butadiene. Motor vehicle exhaust is a constant source of 1,3-butadiene. Although 1,3-butadiene breaks down quickly in the atmosphere, it is usually found in ambient air at low levels in urban and suburban areas. Acute (short-term) exposure to 1,3-butadiene by inhalation in humans results in irritation of the eyes, nasal passages, throat, and lungs. Epidemiological studies have reported a possible association between 1,3-butadiene exposure and cardiovascular diseases. Epidemiological studies of workers in rubber plants have shown an association between 1,3-butadiene exposure and increased incidence of leukemia. Animal studies have reported tumors at various sites from 1,3-butadiene exposure. The USEPA has classified 1,3-butadiene as carcinogenic to humans by inhalation.

Naphthalene. Naphthalene is used in the production of phthalic anhydride; it is also used in mothballs. Acute (short-term) exposure of humans to naphthalene by inhalation, ingestion, and dermal contact is associated with hemolytic anemia, damage to the liver, and neurological damage. Cataracts have also been reported in workers acutely exposed to naphthalene by inhalation and ingestion. Chronic (long-term) exposure of workers and rodents to naphthalene has been reported to cause cataracts and damage to the retina. Hemolytic anemia has been reported in infants born to mothers who "sniffed" and ingested naphthalene (as mothballs) during pregnancy. Available data are inadequate to establish a causal relationship between exposure to naphthalene and cancer in humans. The USEPA has classified naphthalene as a Group C, possible human carcinogen. The state of California has classified naphthalene as a carcinogenic compound.

Polycyclic Organic Matter. The term polycyclic organic matter (POM) defines a broad class of compounds that includes the polycyclic aromatic hydrocarbon compounds (PAHs), of which benzo[a]pyrene is a member. POM compounds are formed primarily from combustion and are present in the atmosphere in particulate form. Sources of air emissions are diverse and include cigarette smoke, vehicle exhaust, home heating, laying tar, and grilling meat. Cancer is the major concern from exposure to POM. Epidemiologic studies have reported an increase in lung cancer in humans exposed to coke oven emissions, roofing tar emissions, and cigarette smoke; all of these mixtures contain POM compounds. Animal studies have reported respiratory tract tumors from inhalation exposure to benzo[a]pyrene and forestomach tumors, leukemia, and lung tumors from oral exposure to benzo[a]pyrene. The USEPA has classified seven PAHs (benzo[*a*]pyrene, benz[a]anthracene, chrysene, benzo[b]fluoranthene,

benzo[k]fluoranthene, dibenz[a,h]anthracene, and indeno[1,2,3-cd]pyrene) as Group B2, probable human carcinogens.

Greenhouse gases (GHGs) are gases that trap heat in the atmosphere. These emissions occur from natural processes as well as human activities. The accumulation of GHGs in the atmosphere regulates the earth's temperature. Scientific evidence indicates a trend of increasing global temperature over the past century, which a number of scientists attribute to an increase in GHG emissions from human activities. The climate change associated with this global warming is predicted to produce negative economic and social consequences across the globe.

Recent observed changes due to global warming include shrinking glaciers, thawing permafrost, a lengthened growing season, and shifts in plant and animal ranges (Intergovernmental Panel on Climate Change 2007). Generally accepted predictions of long-term environmental impacts due to global warming include sea level rise, changing weather patterns with increases in the severity of storms and droughts, changes to local and regional ecosystems including the potential loss of species, and a significant reduction in winter snow pack.

The most common GHGs emitted from natural processes and human activities include carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O). Examples of GHGs created and emitted primarily through human activities include fluorinated gases (hydrofluorocarbons and perfluorocarbons) and sulfur hexafluoride. Each GHG is assigned a global warming potential. The global warming potential is the ability of a gas or aerosol to trap heat in the atmosphere. The global warming potential rating system is standardized to CO_2, which has a value of one. For example, CH_4 has a global warming potential of 21, which means that it has a global warming effect 21 times greater than CO_2 on an equal-mass basis. Total GHG emissions from a source are often reported as a CO_2 equivalent (CO_2e). The CO_2e is calculated by multiplying the emission of each GHG by its global warming potential and adding the results together to produce a single, combined emission rate representing all GHGs. On a national scale, federal agencies are addressing emissions of GHGs by reductions mandated in federal laws and Executive Orders, most recently, Executive Order 13423 Strengthening Federal Environmental, Energy, and Transportation Management (January 24, 2007) was enacted. Several states have promulgated laws as a means to reduce statewide levels of GHG emissions. In particular, the California Global Warming Solutions Act of 2006 directs the State of California to reduce statewide GHG emissions to 1990 levels by the year 2020.

The potential effects of proposed GHG emissions are by nature global, and have cumulative impacts. As individual sources, GHG emissions are not large enough to have an appreciable effect on climate change. Therefore, the impact of proposed GHG emissions to climate change is discussed in the context of cumulative impacts.

Air quality in the air basin for the Project area is regulated by federal, state, and local regulatory agencies with the responsibility for maintaining ambient air quality within federal and state standards. The USEPA is the federal agency responsible for establishing air quality regulations on a federal level. The Federal Clean Air Act (CAA) and its subsequent amendments establish air quality regulations and the NAAQS and delegate the enforcement of these standards to the states. In California, the California Air Resources Board (ARB) is responsible for enforcing air pollution regulations. The ARB has in turn delegated the responsibility of regulating stationary emission sources to regional air agencies. In the air basin for the Project area, which is located in eastern Riverside County, the Mojave Desert Air Quality Management District (MDAQMD) has this responsibility.

The following sections summarize the air quality rules and regulations that apply to the Palo Verde Mesa Solar Project.

2.1 Federal Regulations

The Federal CAA applies to all air emission sources and to all areas within the United States. Regulations adopted under the CAA that would apply to the Palo Verde Mesa Solar Project would include the NAAQS, as well as other requirements that have been adopted as part of the MDAQMD's federally approved plans and programs.

As indicated in Federal Register Volume 75, No. 11, Page 2938, the USEPA is considering lowering the 8-hour O_3 standard from 0.075 ppm, which is its current level, to a lower level within the range of 0.060 and 0.070 ppm. The lower level is proposed to provide increased protection for children and other "at risk" populations against O_3 health effects.

Recent actions by the USEPA have allowed for the regulation of greenhouse gases (GHGs). On April 17, 2009, USEPA issued its proposed endangerment finding for GHG emissions. On December 7, 2009, the USEPA Administrator signed and finalized two distinct findings regarding greenhouse gases under section 202(a) of the Clean Air Act:

> **Endangerment Finding:** The Administrator finds that the current and projected concentrations of the six key well-mixed greenhouse gases--carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6)--in the atmosphere threaten the public health and welfare of current and future generations.
>
> **Cause or Contribute Finding:** The Administrator finds that the combined emissions of these well-mixed greenhouse gases from new motor vehicles and new motor vehicle engines contribute to the greenhouse gas pollution which threatens public health and welfare.

These findings do not themselves impose any requirements on industry or other entities. However, this action was a prerequisite to finalizing the USEPA's proposed greenhouse gas emission standards for light-duty vehicles, which were jointly proposed by USEPA and the Department of Transportation's National Highway Safety Administration on September 15, 2009 and adopted on April 1, 2010. As finalized in April 2010, the emissions standards rule for vehicles will improve average fuel economy standards to 35.5 miles per gallon by 2016. In addition, the rule will require model year 2016 vehicles to meet an estimated combined average emission level of 250 grams of carbon dioxide per mile.

On March 10, 2009, in response to the FY2008 Consolidated Appropriations Act (H.R. 2764; Public Law 110–161), the USEPA proposed a rule that requires mandatory reporting of greenhouse gas (GHG) emissions from large sources in the United States. On September 22, 2009, the Final Mandatory Reporting of Greenhouse Gases Rule was signed, and was published in the Federal Register on October 30, 2009. The rule became effective on December 29, 2009. The rule will collect accurate and comprehensive emissions data to inform future policy decisions.

The USEPA is requiring suppliers of fossil fuels or industrial greenhouse gases, manufacturers of vehicles and engines, and facilities that emit 25,000 metric tons or more per year of GHG emissions to submit annual reports to USEPA. The gases covered by the proposed rule are carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFC), perfluorocarbons (PFC), sulfur hexafluoride (SF_6), and other fluorinated gases, including nitrogen trifluoride (NF_3) and hydrofluorinated ethers (HFE).

2.2 State Regulations

The ARB has oversight over air quality in the state of California, and has established the California Clean Air Act (CCAA). The CCAA was signed into law in 1988 and, for the first time, clearly spelled out in statute California's air quality goals, planning mechanisms, regulatory strategies, and standards of progress. The CCAA provides the State with a comprehensive framework for air quality planning regulation. Prior to passage of the Act, federal law contained the only comprehensive planning framework. As part of its authority within the state of California, and as allowed under the Federal CAA, the ARB has established the California Ambient Air Quality Standards (CAAQS). The CAAQS are at least as stringent as the NAAQS. Both the NAAQS and CAAQS are shown in Table 1.

The ARB is responsible for the development of the State Implementation Plan (SIP), which provides a framework for attaining and maintaining the NAAQS within the state of California. In turn, development of individual inputs to the SIP is the responsibility of local air pollution control agencies. Regulation of individual stationary sources has been delegated to local air pollution control agencies.

The ARB is responsible for developing programs designed to reduce emissions from non-stationary sources, including motor vehicles and off-road equipment. The ARB and the California Office of Environmental Health Hazard Assessment (OEHHA) are also responsible for developing regulations governing TACs. TACs include air pollutants that can cause serious illnesses or increased mortality, even in low concentrations. The ARB and OEHHA identify specific air pollutants as TACs, develop health thresholds for exposure to TACs, and develop guidelines for conducting health risk assessments for sources of TAC emissions.

The state of California enacted some of the first legislation in the United States to regulate GHGs. The following subsections describe regulations and standards that have been adopted by the state of California to address GHG emissions.

Assembly Bill 32, the California Global Warming Solutions Act of 2006. In September 2006, Governor Schwarzenegger signed AB 32 into law. AB 32 directs the ARB to do the following:

- Make publicly available a list of discrete early action GHG emission reduction measures that can be implemented prior to the adoption of the statewide GHG limit and the measures required to achieve compliance with the statewide limit.
- Make publicly available a GHG inventory for the year 1990 and determine target levels for 2020.
- On or before January 1, 2010, adopt regulations to implement the early action GHG emission reduction measures.
- On or before January 1, 2011, adopt quantifiable, verifiable, and enforceable emission reduction measures by regulation that will achieve the statewide GHG emissions limit by 2020, to become operative on January 1, 2012, at the latest. The emission reduction measures may include direct emission reduction measures, alternative compliance mechanisms, and potential monetary and non-monetary incentives that reduce GHG emissions from any sources or categories of sources that ARB finds necessary to achieve the statewide GHG emissions limit.
- Monitor compliance with and enforce any emission reduction measure adopted pursuant to AB 32.

AB 32 required that, by January 1, 2008, the ARB determine what the statewide GHG emissions level was in 1990, and approve a statewide GHG emissions limit that is equivalent to that level, to be achieved by 2020. The ARB adopted its Scoping Plan in December 2008, which provided estimates of the 1990

GHG emissions level and identified sectors for the reduction of GHG emissions. The ARB has estimated that the 1990 GHG emissions level was 427 MMT net CO_2e (ARB 2007b). The ARB estimates that a reduction of 173 MMT net CO_2e emissions below business-as-usual would be required by 2020 to meet the 1990 levels (ARB 2007b). This amounts to roughly a 30 percent reduction from projected business-as-usual levels in 2020 (ARB 2008a).

Senate Bill 97. Senate Bill (SB) 97, enacted in 2007, amends the CEQA statute to clearly establish that GHG emissions and the effects of GHG emissions are appropriate subjects for CEQA analysis. SB 97 directed the Governor's Office of Planning and Research (OPR) to develop draft CEQA guidelines "for the mitigation of greenhouse gas emissions or the effects of greenhouse gas emissions" by July 1, 2009, and directed the California Natural Resources Agency (CNRA) to certify and adopt the CEQA guidelines by January 1, 2010.

OPR published a technical advisory on CEQA and climate change on June 19, 2008. The guidance did not include a suggested threshold, but stated that the OPR had asked the ARB to "recommend a method for setting thresholds which will encourage consistency and uniformity in the CEQA analysis of greenhouse gas emissions throughout the state." The OPR technical advisory does recommend that CEQA analyses include the following components:

- Identification of greenhouse gas emissions;
- Determination of significance; and
- Mitigation of impacts, as needed and as feasible.

On December 31, 2009, the CNRA adopted the proposed amendments to the State CEQA Guidelines. These amendments became effective on March 18, 2010.

Executive Order S-3-05. Executive Order S-3-05, signed by Governor Schwarzenegger on June 1, 2005, calls for a reduction in GHG emissions to 1990 levels by 2020 and for an 80 percent reduction in GHG emissions below 1990 levels by 2050. Executive Order S-3-05 also calls for the California EPA (CalEPA) to prepare biennial science reports on the potential impact of continued GCC on certain sectors of the California economy. The first of these reports, "Our Changing Climate: Assessing Risks to California", and its supporting document "Scenarios of Climate Change in California: An Overview" were published by the California Climate Change Center in 2006.

Executive Order S-21-09. Executive Order S-21-09 was enacted by the Governor on September 15, 2009. Executive Order S-21-09 requires that the ARB, under its AB 32 authority, adopt a regulation by July 31, 2010 that sets a 33 percent renewable energy target. Under Executive Order S-21-09, the ARB will work with the Public Utilities Commission and California Energy Commission to encourage the creation and use of renewable energy sources, and will regulate all California utilities. The ARB will also consult with the Independent System Operator and other load balancing authorities on the impacts on reliability, renewable integration requirements, and interactions with wholesale power markets in carrying out the provisions of the Executive Order. The order requires the ARB to establish highest priority for those resources that provide the greatest environmental benefits with the least environmental costs and impacts on public health.

California Code of Regulations Title 24. Although not originally intended to reduce greenhouse gas emissions, Title 24 of the California Code of Regulations, Part 6: California's Energy Efficiency Standards for Residential and Nonresidential Buildings, were first established in 1978 in response to a legislative mandate to reduce California's energy consumption. The standards are updated periodically to allow for the consideration and possible incorporation of new energy efficiency technologies and

methods. Energy efficient buildings require less electricity, natural gas, and other fuels. Electricity production from fossil fuels and on-site fuel combustion (typically for water heating) results in greenhouse gas emissions. Therefore, increased energy efficiency results in decreased greenhouse gas emissions.

The GHG emission inventory was based on Title 24 standards as of October 2005; however, Title 24 has been updated as of 2008 and standards are currently being phased in.

Senate Bill 1078, Senate Bill 107, and Executive Order S-14-08. SB 1078 initially set a target of 20% of energy to be sold from renewable sources by the year 2017. The schedule for implementation of the RPS was accelerated in 2006 with the Governor's signing of SB 107, which accelerated the 20% RPS goal from 2017 to 2010. On November 17, 2008, the Governor signed Executive Order S-14-08, which requires all retail sellers of electricity to serve 33 percent of their load with renewable energy by 2020. The Governor signed Executive Order S-21-09 on September 15, 2009, which directs ARB to implement a regulation consistent with the 2020 33% renewable energy target by July 31, 2010.

State Standards Addressing Vehicular Emissions. California Assembly Bill 1493 (Pavley) enacted on July 22, 2002, required the ARB to develop and adopt regulations that reduce greenhouse gases emitted by passenger vehicles and light duty trucks. Regulations adopted by ARB would apply to 2009 and later model year vehicles. ARB estimated that the regulation would reduce climate change emissions from light duty passenger vehicle fleet by an estimated 18% in 2020 and by 27% in 2030 (AEP 2007). Overall within the state of California, implementation of the Pavley standards are anticipated to reduce GHG emissions by 17.23% (ARB 2011).

The ARB has adopted amendments to the Pavley regulations that reduce GHG emissions in new passenger vehicles from 2009 through 2016. The amendments, approved by the ARB Board on September 24, 2009, are part of California's commitment toward a nation-wide program to reduce new passenger vehicle GHGs from 2012 through 2016, and prepare California to harmonize its rules with the federal rules for passenger vehicles.

Executive Order S-01-07. Executive Order S-01-07 was enacted by the Governor on January 18, 2007, and mandates that: 1) a statewide goal be established to reduce the carbon intensity of California's transportation fuels by at least 10 percent by 2020; and 2) a Low Carbon Fuel Standard (LCFS) for transportation fuels be established for California. On April 23, 2009, the ARB adopted regulations to implement the LCFS.

Senate Bill 375. SB 375 finds that GHG from autos and light trucks can be substantially reduced by new vehicle technology, but even so "it will be necessary to achieve significant additional greenhouse gas reductions from changed land use patterns and improved transportation. Without improved land use and transportation policy, California will not be able to achieve the goals of AB 32." Therefore, SB 375 requires that regions with metropolitan planning organizations adopt sustainable communities strategies, as part of their regional transportation plans, which are designed to achieve certain goals for the reduction of GHG emissions from mobile sources.

SB 375 also includes CEQA streamlining provisions for "transit priority projects" that are consistent with an adopted sustainable communities strategy. As defined in SB 375, a "transit priority project" shall: (1) contain at least 50 percent residential use, based on total building square footage and, if the project contains between 26 and 50 percent nonresidential uses, a floor area ratio of not less than 0.75; (2) provide a maximum net density of at least 20 dwelling units per acre; and (3) be within 0.5 mile of a major transit stop or high quality transit corridor.

Table 1: Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards	National Standards [a]	
			Primary [b,c]	Secondary [b,d]
Ozone (O_3)	8-hour	0.070 ppm (137 µg/m^3)	0.075 ppm (147 µg/m^3)	Same as primary
	1-hour	0.09 ppm (180 µg/m^3)	—	—
Carbon monoxide (CO)	8-hour	9.0 ppm (10 mg/m^3)	9 ppm (10 mg/m^3)	—
	1-hour	20 ppm (23 mg/m^3)	35 ppm (40 mg/m^3)	—
Nitrogen dioxide (NO_2)	Annual	0.030 ppm (56 µg/m^3)	0.053 ppm (100 µg/m^3)	Same as primary
	1-hour	0.18 ppm (338 µg/m^3)	0.100 ppm (188 µg/m^3)	—
Sulfur dioxide (SO_2)	24-hour	0.04 ppm (105 µg/m^3)	—	—
	3-hour	—	—	0.5 ppm (1,300 µg/m^3)
	1-hour	0.25 ppm (655 µg/m^3)	0.075 ppm (196 µg/m^3)	—
PM_{10}	Annual	20 µg/m^3	—	—
	24-hour	50 µg/m^3	150 µg/m^3	Same as primary
$PM_{2.5}$	Annual	12 µg/m^3	12.0 µg/m^3	
	24-hour	—	35 µg/m^3	
Lead	Rolling 3-month period	—	0.15 µg/m^3	Same as primary
	Calendar Quarter	—	1.5 µg/m^3	Same as primary
	30-day average	1.5 µg/m^3	—	—
Hydrogen Sulfide	1-hour	0.03 ppm (42 µg/m^3)	—	—

Notes:

(a) Standards other than the 1-hour ozone, 24-hour PM_{10}, 24-hour $PM_{2.5}$, and those based on annual averages are not to be exceeded more than once a year. The 8-hour ozone national standard has replaced the 1-hour ozone national standard.

(b) Concentrations are expressed first in units in which they were promulgated. Equivalent units given in parenthesis.

(c) Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health. Each state must attain the primary standards no later than 3 years after that state's implementation plan is approved by the USEPA.

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

2.3 Local Regulations

As discussed above, the Palo Verde Mesa Solar Project is located in the jurisdiction of the MDAQMD. The MDAQMD is responsible for regulating stationary sources of air emissions in the Project area. Stationary sources that have the potential to emit air pollutants into the ambient air are subject to the Rules and Regulations adopted by the MDAQMD. The following MDAQMD rules are applicable to the project.

Rule 401 – Visible Emissions. Rule 401 states that a person shall not discharge into the atmosphere, from any single source of emissions whatsoever, any air contaminant for a period or periods aggregating more than three minutes in any one hour which is:

(a) As dark or darker in shade as that designated as No. 1 on the Ringelmann Chart, as published by the U.S. Bureau of Mines, or

(b) Of such opacity as to obscure an observer's view to a degree equal to or greater than does smoke described in Subsection A [of the Rules].

Rule 402 - Nuisance. Rule 402 prohibits a person from discharging from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance or annoyance to any considerable number of persons or to the public, or which endanger the comfort, repose, health or safety of any such persons or the public, or which cause, or have a natural tendency to cause, injury or damage to business or property.

Rule 403 – Fugitive Dust. Rule 403 requires control of fugitive dust emissions during activities such as construction that have the potential to generate dust. The provisions of Rule 403 include the following:

(a) A person shall not cause or allow the emissions of fugitive dust from any transport, handling, construction or storage activity so that the presence of such dust remains visible in the atmosphere beyond the property line of the emission source. (Does not apply to emissions emanating from unpaved roadways open to public travel or farm roads. This exclusion shall not apply to industrial or commercial facilities).

(b) A person shall take every reasonable precaution to minimize fugitive dust emissions from wrecking, excavation, grading, clearing of land and solid waste disposal operations.

(c) A person shall not cause or allow particulate matter to exceed 100 micrograms per cubic meter when determined as the difference between upwind and downwind samples collected on high volume samplers at the property line for a minimum of five hours.

(d) A person shall take every reasonable precaution to prevent visible particulate matter from being deposited upon public roadways as a direct result of their operations. Reasonable precautions shall include, but are not limited to, the removal of particulate matter from equipment prior to movement on paved streets or the prompt removal of any material from paved streets onto which such material has been deposited.

(e) Subsections (a) and (c) shall not be applicable when the wind speed instantaneously exceeds 40 kilometers (25 miles) per hour, or when the average wind speed is greater than 24 kilometers (15 miles) per hour. The average wind speed determination shall be on a 15 minute average at the nearest official air-monitoring station or by wind instrument located at the site being checked.

(f) The provisions of this rule shall not apply to agricultural operations.

Rule 404 – Particulate Matter Concentration. Rule 404 restricts emissions of particulate matter from any source based on the concentrations specified in Table 404(a).

Rule 405 – Solid Particulate Matter Weight. Rule 405 restricts emissions of particulate matter from any source based on the concentrations specified in Table 405(a).

Rule 406 – Specific Contaminants. Rule 406 restricts emissions of sulfur compounds to 500 ppmv or less, and restricts emissions of halogens, which are not generally emitted from construction projects.

Rule 407 – Liquid and Gaseous Air Contaminants. Rule 407 restricts emissions of carbon monoxide to 2000 ppm or less.

Rule 408 – Circumvention. Rule 408 restricts the building, erection, installation or use of any equipment, the use of which, without resulting in a reduction in the total release of air contaminants to the atmosphere, reduces or conceals an emission which would otherwise constitute a violation of Chapter 3 (commencing with Section 41700) of Part 4, of Division 26 of the Health and Safety Code or of the MDAQMD Rules.

Rule 409 – Combustion Contaminants. Rule 409 restricts discharge into the atmosphere from the burning of fuel, combustion contaminants exceeding 0.23 gram per cubic meter (0.1 grain per cubic foot) of gas calculated to 12 percent of carbon dioxide (CO2) at standard conditions averaged over a minimum of 25 consecutive minutes.

Rule 431 – Sulfur Content of Fuels. Rule 431 restricts the use of any gaseous fuel containing sulfur compounds in excess of 800 ppm calculated as hydrogen sulfide at standard conditions, or any liquid or solid fuel having a sulfur content in excess of 0.5 percent by weight.

Rule 442 – Usage of Solvents. Rule 442 restricts the emission of VOCs from any solvent material to 1,190 pounds per month, and requires proper storage and handling of VOC-containing solvents.

To date, the MDAQMD has not enacted regulations governing GHGs.

3.0 Environmental Setting

As discussed in Section 1.2, the Project is proposed to be located on approximately 3,400 acres in the Palo Verde Mesa region of Riverside County—3,250 for the solar field and 150 acres for the 230 kilovolt (kV) transmission line interconnect. The site is located in proximity to rural agricultural and undeveloped lands, and is near uses associated with the Blythe Airport, power generation, local roads, and interstate highway and other non-sensitive activities.

Sensitive receptors are people who are considered to be more sensitive than others to air pollutants. The reasons for greater than average sensitivity include pre-existing health problems, proximity to emissions sources, or duration of exposure to air pollutants. Schools, hospitals, and convalescent homes are considered to be sensitive to poor air quality because children, elderly people, and the infirmed are more susceptible to respiratory distress and other air quality-related health problems than the general public. Residential areas are considered sensitive to poor air quality because people usually stay home for extended periods of time, with associated greater exposure to ambient air quality. Recreational uses may also be considered sensitive due to the greater exposure to ambient air quality conditions because vigorous exercise associated with recreation places a high demand on the human respiratory system.

Sensitive air quality receptors (e.g., local residences, schools, hospitals, churches, and recreational facilities) are located within one mile of the project site, including several residences. There are 222 residences within one mile of the project site, of which seven individual residences are located within 1,000 feet of the site. The closest residence is located approximately 230 feet away. In addition, the project is approximately 0.4 miles (2,200 feet) from the Mesa Verde Park and approximately 0.8 miles (4,400 feet) from the Roy Wilson Community and Child Center. No schools, hospitals, or convalescent homes are located within one mile of the proposed project.

Areas that do not meet the NAAQS or CAAQS for a given criteria pollutant are designated as "nonattainment areas" by the USEPA and/or the ARB. Further classifications are given to nonattainment areas to identify the severity and number of violations experienced, and the year in which attainment is anticipated based on implementation of attainment plans. The Project area is located in a portion of the air basin considered an unclassified/attainment area for all of the NAAQS. The air basin of the Project area is

considered a moderate nonattainment area for the CAAQS for O_3 and a nonattainment area for the CAAQS for PM_{10}. The air basin of the Project area is considered unclassified/attainment for all CAAQS for the other criteria pollutants.

3.1 Regional Climate

The Project is located in eastern California in the Colorado Desert. The Colorado Desert ranges in elevation from 2,000 feet above sea level to 5,000 feet above sea level. The climate in the Blythe area is categorized as a high desert climate, with dry, hot summers and cool winters. The region is characterized by extreme fluctuations of daily temperatures, strong seasonal winds, and clear skies. January is the coldest month, with a mean low temperature of 37.4°F. July is the hottest month, with a mean high temperature of 108.4°F.

In late winter and early spring the wind is a prominent feature, with dry winds blowing in the afternoon and evening. Winds in excess of 25 mph, with gusts of 75 mph or more are not uncommon. Although it is windy during all months, November, December and January are the calmest. The humidity is below 40% most of the year. During most winter nights, and during and after summer rains the humidity can get above 50%.

The Colorado Desert lies in the rainshadow of the Coast Ranges and receives an average annual precipitation of 5 inches. Most of the precipitation occurs between November and April. There is, however, a summer thunderstorm season from July to September with violent and heavy rainstorms possible.

Data from the Western Regional Climate Center (WRCC 2012) indicate that temperature and precipitation data were measured at Blythe from January 1913 through the present. The mean temperature for the Blythe station is 71.6°F, and the mean annual precipitation is 3.80 inches. Monthly average temperatures and precipitation for the area are summarized in Table 2.

Table 2: Monthly Average Temperatures and Precipitation

Blythe Meteorological Station

Month	Monthly Average Temperatures, °F			Precipitation, inches
	Maximum	Minimum	Mean	Mean
January	67.6	37.4	52.5	0.51
February	73.0	41.8	57.4	0.46
March	79.4	46.5	57.4	0.34
April	87.4	52.7	70.0	0.12
May	95.5	59.9	77.7	0.03
June	104.2	67.4	85.8	0.05
July	108.4	76.1	92.3	0.19
August	106.8	75.4	91.1	0.61
September	101.8	67.3	84.6	0.39
October	90.5	54.8	72.6	0.27
November	76.7	43.4	60.0	0.27
December	67.7	37.6	52.7	0.57
Annual	75.8	49.9	62.9	3.80

Source: www.wrcc.dri.edu

Figure 2 presents a wind rose from Blythe Airport showing the prevailing winds in the Project area.

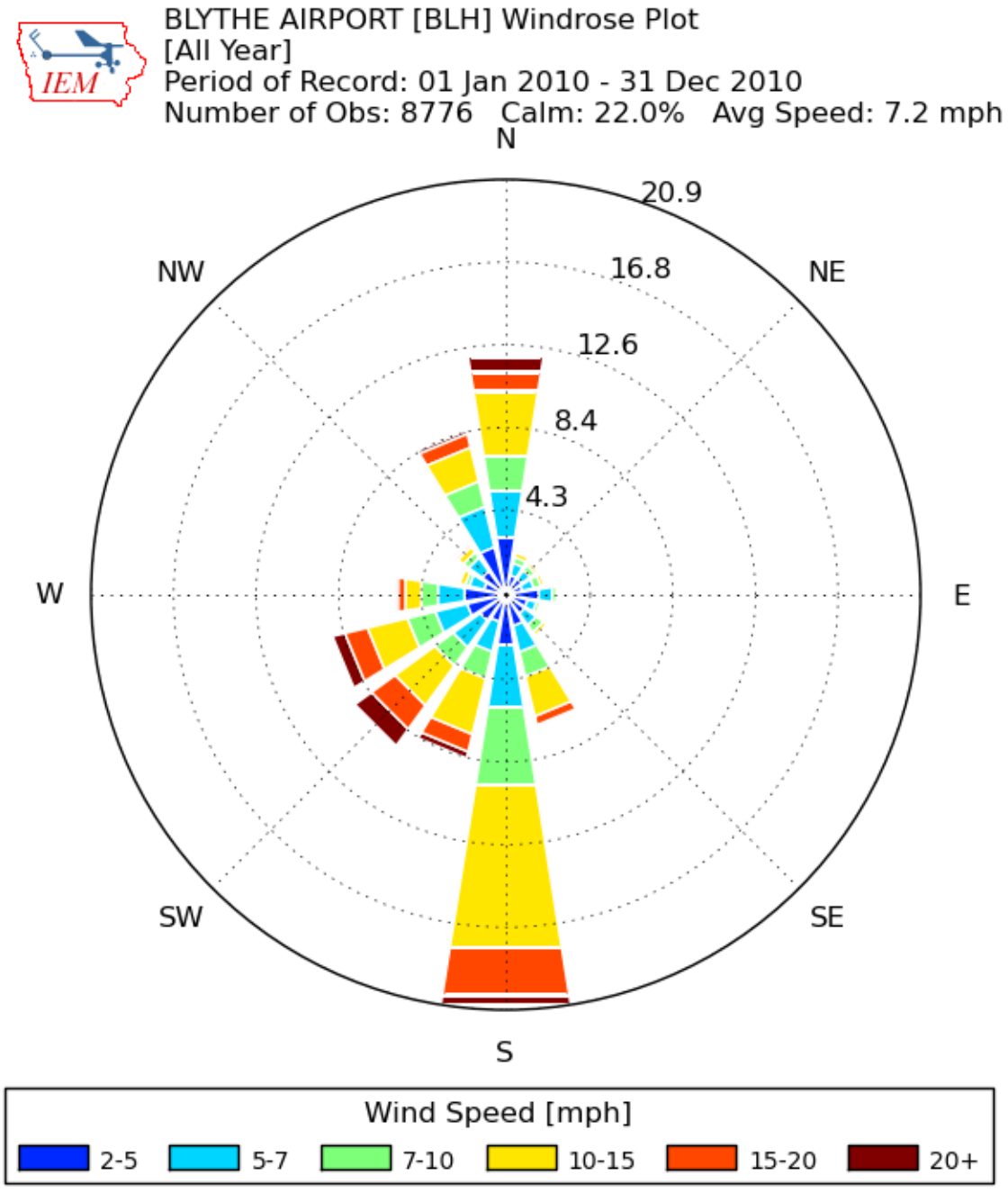


Figure 2. Blythe Wind Rose

3.2 Existing Air Quality

The ARB and the MDAQMD operate a series of ambient air quality monitoring stations throughout Southern California. The closest monitoring site to the Palo Verde Mesa Solar Project is located at 445 West Murphy Street in Blythe. The Blythe monitoring station measures O_3. The nearest monitoring station that measures $PM_{2.5}$ is located in Victorville; measurements in Victorville are not likely to be representative of conditions in the Project area. The nearest monitoring station that measures CO, NO_2, and PM_{10} is located at Barstow, which may also be substantially different from conditions in Blythe. Data from this station are shown below for informational purposes. Table 3 provides a summary of background air quality representative of the Project region.

Table 3: Representative Air Quality Data for the Palo Verde Mesa Solar Project Area (2006-2011)

Air Quality Indicator	2006	2007	2008	2009	2010	2011
Ozone (O_3)[1,3]						
Peak 1-hour value (ppm)	0.073	0.092	0.074	0.072	0.072	0.066
Days above state standard (0.09 ppm)	0	0	0	0	0	0
Peak 8-hour value (ppm)	0.059	0.075	0.071	0.066	0.067	0.061
Days above state standard (0.070 ppm)	0	1	1	0	0	0
Days above federal standard (0.075 ppm)[1,2]	0	0	0	0	0	0
Particulate matter less than or equal to 10 microns in diameter (PM_{10})[4]						
Peak 24-hour value ($\mu g/m^3$)	80	202	93	76	38	108
Days above state standard (50 $\mu g/m^3$)	0	1	2	2	0	2
Days above federal standard (150 $\mu g/m^3$)	2	5	0	0	0	0
Annual Arithmetic Mean (ppm)	21.9	29.8	26.1	26.8	18.8	21.5
Carbon Monoxide[4]						
Peak 8-hour value (mg/m^3)	1.19	0.70	1.23	0.89	0.89	1.35
Days above federal standard (9 ppm)	0	0	0	0	0	0
Peak 1-hour value (mg/m^3)	3.5	1.4	1.4	1.2	1.1	4.3
Days above state standard (20 ppm)	0	0	0	0	0	0
Days above federal standard (35 ppm)	0	0	0	0	0	0
Nitrogen Dioxide (NO_2) [4]						
Peak 1-hour value (ppm)	0.082	0.073	0.081	0.060	0.062	0.077
Days above state standard (0.18 ppm)	0	0	0	0	0	0
Annual Arithmetic Mean (ppm)	0.022	0.020	0.019	0.016	0.017	0.017

Notes: [1] The federal O_3 standard was revised downward in 2008 to 0.075 ppm.

[2] The federal eight-hour ozone standard was previously defined as 0.08 ppm (1 significant digit). Measurements were rounded up or down to determine compliance with the standard; therefore a measurement of 0.084 ppm is rounded to 0.08 ppm. The 8-hour ozone ambient air quality standards are met at an ambient air quality monitoring site when the average of the annual fourth-highest daily maximum 8-hour average ozone concentration is less than or equal to the standard.

[3] Data from the Blythe monitoring station. Data for 1-hour CO concentrations unavailable.

[4] Data from the Barstow monitoring station.

ppm = parts per million; $\mu g/m^3$ = micrograms per cubic meter; * = not available

Source: http://www.arb.ca.gov/adam/php_files/aqdphp/topfourdisplay.php

4.0 Impact Assessment

4.1 Significance Thresholds

The CEQA thresholds of significance for air quality are derived from Appendix G of the state CEQA guidelines. These thresholds indicate that a project could have potentially significant impacts if it could:

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

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

c. Result in cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including release emissions which exceed quantitative thresholds for ozone precursors);

d. Expose sensitive receptors to substantial pollutant concentrations; or

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

The MDAQMD has adopted CEQA Guidelines (MDAQMD 2009) based on the State CEQA Guidelines that indicate that a project would have a significant impact on air quality if it:

1. Generates total emissions (direct and indirect) in excess of the thresholds given in Table 4 below; and/or,

2. Generates a violation of any ambient air quality standard when added to the local background; and/or,

3. Does not conform with the applicable attainment or maintenance plan(s); and/or,

4. Exposes sensitive receptors to substantial pollutant concentrations, including those resulting in a cancer risk greater than or equal to 10 in a million and/or a Hazard Index (HI) (non-cancerous) greater than or equal to 1.

As defined in the MDAQMD's CEQA Guidelines, sensitive receptors include residences, schools, daycare centers, playgrounds and medical facilities are considered sensitive receptor land uses. The following project types proposed for land use sites within the specified distance to an existing or planned (zoned) sensitive receptor must be evaluated using significance threshold criterion number 4:

- Any industrial project within 1000 feet;
- A distribution center (40 or more trucks per day) within 1000 feet;
- A major transportation project (50,000 or more vehicles per day) within 1000 feet;
- A dry cleaner using perchloroethylene within 500 feet;
- A gasoline dispensing facility within 300 feet.

Table 4 presents the quantitative thresholds by which a project's emissions are evaluated under significance threshold criterion number 1. The air quality impacts associated with the project were evaluated for significance based on these significance criteria.

Table 4: MDAQMD Significant Emission Thresholds		
Criteria Pollutant	**Annual Threshold (tons)**	**Daily Threshold (pounds)**
Carbon Monoxide (CO)	100	548
Oxides of Nitrogen (NOx)	25	137
Volatile Organic Compounds (VOCs)	25	137
Oxides of Sulfur (SOx)	25	137
Particulate Matter (PM_{10})	15	82
Particulate Matter ($PM_{2.5}$)	15	82
Hydrogen Sulfide (H_2S)	10	54
Lead (Pb)	0.6	3

In addition to air quality impacts, this analysis addresses impacts associated with greenhouse gas emissions. The effects of project-specific greenhouse gas (GHG) emissions are cumulative, and therefore global climate change impacts are addressed as a cumulative, rather than a direct, impact. The guidance for determining significance of impacts has been developed from the requirements of AB 32. The guideline addresses the potential cumulative impacts that a project's GHG emissions could have on global climate change. Based on Appendix G of the CEQA Guidelines, the following criteria are used to evaluate whether a project would result in a significant impact for global climate change impacts:

Would the project:

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

As discussed in Section 15064.4 of the CEQA Regulations, the determination of the significance of greenhouse gas emissions calls for a careful judgment by the lead agency consistent with the provisions in section 15064.

Different agencies and studies estimate different goals for reduction of emissions to achieve 1990 levels by the year 2020, as set forth in AB 32. The California Air Pollution Control Officers Association (CAPCOA) has suggested a screening-level significance threshold of 900 metric tons of CO_2-equivalent (CO_2e) emissions annually (CAPCOA 2008), which will be used for this study.

Impacts from GHG emissions were therefore evaluated based on a significance threshold of 900 metric tons of CO_2e as a screening threshold.

4.2 Impacts

4.2.1 Construction Impacts

Site Preparation

Since most of the site has nearly level to gently sloping topography, no mass grading would be required. Some of the proposed parcels where facilities and arrays are located would require light grubbing for leveling and trenching. Access roads would require minimal grading. After grubbing and light grading, construction of staging areas would occur. On-site assembly of trackers would take place in the staging area.

The PV system proposed for the site can operate on slopes up to nine percent in any direction. Fine grading would only be required for the development site access roads or to reduce extreme elevation areas. In order to aim for balanced cut-and-fill quantities, grading activities may include placement and compaction of excess materials in low-elevation areas of the site.

Installation of the electrical collection system would require excavations to a depth of about three feet for underground electrical circuits, inverter and switchgear enclosure foundations, and transformer foundations. The O&M building foundation would be excavated to a depth of about three feet.

Construction Activities

The Project would be constructed in the following stages, which would occur simultaneously on different portions of the site:

- Development of staging areas and assembly areas and grading of site access roads.
- Construction of arrays including pile installation, assembly of trackers, mounting of PV panels, and placement of support piles, placement of trackers on support piles, and trenching and installation of electrical cable and equipment for arrays.
- Construction of electrical transmission facilities, including the construction of two substations, the single-circuit transmission line, and one O&M building.

Staging Areas, Assembly Areas, and Access Roads

Construction staging and material lay-down would be distributed across the Project site evenly to allow for efficient distribution of components to different parts of the Project. Typically, one staging and material lay-down area would be set up for every 100 acres of the Project site. These lay-down areas would be fenced and would cover approximately five acres each. Lay-down areas would be temporary and would be converted to solar arrays as work is completed in the general area. Within the solar field, grubbing and light grading of 12-foot-wide access roads would also be performed approximately every 200 to 400 feet to allow access to and maintenance of the solar panels.

Array Assembly

Tracker assembly may include up to 25 small gas-powered generators to power welding machines to assemble trackers and construct tracker arrays. Support piles would be driven into the ground to a depth of eight to twelve feet using a vibration technology to reduce noise impacts. A tracked backhoe would drive piles. No blasting or rock breaking is anticipated or proposed. Small truck-mounted cranes or grade-all forklifts would place trackers on support piles. The torque tubes, cable trays, and panels would then be installed on the assemblies. Concrete foundations for the drive motors would be poured in place, and electrical equipment for the array would be set in place. Tracker installation would include small all-terrain vehicles to transport materials and workers on access roads and array aisles.

Substations

Construction of the two substations would involve site preparation, clearing of the switchyard site, and installation of substructures and electrical equipment. The site would be initially cleared, graded, and security fenced for the duration of substation construction. Underground Service Alert would be contacted to mark the locations of existing buried utilities in the vicinity. Substation materials and equipment would be delivered to, and stored at, the substation site, as required, during construction.

The substation would be constructed with conventional grading and construction equipment. The site would be graded to maintain current drainage patterns as much as possible and minor excavation would provide concrete footings for the substation equipment. The substation site would be graveled with crushed rock for grounding and employee safety purposes.

O&M Buildings

The area for the one O&M building would be surveyed and staked. A concrete slab would be poured to the dimensions of the building. The prefabricated steel building structure would then be assembled. The exterior would be finished as the mechanical and electrical systems are built inside. Interior finishing would follow, and final fixtures and equipment would be installed.

Transmission Line

The transmission line construction will involve the following activities: (1) construction of staging areas for trailers, office personnel, equipment, material staging, lay-down, and employee parking on private land; (2) construction of access roads to the structure locations; (3) pole erection; (4) conductor installation; (5) establishing pulling sites and tensioning of conductors; and (6) installation of the overhead ground/fiber optic communications system.

Construction Sequence, Equipment, and Workforce

Construction is anticipated to occur over a three-year period with the construction phases (described above) occurring simultaneously. The solar field would be developed in six-month phases, with six blocks constructed at a time (each block 100 acres or a total of 600 acres at a time). As the arrays are being assembled, construction of the substations, transmission line, switchyard, and O&M buildings would also occur simultaneously. The timing and workforce assumed for each construction activity/phase is illustrated in Table 5. After the common facilities (e.g., substations, switchyards, O&M buildings) are completed in the earlier stages, the workforce would be devoted more to array construction in the later stages.

Approximately 300-500 daily workers would be present on site during construction. Workers would gain primary access to the site using Seeley Avenue and Riverside Drive off of Neighbors Blvd. Worker construction traffic would consist of up to 400 daily vehicle roundtrips. It is anticipated that most workers would be drawn from the Blythe/Palo Verde Valley region and the Desert Center region, with a smaller portion drawn from the Imperial Valley or Eastern Riverside County region. Anticipated average daily material deliveries would consist of 20 truck deliveries per day for 24 months. Workers and delivery trucks will access site using the Neighbors Blvd. off ramp off Highway 10. On-site work hours would be from 7:00 a.m. to 7:00 p.m. During the installation period, construction workers are projected to be onsite five days per week, year round. Due to weather or other major type delays, times may shift to start as early as 5:00 a.m. and end as late as 8:00 p.m., as well as continue into the weekends. Security will be onsite 24 hours per day.

Table 5: Construction Phasing and Workforce Estimates		
CONSTRUCTION ACTIVITY/PHASE*	**DURATION**	**WORKERS**
Site Preparation/Clearing/Grading	6 months	20
Staging & Assembly Areas (including access roads)	6 months	20
Construction of Solar Array, Substations, O&M Buildings	24 months	200-400
Installation of 230 kV Transmission Line & Fiber Optic Cable	12 months	30
Testing	3 months	20
Clean up/restoration	1 month	20

*Construction would occur over a three-year period with construction activities staggered.

During construction, a variety of equipment and vehicles would be operating on the site. Table 6 provides a list of the type and number of equipment and vehicles expected to construct each construction phase.

Table 6: Construction Equipment by Construction Phase						
EQUIPMENT	**CONSTRUCTION PHASES**					
	Site Preparation	**Construction of Solar Array**	**Installation of Transmission Line Poles**	**Fiber Optic Cable**	**Substation & O&M Building**	**Clean up & Restoration**
Backhoe		X	X		X	
Cranes		X	X	X	X	
Vibratory Post Divers		X				
Fork Lifts	X	X	X	X	X	
Dozers	X				X	
Excavator	X				X	
Grader	X				X	X
Loaders, Rubber Tired	X	X	X	X		
Rollers	X				X	
Scrapers	X					
Trenchers		X				
Dump Truck	X	X				
Water Truck	X	X			X	
Concrete Truck	X	X	X			
Flatbed Truck		X	X	X	X	
Light-weight Truck	X	X	X	X	X	
ATV Gator Carts	X	X			X	

The assumptions used to calculate construction emissions are as follows:

- Heavy construction equipment would be similar to other similar projects for site preparation, installation of the solar array, construction of the transmission line, and construction of the substation and O&M buildings.

- It was assumed that watering three times daily would control emissions of PM_{10} and $PM_{2.5}$ by 75 percent (based on the Midwest Research Institute's evaluation of fugitive dust control measures, considering the application of water and dust suppressants on unpaved surfaces, control of stockpiles using water, use of enclosures and minimum freeboard on trucks, and limiting vehicles speeds on unpaved roadways).
- For the purpose of estimating maximum daily traffic, it was assumed that the maximum number of employees (500) could arrive in a single day. For conservative purposes, it was assumed that carpooling would reduce the total number of daily round trips to 400. It was also assumed that 20 truck trips could occur in a single day.
- Workers and trucks would travel, on average, 40 miles round trip per day.

Emissions of ROG, SOx, and GHGs from heavy equipment used in construction of the Palo Verde Mesa Solar Project were estimated based on emission factors for the SCAB from the ARB's OFFROAD2007 Model (ARB 2007a), as published on the SCAQMD's website. Emissions of NOx, CO, and PM were calculated based on the assumption that the equipment used for construction would, at a minimum, meet USEPA Tier 2 emission standards. Emission factors for 2014 represent the average fleet emissions throughout the SCAB and were considered representative of construction equipment that would be used during construction of the project. It was assumed that the Palo Verde Mesa Solar Project would be constructed after the Blythe Mesa Solar Project, and that the projects would not be constructed simultaneously.

Emissions from worker travel and truck traffic were calculated using the ARB's EMFAC2007 Model (ARB 2007b) for on-road vehicles. Emissions of fugitive dust were estimated based on SCAQMD and USEPA emission factors. Unmitigated construction emissions may have the potential to result in a temporary significant impact on the air quality. Under the MDAQMD Rules and Regulations, all projects must comply with Rule 403, which prohibits fugitive dust from construction activities that results in emissions that are visible in the atmosphere beyond the property line where construction is occurring. Through the implementation of Rule 403, fugitive dust control measures must be utilized to reduce emissions of particulate matter during construction, and emissions from construction would therefore not conflict with or obstruct implementation of the applicable air quality management plan, and will be mitigated to below a level of significance.

Solar Array, O&M Building, Substation, and Transmission Line. Construction of these components of the project would occur primarily on the private land portion of the site. The project also includes construction of a 14.5-mile transmission line to connect with the grid. Emissions were estimated based on the construction schedule and equipment requirements for the project provided by the project team. Table 7 presents a summary of the daily construction emissions for the construction of the solar array, O&M buildings, substation, and transmission line based on the above assumptions and assuming standard mitigation measures would be implemented, in comparison with the MDAQMD significance thresholds.

Table 7: Estimated Construction Emissions – Solar Arrays, O&M Buildings, Substation and Transmission Line						
Emission Source	**ROG**	**NOx**	**CO**	**SOx**	**PM_{10}**	**$PM_{2.5}$**
Maximum Daily Construction Emissions, lbs/day						
Offroad Equipment	32.93	99.36	63.31	11.35	4.61	4.10
On-Road Vehicles	19.10	33.84	207.51	0.02	4.04	4.00
Fugitive Dust	---	---	---	---	38.86	8.16
TOTAL	**52.04**	**133.20**	**270.82**	**11.37**	**47.51**	**16.26**
Significance Thresholds	137	137	548	137	82	82
Above Significance Thresholds?	*No*	*No*	*No*	*No*	*No*	*No*
Annual Construction Emissions, tons/year						
Offroad Equipment	1.54	13.90	8.61	0.32	0.62	0.55
On-Road Vehicles	2.42	4.69	26.01	0.00	0.53	0.51
Fugitive Dust	---	---	---	---	5.13	0.97
TOTAL	**3.96**	**18.59**	**34.62**	**0.33**	**6.27**	**2.04**
Significance Thresholds	25	25	100	25	15	15
Above Significance Thresholds?	*No*	*No*	*No*	*No*	*No*	*No*

As shown in Table 7, maximum daily emissions from construction of the solar array, O&M buildings, and substation would be below the significance thresholds for the maximum daily construction for all pollutants. Annual emissions would also be below the significance thresholds for all pollutants. Construction would therefore result in a less than significant impact on air quality.

Mitigation measures include fugitive dust control measures as required under MDAQMD Rule 403. Additional measures to reduce emissions during construction include the following:

Mitigation Measure AQ-1: Employ the following measures to reduce emissions from construction equipment and fugitive dust generating activities, as feasible.

- Require off-road construction equipment to meet or exceed Tier 3 standards with available CARB verified technologies, or
- Alternatively, require the use of alternative fueled off-road construction equipment, and
- Reroute construction trucks away from congested streets or sensitive receptor areas.
- Operating equipment in an idling mode shall be minimized and shall not idle for more than five minutes. All equipment should be turned off when not in use, to the extent feasible.
- Minimize obstruction of through-traffic lanes. When feasible, construction should be planned so that lane closures on existing streets are kept to a minimum. If necessary, a flag person shall be retained to maintain the safety adjacent to existing roadways. Provide temporary traffic controls such as a flag person, during all phases of construction to maintain smooth traffic flow.
- Dedicated turn lanes and/or other roadway improvements shall be provided as appropriate at heavily congested roadways.
- Require the application of non-toxic soil stabilizers according to manufacturers' specifications to all inactive construction areas (previously graded areas inactive for ten days or more),

- Install wheel washers where vehicles enter and exit the construction site onto paved roads or wash off trucks and any equipment leaving the site,
- Require all trucks hauling dirt, sand, soil, or other loose materials to be covered,
- Suspend all excavating and grading operations when wind gusts (as instantaneous gusts) exceed 25 mph,
- Appoint a construction relations officer to act as a community liaison concerning on-site construction activity including resolution of issues related to PM_{10} generation,
- When sweeping streets to remove visible soil materials use certified street sweepers or roadway washing trucks, and
- Replace ground cover in disturbed areas as quickly as possible.
- Construct or build with materials that do not require painting, and
- Require the use of pre-painted construction materials.

These construction mitigation measures would reduce emissions from construction; however, impact analysis shows that emissions are less than significant.

4.2.2 Operational Emissions

After the construction phase, the O&M building would serve as the Project's operations center for approximately ten permanent full-time employees, which would include one plant manager, three engineers/technicians, and six security staff. The Project facilities would be monitored during operating (daylight) hours, even though the Project facilities would be capable of automatic start-up, shutdown, self-diagnosis, and fault detection.

The panels may be cleaned up to two times per year, if necessary to optimize output. No chemicals would be used during cleaning. No heavy equipment would be used during normal operation. O&M vehicles would include trucks (pickup and flatbed), forklifts, and loaders for routine and scheduled maintenance and water trucks for solar panel washing. Large heavy-haul transport equipment may be brought to the Project site infrequently for equipment repair or replacement. Fugitive dust would be generated from vehicles travelling over unpaved roads.

The Project site would be secured 24 hours per day by on-site private security personnel or remote security services with motion-detection cameras. Operational emissions would be confined to inspection and maintenance activities, including washing of the solar panels. Emissions associated with operations are summarized in Table 8.

Table 8: Estimated Operational Emissions						
Emission Source	**ROG**	**NOx**	**CO**	**SOx**	**PM_{10}**	**$PM_{2.5}$**
Total Operational Emissions, lbs/day						
Offroad Equipment	10.99	37.59	19.95	1.32	1.15	1.02
On-Road Vehicles	3.25	9.48	36.90	0.00	0.38	0.38
Fugitive Dust	---	---	---	---	6.87	0.69
TOTAL	**14.24**	**47.07**	**56.84**	**1.32**	**8.40**	**2.09**
Significance Thresholds	137	137	548	137	82	82
Above Significance Thresholds?	*No*	*No*	*No*	*No*	*No*	*No*
Total Operational Emissions, tons/year						
Offroad Equipment	0.97	2.83	1.50	0.12	0.09	0.08
On-Road Vehicles	0.06	0.09	0.72	0.00	0.01	0.01
Fugitive Dust	---	---	---	---	0.20	0.03
TOTAL	**1.03**	**2.92**	**2.22**	**0.12**	**0.30**	**0.12**
Significance Thresholds	25	25	100	25	15	15
Above Significance Thresholds?	*No*	*No*	*No*	*No*	*No*	*No*

As shown in Table 8, operational emissions would be below the maximum daily and annual significance thresholds within the MDAQMD. Impacts from operations would therefore be less than significant.

4.2.3 Toxic Air Contaminant Emissions

Construction activities would result in emissions of diesel particulate matter from heavy construction equipment used on site and truck traffic to and from the site, as well as minor amounts of TAC emissions from motor vehicles (such as benzene, 1,3-butadiene, toluene, and xylenes). Health effects attributable to exposure to diesel particulate matter are long-term effects based on chronic (i.e., long-term) exposure to emissions. Health effects are generally evaluated based on a lifetime (70 years) of exposure. As discussed in Section 4.1, a project would result in a significant impact if it exposes sensitive receptors to substantial pollutant concentrations, including those resulting in a cancer risk greater than or equal to 10 in a million and/or a Hazard Index (HI) (non-cancerous) greater than or equal to 1.

The risk-driving TAC associated with construction activities at the Palo Verde Mesa project site is diesel particulate emitted from equipment and vehicles operating on site. Sources of diesel particulate matter at the site would include haul truck activities, heavy construction equipment, and contractor vehicles. Construction emissions were modeled using the SCREEN3 model to evaluate whether diesel particulate matter would result in a significant health risk to sensitive receptors in the Project area.

Based on the construction emissions analysis as shown in Table 7, the annual particulate emissions from offroad equipment operating on site would be 0.62 tons per year. The on-road diesel emissions would be 0.53 tons per year, which includes the 40-mile round trip distance traveling on roads to the site. For the purpose of providing a worst case analysis of the potential for TAC impacts to sensitive receptors, it was assumed that all of the on-road emissions could occur at the site.

The emissions were modeled using the SCREEN3 model as a volume source on the site, assuming the nearest off-site receptor would be located 100 meters from the site boundary. Because SCREEN3 only provides maximum one-hour concentrations and excess cancer and chronic risks from diesel particulate matter are calculated on an annualized basis, the concentration predicted by the model was multiplied by the USEPA's recommended scaling factor of 0.08 to convert a 1-hour maximum concentration to an annual concentration.

The expected diesel construction emission concentrations from the SCREEN3 model are shown below in Table 9 and Appendix A. Based upon the model results, the particulate matter concentrations are below the inhalation Chronic Risk Factor of 1.0 and the Cancer Risk Threshold of 10 in one million. There is no other substantial evidence in the record demonstrating that the Proposed Project would have a significant impact. Therefore, impacts for cancer risks from toxic air emissions during construction activities would be less than significant.

Table 9: Screening Health Risk Assessment Results

Diesel Particulate Matter Emissions (tons per year)	1-hour Ground-Level Concentration, micrograms/cubic meter	Annual Ground-Level Concentration, micrograms/cubic meter	Calculated Cancer Risk (in a million)	Inhalation Chronic Risk Factor	Significant?
1.15	0.4850	0.03846	0.554	0.00776	***No***

Notes:

1. SCREEN3 inputs were calculated by converting the diesel engine particulate matter emissions in tons per year for construction activities to grams per second per meters squared. The following conversion factors were utilized: 1 day = 86,400 seconds; 1 pound = 453.592 grams; 1 acre = 4,046.873 square meters
2. Pollutant concentrations based upon SCREEN3 modeling results.
3. The inhalation cancer risk was calculated based on the following equation:

Inhalation cancer risk = ((Cair*DBR*A*EF*ED*1x10^{-6})/AT)*Inhalation Cancer Potency Factor)

Where

Cair = concentration in the air of DPM;

DBR = daily breathing rate (based on OEHHA guidance, assume 80th percentile breathing rate of 303 L/kg-day);

A = inhalation absorption factor (1);

EF = exposure frequency (365 days/year);

ED = duration of construction (3 years)

AT = average time period over which exposure is averaged (25,550 days);

Inhalation Cancer Potency Factor = 1.1 mg/kg-d)$^{-1}$

4. The inhalation chronic risk was based upon the following equation:

Inhalation chronic risk = (Cair/Chronic Reference Exposure Level)

Where

Cair = concentration in the air of DPM;

Chronic Reference Exposure Level = Concentration level at which OEHHA has determined a significant chronic risk may result from inhalation exposure (5.0 µg/m^3)

4.2.4 Consistency with Ambient Air Quality Plans

The MDAQMD's most recently adopted air quality management plan is its 2004 Ozone Attainment Plan (MDAQMD 2004). The MDAQMD has adopted the control measures recommended in the plan in its Rules and Regulations. The MDAQMD has also adopted fugitive dust control requirements in its Rule 403. Because the project will comply with the MDAQMD's Rules and Regulations, including those adopted from the SIP, the project will not conflict with the applicable Air Quality Plan.

4.2.5 Decommissioning

At the end of the energy contract term, the facilities would be decommissioned and dismantled and the site restored. Decommissioning activities would require a workforce similar to that of construction. Activities for decommissioning of a solar plant would include:

- Dismantling and removal of all-above ground equipment (solar panels, tracker units, transformers, substation, O&M building, etc.)
- Excavation and removal of all below-ground cabling
- Removal of posts
- Removal of primary roads (aggregate-based)
- Break-up and removal of concrete pads and foundations
- Scarification of compacted areas

Decommissioning would first involve removing the panels for sale into a secondary solar PV panel market. It is expected that a robust market for used PV panels will exist in the future because the panels can be used in various configurations and at various scales. Electricity demand continues to rise, and electricity prices are projected to continue their steady increase. Demand for solar energy is rapidly accelerating and is expected to grow for decades to come.

Decommissioning of the 230-kV transmission line would be completed using traditional heavy construction equipment, such as front-end loaders, cranes, track-mounted and rubber-tired excavators, and motor graders. Dismantling would proceed in the following general stages: (1) dismantling and demolishing above-ground structures; (2) removing concrete foundations; (3) excavating and removing solid and broken concrete from the site; and (4) surface contouring to return the disturbed area to its pre-Project state to the greatest extent feasible.

Emissions associated with decommissioning the Palo Verde Mesa Solar Project were calculated using the same methodology as construction emissions. Table 10 presents a summary of emissions anticipated from decommissioning activities.

Table 10: Estimated Decommissioning Emissions

Emission Source	ROG	NOx	CO	SOx	PM_{10}	$PM_{2.5}$
Maximum Daily Decommissioning Emissions, lbs/day						
Offroad Equipment	14.02	62.40	35.17	3.81	2.26	2.26
On-Road Vehicles	19.10	33.84	207.51	0.02	4.04	4.00
Fugitive Dust	---	---	---	---	41.68	8.75
TOTAL	**33.12**	**96.24**	**242.68**	**3.83**	**47.98**	**15.01**
Significance Thresholds	137	137	548	137	82	82
Above Significance Thresholds?	*No*	*No*	*No*	*No*	*No*	*No*
Annual Decommissioning Emissions, tons/year						
Offroad Equipment	1.26	5.62	3.16	0.34	0.20	0.20
On-Road Vehicles	2.41	4.57	25.97	0.00	0.52	0.52
Construction Truck Trips					5.01	0.96
TOTAL	**3.67**	**10.19**	**29.13**	**0.34**	**5.73**	**1.68**
Significance Thresholds	25	25	100	25	15	15
Above Significance Thresholds?	*No*	*No*	*No*	*No*	*No*	*No*

As shown in Table 10, maximum daily emissions from decommissioning of the Palo Verde Mesa Solar Project would be below the significance thresholds for the maximum daily construction for all pollutants. Annual emissions would also be below the significance thresholds for all pollutants. Decommissioning would therefore result in a less than significant impact on air quality.

5.0 Global Climate Change

Global Climate Change (GCC) refers to changes in average climatic conditions on Earth as a whole, including temperature, wind patterns, precipitation and storms. Global temperatures are moderated by naturally occurring atmospheric gases, including water vapor, carbon dioxide (CO_2), methane (CH_4) and nitrous oxide (N_2O), which are known as greenhouse gases (GHGs). These gases allow solar radiation (sunlight) into the Earth's atmosphere, but prevent radiative heat from escaping, thus warming the Earth's atmosphere. Gases that trap heat in the atmosphere are often called greenhouse gases, analogous to a greenhouse. GHGs are emitted by both natural processes and human activities. The accumulation of GHGs in the atmosphere regulates the Earth's temperature. Emissions from human activities, such as burning fossil fuels for electricity production and vehicle use, have elevated the concentration of these gases in the atmosphere.

The State of California has been at the forefront of developing solutions to address GCC. GCC refers to any significant change in measures of climate, such as average temperature, precipitation, or wind patterns over a period of time. GCC may result from natural factors, natural processes, and/or human activities that change the composition of the atmosphere and alter the surface and features of land.

The United Nations Intergovernmental Panel on Climate Change (IPCC) constructed several emission trajectories of GHGs needed to stabilize global temperatures and climate change impacts. The IPCC concluded that a stabilization of GHGs at 400 to 450 ppm CO_2 equivalent concentration is required to keep global mean warming below 3.6º Fahrenheit (2º Celsius), which is assumed to be necessary to avoid dangerous climate change (Association of Environmental Professionals 2007).

State law defines greenhouse gases as any of the following compounds: carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and sulfur hexafluoride (SF_6) (California Health and Safety Code Section 38505(g).) CO_2, followed by CH_4 and N_2O, are the most common GHGs that result from human activity.

The State of California GHG Inventory performed by the California Air Resources Board (ARB), compiled statewide anthropogenic GHG emissions and sinks. It includes estimates for CO_2, CH_4, N_2O, SF_6, HFCs, and PFCs. The current inventory covers the years 1990 to 2009, and is summarized in Table 11. Data sources used to calculate this GHG inventory include California and federal agencies, international organizations, and industry associations. The calculation methodologies are consistent with guidance from the IPCC. The 1990 emissions level is the sum total of sources and sinks from all sectors and categories in the inventory. The inventory is divided into seven broad sectors and categories in the inventory. These sectors include: Agriculture; Commercial; Electricity Generation; Forestry; Industrial; Residential; and Transportation.

Table 11: State of California GHG Emissions by Sector				
Sector	**Total 1990 Emissions ($MMTCO_2e$)**	**Percent of Total 1990 Emissions**	**Total 2009 Emissions ($MMTCO_2e$)**	**Percent of Total 2008 Emissions**
Agriculture	23.4	5%	32.13	7%
Commercial	14.4	3%	13.41	3%
Electricity Generation	110.6	26%	103.68	23%
Forestry (excluding sinks)	0.2	<1%	0.19	<1%
Industrial	103.0	24%	81.38	18%
Residential	29.7	7%	28.61	6%
Transportation	150.7	35%	172.92	38%
Recycling and Waste			7.32	2%
High GWP Gases			16.32	4%
Forestry Sinks	(6.7)		(3.80)	

When accounting for GHGs, all types of GHG emissions are expressed in terms of CO_2 equivalents (CO_2e) and are typically quantified in metric tons (MT) or millions of metric tons (MMT).

GHGs have varying global warming potential (GWP). The GWP is the potential of a gas or aerosol to trap heat in the atmosphere; it is the "cumulative radiative forcing effect of a gas over a specified time horizon resulting from the emission of a unit mass of gas relative to a reference gas" (USEPA 2006). The reference gas for GWP is CO_2; therefore, CO_2 has a GWP of 1. The other main greenhouse gases that have been attributed to human activity include CH_4, which has a GWP of 21, and N_2O, which has a GWP of 310. Table 12 presents the GWP and atmospheric lifetimes of common GHGs.

Table 12: Global Warming Potentials and Atmospheric Lifetimes of GHGs			
GHG	**Formula**	**100-Year Global Warming Potential**	**Atmospheric Lifetime (Years)**
Carbon Dioxide	CO_2	1	Variable
Methane	CH_4	21	12 ± 3
Nitrous Oxide	N_2O	310	120
Sulfur Hexafluoride	SF_6	23,900	3,200

Human-caused sources of CO_2 include combustion of fossil fuels (coal, oil, natural gas, gasoline and wood). Data from ice cores indicate that CO_2 concentrations remained steady prior to the current period for approximately 10,000 years. Concentrations of CO_2 have increased in the atmosphere since the industrial revolution.

CH_4 is the main component of natural gas and also arises naturally from anaerobic decay of organic matter. Human-caused sources of natural gas include landfills, fermentation of manure and cattle farming. Human-caused sources of N_2O include combustion of fossil fuels and industrial processes such as nylon production and production of nitric acid.

Other GHGs are present in trace amounts in the atmosphere and are generated from various industrial or other uses.

5.1 Potential Climate Change Impacts to Project

The Climate Scenarios Report (CCCC 2006), uses a range of emissions scenarios developed by the IPCC to project a series of potential warming ranges (i.e., temperature increases) that may occur in California during the 21st century. Three warming ranges were identified: Lower warming range (3.0 to 5.5 degrees Fahrenheit (ºF)); medium warming range (5.5 to 8.0 ºF); and higher warming range (8.0 to 10.5 ºF). The Climate Scenarios report then presents an analysis of the future projected climate changes in California under each warming range scenario.

According to the report, substantial temperature increases would result in a variety of impacts to the people, economy, and environment of California. These impacts would result from a projected increase in extreme conditions, with the severity of the impacts depending upon actual future emissions of GHGs and associated warming. These impacts are described below.

Public Health. Higher temperatures are expected to increase the frequency, duration, and intensity of conditions conducive to air pollution formation. For example, days with weather conducive to O_3 formation are projected to increase by 25 to 35 percent under the lower warming range and 75 to 85 percent under the medium warming range. In addition, if global background O_3 levels increase as is predicted in some scenarios, it may become impossible to meet local air quality standards. An increase in wildfires could also occur, and the corresponding increase in the release of pollutants including $PM_{2.5}$ could further compromise air quality. The Climate Scenarios report indicates that large wildfires could become up to 55 percent more frequent of GHG emissions are not significantly reduced.

Potential health effects from global climate change may arise from temperature increases, climate-sensitive diseases, extreme events, and air quality. There may be direct temperature effects through increases in average temperature leading to more extreme heat waves and less extreme cold spells. Those living in warmer climates are likely to experience more stress and heat-related problems (e.g., heat rash and heat stroke). In addition, climate sensitive diseases (such as malaria, dengue fever, yellow fever, and encephalitis) may increase, such as those spread by mosquitoes and other disease-carrying insects.

Climate change could affect the project area in that it is located in the desert area of California, where warmer climates may lead to more of the problems identified above related to heat, should increases in average temperature in the project area occur.

Water Resources. A vast network of reservoirs and aqueducts capture and transport water throughout the State from northern California rivers and the Colorado River. The current distribution system relies on Sierra Nevada mountain snowpack to supply water during the dry spring and summer months. Rising temperatures, potentially compounded by decreases in precipitation, could severely reduce spring snowpack, increasing the risk of summer water shortages. In addition, if temperatures continue to rise more precipitation would fall as rain instead of snow, further reducing the Sierra Nevada spring snowpack by as much as 70 to 90 percent. The State's water resources are also at risk from rising sea levels. An influx of seawater would degrade California's estuaries, wetlands, and groundwater aquifers.

This global climate change impact is not likely to have a direct effect on the operation of the project.

Agriculture. Increased GHG and associated increases in temperature are expected to cause widespread changes to the agricultural industry, reducing the quantity and quality of agricultural products statewide. Significant reductions in available water supply to support agriculture would also impact production. Crop growth and development will change as will the intensity and frequency of pests and diseases. This effect of global climate change would not be anticipated to affect the project site directly because there are no agricultural uses present.

Ecosystems/Habitats. Continued global warming will likely shift the ranges of existing invasive plants and weeds, thus alternating competition patterns with native plants. Range expansion is expected in many species while range contractions are less likely in rapidly evolving species with significant populations already established. Continued global warming is also likely to increase the populations of and types of pests. Continued global warming would also affect natural ecosystems and biological habitats throughout the State. This effect of global climate change could affect current ecosystems/habitats at the project site.

Wildland Fires. Global warming is expected to increase the risk of wildfire and alter the distribution and character of natural vegetation. If temperatures rise into the medium warming range, the risk of large wildfires in California could increase by as much as 55 percent, which is almost twice the increase expected if temperatures stay in the lower warming range. However, since wildfire risk is determined by a combination of factors including precipitation, winds, temperature, and landscape and vegetation conditions, future risks will not be uniform throughout the State. Should global climate change in the southern California region lead to increased risk of wildfires, this impact could directly affect the project site in that the potential for wildfire at the project location would increase.

Rising Sea Levels. Rising sea levels, more intense coastal storms, and warmer water temperatures will increasing threaten the State's coastal regions. Under the high warming scenario, sea level is anticipated to rise 22 to 35 inches by 2100. A sea level risk of this magnitude would inundate coastal areas with salt water, accelerate coastal erosion, threaten levees and inland water systems, and disrupt wetlands and natural habitats. Because the project site is located in the high desert area, it is not anticipated that rising sea levels would have a direct affect on the project.

5.2 Impacts

The effects of project-specific GHG emissions are cumulative, and therefore GCC impacts are addressed as a cumulative, rather than a direct, impact. The guidance for determining significance of impacts has been developed from the requirements of AB 32. The guideline addresses the potential cumulative impacts that a project's GHG emissions could have on GCC. Based on Appendix G of the CEQA Guidelines, the following criteria are used to evaluate whether a project would result in a significant impact for GCC impacts:

Would the project:

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

As discussed in Section 15064.4 of the CEQA Regulations, the determination of the significance of greenhouse gas emissions calls for a careful judgment by the lead agency consistent with the provisions in section 15064. Different agencies and studies estimate different goals for reduction of emissions to achieve 1990 levels by the year 2020, as set forth in AB 32. Some agencies have estimated a reduction of 28 percent to 29 percent, based on the ARB's analysis that statewide 2020 business as usual GHG emissions would be 596 $MMTCO_2e$, with 1990 emissions of 427 $MMTCO_2e$, for a reduction of 28.35% (ARB 2008).

Projects that meet the criteria for conducting a climate change analysis are required to conduct a GHG inventory and disclose GHG emissions associated with project implementation and operation under

"business as usual" conditions. "Business as usual" is defined as the emissions that would have occurred in the absence of reductions mandated under AB 32.

The main source of greenhouse gas emissions associated with the projects would be combustion of fossil fuels during construction of the project. Emissions of GHG were calculated using the same approach as emissions for overall construction emissions discussed in Section 4.1. Estimated emissions of construction greenhouse gases for the proposed Project are summarized in Table 13. Emission calculations are provided in Appendix B.

Table 13: Construction Greenhouse Gas Emissions

Emissions, metric tons	**CO_2**
Solar Array, O&M Building, Substation and Transmission Line	5,503
Total	**5,503**

Amortization of the construction emissions for the Palo Verde Mesa Solar Project would result in a contribution of 183 metric tons of CO_2e emissions over the lifetime of the project. Emissions associated with construction would be temporary, likely to occur in only one three-year period.

Emissions associated with operations are estimated to be 271 metric tons per year of CO_2e, which is below the CAPCOA recommended threshold of 900 metric tons per year of CO_2e. Operational impacts to global climate change would therefore be less than significant. Emissions during decommissioning would be similar to construction, although it is expected that the decommissioning would take about one half as long as construction. Adding the amortized construction and decommissioning emissions to the operational emissions would result in an estimate of 638 metric tons of CO_2e annually, which remains below the CAPCOA recommended threshold of 900 metric tons per year of CO_2e.

It should also be noted that the purpose of the project is to provide electricity generation from a renewable resource. The Palo Verde Mesa Solar Project would serve to meet the state's goals for the Renewable Portfolio Standard, which has been identified by the state as a means of meeting the goals of AB 32 to reduce emissions to 1990 levels by the year 2020.

The project is proposed to produce approximately 470 MW of electrical energy, which would be approximately 1,288,167 megawatt hours (MWh) of electrical energy per year. In comparison, GHG emissions were estimated for a conventional fossil-fuel combustion power plant producing the same electrical energy per year as the Project facility. Data from the U.S. Department of Energy, USEPA, and the Electric Power Research Institute provided GHG production rates per megawatt (MWh). GHG emissions from the most efficient combined cycle gas turbine power plant and a coal-fired power plant were calculated based on 0.35 and 1.0 metric tons of CO_2 equivalent (CO_2e) per MWh of electricity produced by gas turbine and coal-fired plants, respectively. Therefore, gas turbine and coal-fired plants are estimated to produce approximately 450,858 and 1,288,167 metric tons of CO_2e, respectively.

The net GHG displacement or off-set would therefore be the difference between the annual operational GHG emissions associated with the Palo Verde Mesa Solar Project and the emissions associated with operation of a conventional power plant. The project would result in a net GHG displacement through the replacement of fossil-fuel generated electricity with solar electricity of from 450,220 to 1,287,529 metric tons of CO_2e. Operation of the Palo Verde Mesa Solar Project would therefore result in a substantial net

reduction (displacement) in GHG emissions in the region with the implementation of the Project's solar facility, when compared to a conventional fossil-fuel combustion power plant.

The Project's construction and operational emissions would therefore be offset by the Project's provision of renewable energy that would replace conventionally-generated electricity in the service area.

Because the project's construction GHG emissions are temporary, and the project's long-term operational GHG emissions are less than significant, and the project would result in a reduction in GHG emissions, the project is therefore consistent with the goals of AB 32 and impacts to global climate are less than significant.

6.0 Cumulative Impacts

In analyzing cumulative impacts from a proposed project, the analysis must specifically evaluate a project's contribution to the cumulative increase in pollutants for which the project area is listed as "non-attainment" for the federal or state AAQS. In the event direct impacts from a project are less than significant, a project may still have a cumulatively considerable impact on air quality if the emissions from the project, in combination with the emissions from other proposed, or reasonably foreseeable future projects are in excess of screening levels identified above, and the project's contribution accounts for more than an insignificant proportion of the cumulative total emissions.

As discussed in Section 2.0, the Project area is considered an unclassified/attainment area for all of the NAAQS. The Project area is considered a moderate nonattainment area for the CAAQS for O_3 and a nonattainment area for the CAAQS for PM_{10}. The area is considered unclassified/attainment for all CAAQS for the other criteria pollutants.

While the region is nonattainment for the CAAQS for O_3 and PM_{10}, not all projects would result in a significant impact to air quality. Permitting agencies and lead agencies with jurisdiction over nonattainment areas, such as the USEPA and the MDAQMD, typically establish thresholds below which a project would have neither direct, nor cumulative impacts. The Palo Verde Mesa Solar Project's potential for air quality impacts are mainly attributable to construction activities.

Each air district in a nonattainment area is responsible for developing emissions inventory data as part of the planning process to develop its attainment plan. The emissions budget for the MDAQMD includes emissions associated with construction activity, including construction equipment, fugitive dust, and vehicles. The MDAQMD construction emissions budget for off-road construction equipment and vehicles includes 1.63 tons per day of ROG, 4.67 tons per day of NOx and 0.28 tons per day of PM_{10}. The MDAQMD fugitive dust emissions budget attributable to construction activities also includes 8.77 tons per day of PM_{10}. During construction, the Palo Verde Mesa Solar Project's estimated ROG emissions are less than 1 percent of the total emissions budget, NOx emissions are less than 1 percent of the total emissions budget, and PM_{10} emissions are less than 1 percent of the total emissions budget. Operational emissions of nonattainment pollutants are also a small percentage of the overall emissions budget for the air basin. The Palo Verde Mesa Solar Project's emissions are therefore not cumulatively considerable. Because the project would also provide renewable energy, the project would reduce emissions of both criteria pollutants and greenhouse gases, thus lessening the amount of pollution emitted overall.

7.0 Conclusions and Recommendations

In summary, the proposed project would result in emissions of air pollutants for both the construction phase and operational phase of the project. The air quality impact analysis evaluated the potential for adverse impacts to the ambient air quality due to construction, operations, and decommissioning

emissions. Construction emissions would include emissions associated with fugitive dust, heavy construction equipment and construction workers commuting to and from the site and would be below the MDAQMD's significance thresholds for all pollutants. Emissions from construction would be temporary. The project would implement mitigation measures in accordance with MDAQMD Rule 403 to reduce emissions to the extent possible. Construction impacts would be less than significant.

Project operational emissions would be minor and would only be associated with operation and maintenance activities. These activities would involve on-road vehicle travel, minor heavy equipment use, and emissions associated with periodic solar panel washing activities. Operational emissions are less than significant.

Decommissioning the Project would require similar equipment as the construction phase, except that decommissioning would not take as long to complete. The maximum daily emissions from decommissioning of the Palo Verde Mesa Solar Project would be below the significance thresholds for maximum daily levels for all pollutants. Annual emissions would also be below the significance thresholds for all pollutants. Decommissioning would therefore result in a less than significant impact on air quality.

The project would provide renewable energy and would therefore serve the purpose of meeting the state's goals for renewable energy as set forth in AB 32. The project would therefore not conflict with the goals of AB 32 in reducing emissions of GHG, and would result in a less than significant impact on global climate.

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Appendix A

SCREEN3 Model Output

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SCREEN3 Model Output

Screening Health Risk Assessment

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03/12/13

10:38:56
  ***  SCREEN3 MODEL RUN  ***
  *** VERSION DATED 96043 ***

 Palo Verde Mesa Construction HRA

 SIMPLE TERRAIN INPUTS:
    SOURCE TYPE               =       VOLUME
    EMISSION RATE (G/S)       =      .330800E-01
    SOURCE HEIGHT (M)         =       1.0000
    INIT. LATERAL DIMEN (M)   =    1000.0000
    INIT. VERTICAL DIMEN (M)  =       2.0000
    RECEPTOR HEIGHT (M)       =        .0000
    URBAN/RURAL OPTION        =        RURAL

 THE REGULATORY (DEFAULT) MIXING HEIGHT OPTION WAS SELECTED.
 THE REGULATORY (DEFAULT) ANEMOMETER HEIGHT OF 10.0 METERS WAS ENTERED.


 BUOY. FLUX =     .000 M**4/S**3;  MOM. FLUX =     .000 M**4/S**2.

 *** FULL METEOROLOGY ***

 **********************************
 *** SCREEN AUTOMATED DISTANCES ***
 **********************************

 *** TERRAIN HEIGHT OF    0. M ABOVE STACK BASE USED FOR FOLLOWING
DISTANCES ***

   DIST     CONC              U10M   USTK  MIX HT   PLUME   SIGMA   SIGMA
    (M)   (UG/M**3)   STAB   (M/S)  (M/S)    (M)   HT (M)   Y (M)   Z (M)
DWASH
 -------  ----------  ----  -----  -----  ------  ------  ------  ------
-----
    100.   .0000        0      .0     .0      .0     .00     .00     .00
    200.   .0000        0      .0     .0      .0     .00     .00     .00
    300.   .0000        0      .0     .0      .0     .00     .00     .00
    400.   .0000        0      .0     .0      .0     .00     .00     .00
    500.   .0000        0      .0     .0      .0     .00     .00     .00
    600.   .0000        0      .0     .0      .0     .00     .00     .00
    700.   .0000        0      .0     .0      .0     .00     .00     .00
    800.   .0000        0      .0     .0      .0     .00     .00     .00
    900.   .0000        0      .0     .0      .0     .00     .00     .00
```

1000.	.0000	0	.0	.0	.0	.00	.00	.00
1100.	.0000	0	.0	.0	.0	.00	.00	.00
1200.	.0000	0	.0	.0	.0	.00	.00	.00
1300.	.0000	0	.0	.0	.0	.00	.00	.00
1400.	.0000	0	.0	.0	.0	.00	.00	.00
1500.	.0000	0	.0	.0	.0	.00	.00	.00
1600.	.0000	0	.0	.0	.0	.00	.00	.00
1700.	.0000	0	.0	.0	.0	.00	.00	.00
1800.	.0000	0	.0	.0	.0	.00	.00	.00
1900.	.0000	0	.0	.0	.0	.00	.00	.00
2000.	.0000	0	.0	.0	.0	.00	.00	.00
2100.	.0000	0	.0	.0	.0	.00	.00	.00
2200.	.4787	6	1.0	1.0	10000.0	1.00	958.71	22.92
NO								
2300.	.4664	6	1.0	1.0	10000.0	1.00	960.71	23.48
NO								
2400.	.4549	6	1.0	1.0	10000.0	1.00	962.70	24.02
NO								
2500.	.4441	6	1.0	1.0	10000.0	1.00	964.69	24.56
NO								
2600.	.4339	6	1.0	1.0	10000.0	1.00	966.68	25.08
NO								
2700.	.4243	6	1.0	1.0	10000.0	1.00	968.67	25.60
NO								
2800.	.4152	6	1.0	1.0	10000.0	1.00	970.66	26.11
NO								
2900.	.4066	6	1.0	1.0	10000.0	1.00	972.64	26.61
NO								
3000.	.3995	6	1.0	1.0	10000.0	1.00	974.63	27.02
NO								

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND 100. M:

2151.	.4850	6	.0	.0	.0	.00	.00	.00

DWASH= MEANS NO CALC MADE (CONC = 0.0)
DWASH=NO MEANS NO BUILDING DOWNWASH USED
DWASH=HS MEANS HUBER-SNYDER DOWNWASH USED
DWASH=SS MEANS SCHULMAN-SCIRE DOWNWASH USED
DWASH=NA MEANS DOWNWASH NOT APPLICABLE, X<3*LB

****
* SUMMARY OF TERRAIN HEIGHTS ENTERED FOR *
* SIMPLE ELEVATED TERRAIN PROCEDURE *
****

TERRAIN HT (M)	DISTANCE RANGE (M) MINIMUM	MAXIMUM
0.	100.	3000.

****
*** SUMMARY OF SCREEN MODEL RESULTS ***
****

CALCULATION PROCEDURE	MAX CONC (UG/M**3)	DIST TO MAX (M)	TERRAIN HT (M)
SIMPLE TERRAIN	.4850	2151.	0.

****
** REMEMBER TO INCLUDE BACKGROUND CONCENTRATIONS **
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Appendix B

Emission Calculations

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Table A-1. Air Emissions Calculations Summary - Palo Verde Mesa Solar Project

Construction Phase Emissions, CSF2

Offroad Tiers 2 emission factors (EFs) are applied to NOx, PM, and CO. Load factors (LFs) are used in conjunction with Tiers 2 EFs.
2012 SCAB EFs (OFFROAD2007 model) are applied to CO2, ROG, SOX. LFs already incorporated in OFFROAD model.
Onroad model (EMFAC) assumes 1990-2012 composite fleet across light, medium, and heavy duty vehicle classes.

Onroad/offroad equipment mix and schedules, including helicopter classes and usage,as provided by construction contractor (Sargent & Lundy LLC).

	Maximum Daily Emissions of Proposed Project	NOX lbs/day	ROG lbs/day	PM10 lbs/day	PM2.5 lbs/day	CO lbs/day	SOX lbs/day	CO2 lbs/day
Riverside County	Offroad Vehicles and Equipment	99.36	32.93	4.61	4.10	63.31	11.35	33598.70
	Onroad Vehicles	33.84	19.10	4.04	4.00	207.51	0.02	34903.50
	Fugitive Dust	---	---	38.86	8.16	---	---	---
	Total for Riverside County *	**133.20**	**52.04**	**47.51**	**16.26**	**270.82**	**11.37**	**68502.21**

** Basis: 0.25 of Total Proposed Project divided over two years.*

*** Basis: 0.75 of Total Proposed Project divided over two years.*

Overall Emissions of PVMSP	NOX (ton)	ROG (ton)	PM10 (ton)	PM2.5 (ton)	CO (ton)	SOX (ton)	CO2 (ton)
Offroad Vehicles and Equipment	13.90	1.54	0.62	0.55	8.61	0.32	1,082.1
Onroad Vehicles	4.69	2.42	0.53	0.52	26.01	0.00	4,420.4
Fugitive Dust			5.13	0.97			
Total Emissions for Project Duration	**18.59**	**3.96**	**6.27**	**2.04**	**34.62**	**0.33**	**5,502.5**

Table A-2. 2014 SCAB Fleet Average Emission Factors (OFFROAD2007)

These emission factors are applied to CO2, ROG, SOX only. Load factors are already incorporated.

Equipment	MaxHP	NOX (lbs/hr)	ROG (lbs/hr)	PM (lbs/hr)	CO (lbs/hr)	SOX (lbs/hr)	CO2 (lbs/hr)
Aerial Lifts	15	0.0101	0.0528	0.0633	0.0001	0.0026	8.7
	25	0.0160	0.0494	0.0919	0.0001	0.0048	11.0
	50	0.0534	0.1694	0.1765	0.0003	0.0142	19.6
	120	0.0509	0.2400	0.3531	0.0004	0.0272	38.1
	500	0.1106	0.4444	1.3843	0.0021	0.0408	213
	750	0.2063	0.8033	2.5864	0.0039	0.0751	385
Aerial Lifts Total		0.0483	0.1877	0.2867	0.0004	0.0184	34.7
Air Compressors	15	0.0114	0.0474	0.0697	0.0001	0.0044	7.2
	25	0.0247	0.0711	0.1275	0.0002	0.0075	14.4
	50	0.0831	0.2446	0.2134	0.0003	0.0201	22.3
	120	0.0758	0.3216	0.4682	0.0006	0.0416	47.0
	175	0.0984	0.5035	0.7837	0.0010	0.0431	88.5
	250	0.0948	0.2873	1.0299	0.0015	0.0316	131
	500	0.1543	0.5129	1.5945	0.0023	0.0519	232
	750	0.2412	0.7927	2.5509	0.0036	0.0819	358
	1000	0.3865	1.2935	4.7637	0.0049	0.1363	486
Air Compressors Total		0.0842	0.3313	0.5635	0.0007	0.0396	63.6
Bore/Drill Rigs	15	0.0120	0.0632	0.0754	0.0002	0.0029	10.3
	25	0.0193	0.0658	0.1222	0.0002	0.0048	16.0
	50	0.0255	0.2253	0.2394	0.0004	0.0095	31.0
	120	0.0409	0.4684	0.4254	0.0009	0.0204	77.1
	175	0.0671	0.7539	0.6527	0.0016	0.0246	141
	250	0.0737	0.3426	0.6140	0.0021	0.0179	188
	500	0.1206	0.5512	0.9516	0.0031	0.0294	311
	750	0.2388	1.0890	1.8972	0.0062	0.0582	615
	1000	0.3889	1.6591	5.4092	0.0093	0.1411	928
Bore/Drill Rigs Total		0.0729	0.5030	0.7136	0.0017	0.0248	165
Cement and Mortar Mixers	15	0.0074	0.0386	0.0466	0.0001	0.0020	6.3
	25	0.0259	0.0794	0.1481	0.0002	0.0078	17.6
Cement and Mortar Mixers Total		0.0089	0.0420	0.0550	0.0001	0.0025	7.2
Concrete/Industrial Saws	25	0.0199	0.0678	0.1256	0.0002	0.0048	16.5
	50	0.0864	0.2825	0.2750	0.0004	0.0226	30.2
	120	0.0978	0.4796	0.6733	0.0009	0.0538	74.1
	175	0.1457	0.8685	1.2772	0.0018	0.0645	160
Concrete/Industrial Saws Total		0.0917	0.4031	0.5267	0.0007	0.0413	58.5
Cranes	50	0.0932	0.2808	0.2313	0.0003	0.0221	23.2
	120	0.0859	0.3587	0.5189	0.0006	0.0453	50.1
	175	0.0977	0.4806	0.7306	0.0009	0.0412	80.3
	250	0.0979	0.2817	0.9088	0.0013	0.0317	112
	500	0.1468	0.4948	1.2979	0.0018	0.0470	180
	750	0.2485	0.8312	2.2480	0.0030	0.0803	303
	9999	0.9122	3.0993	9.8090	0.0098	0.3001	971
Cranes Total		0.1276	0.4553	1.1066	0.0014	0.0466	129
Crawler Tractors	50	0.1094	0.3164	0.2544	0.0003	0.0251	24.9
	120	0.1217	0.4814	0.7280	0.0008	0.0627	65.8
	175	0.1594	0.7413	1.1857	0.0014	0.0663	121
	250	0.1672	0.4797	1.4702	0.0019	0.0562	166
	500	0.2420	0.8885	2.0637	0.0025	0.0798	259
	750	0.4355	1.5882	3.7861	0.0047	0.1446	465
	1000	0.6595	2.5182	7.0047	0.0066	0.2228	658
Crawler Tractors Total		0.1499	0.5767	1.0853	0.0013	0.0644	114
Crushing/Proc. Equipment	50	0.1559	0.4812	0.4182	0.0006	0.0383	44.0
	120	0.1284	0.5703	0.8000	0.0010	0.0704	83.1
	175	0.1801	0.9583	1.4195	0.0019	0.0782	167
	250	0.1744	0.5287	1.8241	0.0028	0.0562	245
	500	0.2480	0.8092	2.4341	0.0037	0.0801	374
	750	0.3929	1.2625	3.9931	0.0059	0.1283	589
	9999	1.0512	3.3574	12.4161	0.0131	0.3572	1,308
Crushing/Proc. Equipment Total		0.1597	0.6651	1.0867	0.0015	0.0677	132
Dumpers/Tenders	25	0.0095	0.0317	0.0595	0.0001	0.0027	7.6
Dumpers/Tenders Total		0.0095	0.0317	0.0595	0.0001	0.0027	7.6
Excavators	25	0.0198	0.0677	0.1253	0.0002	0.0047	16.4
	50	0.0728	0.2757	0.2354	0.0003	0.0189	25.0
	120	0.0998	0.5137	0.6331	0.0009	0.0519	73.6
	175	0.1134	0.6660	0.8323	0.0013	0.0457	112
	250	0.1180	0.3480	1.0099	0.0018	0.0333	159
	500	0.1657	0.5102	1.3127	0.0023	0.0463	234
	750	0.2764	0.8452	2.2503	0.0039	0.0782	387
Excavators Total		0.1143	0.5289	0.8299	0.0013	0.0428	120

Table A-2. 2014 SCAB Fleet Average Emission Factors (OFFROAD2007)

These emission factors are applied to CO2, ROG, SOX only. Load factors are already incorporated.

Equipment	MaxHP	NOX (lbs/hr)	ROG (lbs/hr)	PM (lbs/hr)	CO (lbs/hr)	SOX (lbs/hr)	CO2 (lbs/hr)
Forklifts	50	0.0381	0.1569	0.1376	0.0002	0.0106	14.7
	120	0.0390	0.2158	0.2571	0.0004	0.0206	31.2
	175	0.0524	0.3311	0.3883	0.0006	0.0214	56.1
	250	0.0542	0.1595	0.4606	0.0009	0.0149	77.1
	500	0.0752	0.2182	0.5845	0.0011	0.0206	111
Forklifts Total		0.0497	0.2215	0.3551	0.0006	0.0178	54.4
Generator Sets	15	0.0142	0.0670	0.0971	0.0002	0.0054	10.2
	25	0.0256	0.0868	0.1557	0.0002	0.0085	17.6
	50	0.0785	0.2545	0.2731	0.0004	0.0213	30.6
	120	0.1008	0.4857	0.7130	0.0009	0.0537	77.9
	175	0.1236	0.7367	1.1536	0.0016	0.0538	142
	250	0.1181	0.4248	1.5252	0.0024	0.0422	213
	500	0.1683	0.6904	2.1655	0.0033	0.0627	337
	750	0.2811	1.1145	3.6123	0.0055	0.1032	544
	9999	0.7280	2.5702	9.5914	0.0105	0.2595	1,049
Generator Sets Total		0.0702	0.2974	0.5083	0.0007	0.0296	61.0
Graders	50	0.0985	0.3168	0.2668	0.0004	0.0239	27.5
	120	0.1166	0.5268	0.7270	0.0009	0.0614	75.0
	175	0.1386	0.7331	1.0511	0.0014	0.0577	124
	250	0.1407	0.4177	1.2844	0.0019	0.0445	172
	500	0.1759	0.5992	1.5242	0.0023	0.0550	229
	750	0.3746	1.2665	3.3218	0.0049	0.1182	486
Graders Total		0.1362	0.5987	1.0796	0.0015	0.0539	133
Off-Highway Tractors	120	0.2008	0.7118	1.1800	0.0011	0.1014	93.7
	175	0.1960	0.8272	1.4624	0.0015	0.0820	130
	250	0.1564	0.4499	1.3527	0.0015	0.0560	130
	750	0.6254	2.6908	5.4422	0.0057	0.2197	568
	1000	0.9416	4.2058	9.6214	0.0082	0.3259	814
Off-Highway Tractors Total		0.1986	0.7438	1.6111	0.0017	0.0767	151
Off-Highway Trucks	175	0.1355	0.7569	0.9614	0.0014	0.0539	125
	250	0.1326	0.3761	1.1048	0.0019	0.0368	167
	500	0.2065	0.6134	1.5945	0.0027	0.0567	272
	750	0.3371	0.9944	2.6748	0.0044	0.0937	442
	1000	0.5191	1.5673	5.5862	0.0063	0.1665	625
Off-Highway Trucks Total		0.2034	0.6148	1.6679	0.0027	0.0579	260
Other Construction Equipment	15	0.0118	0.0617	0.0737	0.0002	0.0029	10.1
	25	0.0160	0.0544	0.1010	0.0002	0.0039	13.2
	50	0.0670	0.2573	0.2471	0.0004	0.0183	28.0
	120	0.0915	0.5237	0.6571	0.0009	0.0503	80.9
	175	0.0868	0.5867	0.7476	0.0012	0.0374	107
	500	0.1379	0.5080	1.3457	0.0025	0.0441	254
Other Construction Equipment Total		0.0820	0.3697	0.7168	0.0013	0.0296	123
Other General Industrial Equipt	15	0.0066	0.0391	0.0466	0.0001	0.0018	6.4
	25	0.0185	0.0632	0.1170	0.0002	0.0044	15.3
	50	0.0878	0.2626	0.2155	0.0003	0.0211	21.7
	120	0.1082	0.4435	0.6351	0.0007	0.0583	62.0
	175	0.1174	0.5703	0.8698	0.0011	0.0498	95.9
	250	0.1111	0.3089	1.0899	0.0015	0.0346	136
	500	0.2032	0.6064	1.8639	0.0026	0.0630	265
	750	0.3375	0.9995	3.1813	0.0044	0.1061	437
	1000	0.4892	1.5297	5.6194	0.0056	0.1666	560
Other General Industrial Equipmen Total		0.1448	0.4985	1.2360	0.0016	0.0527	152
Other Material Handling Equipr	50	0.1219	0.3632	0.2997	0.0004	0.0293	30.3
	120	0.1051	0.4319	0.6201	0.0007	0.0568	60.7
	175	0.1481	0.7226	1.1054	0.0014	0.0631	122
	250	0.1174	0.3291	1.1643	0.0016	0.0368	145
	500	0.1448	0.4365	1.3440	0.0019	0.0453	192
	9999	0.6617	2.0216	7.4315	0.0073	0.2197	741
Other Material Handling Equipment Total		0.1381	0.4814	1.2068	0.0015	0.0511	141
Pavers	25	0.0239	0.0788	0.1472	0.0002	0.0070	18.7
	50	0.1281	0.3506	0.2860	0.0004	0.0289	28.0
	120	0.1311	0.5011	0.7948	0.0008	0.0682	69.2
	175	0.1695	0.7742	1.3079	0.0014	0.0720	128
	250	0.1962	0.5822	1.8076	0.0022	0.0696	194
	500	0.2165	0.8647	1.9551	0.0023	0.0756	233
Pavers Total		0.1429	0.5277	0.8112	0.0009	0.0564	77.9
Paving Equipment	25	0.0152	0.0520	0.0965	0.0002	0.0038	12.6
	50	0.1094	0.2974	0.2439	0.0003	0.0247	23.9
	120	0.1028	0.3923	0.6241	0.0006	0.0538	54.5
	175	0.1323	0.6049	1.0274	0.0011	0.0565	101
	250	0.1207	0.3595	1.1333	0.0014	0.0429	122
Paving Equipment Total		0.1082	0.4273	0.7312	0.0008	0.0502	68.9

Table A-2. 2014 SCAB Fleet Average Emission Factors (OFFROAD2007)

These emission factors are applied to CO2, ROG, SOX only. Load factors are already incorporated.

Equipment	MaxHP	NOX (lbs/hr)	ROG (lbs/hr)	PM (lbs/hr)	CO (lbs/hr)	SOX (lbs/hr)	CO2 (lbs/hr)
Plate Compactors	15	0.0050	0.0263	0.0314	0.0001	0.0012	4.3
Plate Compactors Total		0.0050	0.0263	0.0314	0.0001	0.0012	4.3
Pressure Washers	15	0.0068	0.0321	0.0465	0.0001	0.0026	4.9
	25	0.0104	0.0352	0.0631	0.0001	0.0035	7.1
	50	0.0281	0.1001	0.1230	0.0002	0.0085	14.3
	120	0.0274	0.1429	0.2101	0.0003	0.0143	24.1
Pressure Washers Total		0.0145	0.0603	0.0838	0.0001	0.0053	9.4
Pumps	15	0.0117	0.0488	0.0716	0.0001	0.0045	7.4
	25	0.0333	0.0959	0.1721	0.0002	0.0101	19.5
	50	0.0949	0.3004	0.3098	0.0004	0.0251	34.3
	120	0.1049	0.4934	0.7241	0.0009	0.0563	77.9
	175	0.1275	0.7382	1.1562	0.0016	0.0556	140
	250	0.1175	0.4096	1.4689	0.0023	0.0416	201
	500	0.1815	0.7226	2.2468	0.0034	0.0667	345
	750	0.3092	1.1947	3.8390	0.0057	0.1124	571
	9999	0.9669	3.3910	12.5393	0.0136	0.3422	1,355
Pumps Total		0.0683	0.2873	0.4427	0.0006	0.0295	49.6
Rollers	15	0.0074	0.0386	0.0461	0.0001	0.0018	6.3
	25	0.0161	0.0549	0.1019	0.0002	0.0040	13.3
	50	0.0947	0.2831	0.2492	0.0003	0.0226	26.0
	120	0.0921	0.4030	0.5906	0.0007	0.0494	59.0
	175	0.1178	0.6182	0.9537	0.0012	0.0510	108
	250	0.1180	0.3717	1.2002	0.0017	0.0407	153
	500	0.1555	0.5926	1.5340	0.0022	0.0537	219
Rollers Total		0.0912	0.4018	0.6164	0.0008	0.0419	67.1
Rough Terrain Forklifts	50	0.1055	0.3654	0.3185	0.0004	0.0271	33.9
	120	0.0877	0.4292	0.5612	0.0007	0.0474	62.4
	175	0.1265	0.7246	0.9750	0.0014	0.0534	125
	250	0.1230	0.3717	1.1633	0.0019	0.0376	171
	500	0.1745	0.5501	1.5313	0.0025	0.0529	257
Rough Terrain Forklifts Total		0.0929	0.4608	0.6101	0.0008	0.0477	70.3
Rubber Tired Dozers	175	0.2034	0.8392	1.4854	0.0015	0.0841	129
	250	0.2322	0.6560	1.9517	0.0021	0.0821	183
	500	0.3072	1.3307	2.5592	0.0026	0.1058	265
	750	0.4633	1.9954	3.9201	0.0040	0.1603	399
	1000	0.7196	3.2150	7.1336	0.0060	0.2458	592
Rubber Tired Dozers Total		0.2854	1.1058	2.3867	0.0025	0.0993	239
Rubber Tired Loaders	25	0.0204	0.0697	0.1291	0.0002	0.0049	16.9
	50	0.1092	0.3535	0.3000	0.0004	0.0266	31.1
	120	0.0902	0.4119	0.5654	0.0007	0.0477	58.9
	175	0.1168	0.6261	0.8915	0.0012	0.0489	106
	250	0.1186	0.3553	1.0966	0.0017	0.0375	149
	500	0.1769	0.6085	1.5507	0.0023	0.0554	237
	750	0.3648	1.2450	3.2733	0.0049	0.1153	486
	1000	0.4927	1.7350	5.6204	0.0060	0.1686	594
Rubber Tired Loaders Total		0.1122	0.4683	0.8620	0.0012	0.0461	109
Scrapers	120	0.1770	0.6882	1.0571	0.0011	0.0913	93.9
	175	0.1973	0.9065	1.4751	0.0017	0.0824	148
	250	0.2135	0.6146	1.8936	0.0024	0.0726	209
	500	0.3033	1.1355	2.6139	0.0032	0.1012	321
	750	0.5260	1.9562	4.6194	0.0056	0.1767	555
Scrapers Total		0.2648	0.9890	2.2371	0.0027	0.0928	262
Signal Boards	15	0.0072	0.0377	0.0450	0.0001	0.0018	6.2
	50	0.1035	0.3331	0.3273	0.0005	0.0269	36.2
	120	0.1072	0.5163	0.7320	0.0009	0.0584	80.2
	175	0.1415	0.8317	1.2462	0.0017	0.0621	155
	250	0.1520	0.5213	1.8056	0.0029	0.0525	255
Signal Boards Total		0.0181	0.0929	0.1332	0.0002	0.0071	16.7
Skid Steer Loaders	25	0.0195	0.0610	0.1145	0.0002	0.0059	13.8
	50	0.0443	0.2196	0.2161	0.0003	0.0134	25.5
	120	0.0380	0.2727	0.3020	0.0005	0.0205	42.8
Skid Steer Loaders Total		0.0406	0.2262	0.2369	0.0004	0.0152	30.3
Surfacing Equipment	50	0.0442	0.1367	0.1310	0.0002	0.0110	14.1
	120	0.0904	0.4182	0.6174	0.0007	0.0477	63.8
	175	0.0842	0.4716	0.7317	0.0010	0.0363	85.8
	250	0.0955	0.3237	1.0228	0.0015	0.0341	135
	500	0.1433	0.6069	1.5156	0.0022	0.0516	221
	750	0.2284	0.9503	2.4407	0.0035	0.0820	347
Surfacing Equipment Total		0.1194	0.4930	1.1688	0.0017	0.0427	166

Table A-2. 2014 SCAB Fleet Average Emission Factors (OFFROAD2007)

These emission factors are applied to CO2, ROG, SOX only. Load factors are already incorporated.

Equipment	MaxHP	NOX (lbs/hr)	ROG (lbs/hr)	PM (lbs/hr)	CO (lbs/hr)	SOX (lbs/hr)	CO2 (lbs/hr)
Sweepers/Scrubbers	15	0.0124	0.0729	0.0870	0.0002	0.0034	11.9
	25	0.0237	0.0808	0.1495	0.0002	0.0057	19.6
	50	0.0911	0.3300	0.2939	0.0004	0.0241	31.6
	120	0.0991	0.5098	0.6481	0.0009	0.0543	75.0
	175	0.1317	0.7996	1.0280	0.0016	0.0561	139
	250	0.1086	0.3327	1.0406	0.0018	0.0325	162
Sweepers/Scrubbers Total		0.1029	0.5086	0.6353	0.0009	0.0447	78.5
Tractors/Loaders/Backhoes	25	0.0193	0.0654	0.1228	0.0002	0.0052	15.9
	50	0.0792	0.3103	0.2765	0.0004	0.0211	30.3
	120	0.0634	0.3503	0.4252	0.0006	0.0337	51.7
	175	0.0924	0.5857	0.7161	0.0011	0.0380	101
	250	0.1142	0.3608	1.0294	0.0019	0.0330	172
	500	0.2186	0.7245	1.8255	0.0039	0.0627	345
	750	0.3304	1.0864	2.8317	0.0058	0.0958	517
Tractors/Loaders/Backhoes Total		0.0728	0.3747	0.4977	0.0008	0.0341	66.8
Trenchers	15	0.0099	0.0517	0.0617	0.0001	0.0024	8.5
	25	0.0397	0.1355	0.2509	0.0004	0.0095	32.9
	50	0.1477	0.3990	0.3332	0.0004	0.0333	32.9
	120	0.1212	0.4640	0.7489	0.0008	0.0629	64.9
	175	0.1864	0.8579	1.4773	0.0016	0.0798	144
	250	0.2226	0.6786	2.0933	0.0025	0.0813	223
	500	0.2835	1.2125	2.6464	0.0031	0.1024	311
	750	0.5377	2.2784	5.0912	0.0059	0.1947	587
Trenchers Total		0.1350	0.4606	0.6384	0.0007	0.0517	58.7
Welders	15	0.0098	0.0408	0.0599	0.0001	0.0038	6.2
	25	0.0193	0.0555	0.0996	0.0001	0.0058	11.3
	50	0.0886	0.2652	0.2435	0.0003	0.0219	26.0
	120	0.0601	0.2632	0.3850	0.0005	0.0328	39.5
	175	0.1021	0.5438	0.8502	0.0011	0.0448	98.2
	250	0.0801	0.2545	0.9129	0.0013	0.0274	119
	500	0.1028	0.3644	1.1332	0.0016	0.0359	168
Welders Total		0.0589	0.2041	0.2436	0.0003	0.0206	25.6

Table A-3a. Offroad Emissions Calculation - Using SCAB Emission Factors

2012 SCAB emission factors (EFs) corresponding to OFFROAD2007 model are applied to CO2, ROG, and SOX.
Tier 2 and 3 EFs are applied to NOx, PM, and CO. Calculation details are provided in *Offroad Tier 2* and *Offroad Tier 3* worksheets.
Load factors are used in conjunction with Tier 2and 3 EFs.

Offroad Equipment Project Total

ROG lbs/day	SOx lbs/day	CO2 lbs/day	ROG (tons)	SOX (tons)	CO2 (tons)
32.93	11.35	33598.70	1.54	0.32	1,082.07

Site Preparation/Grading/Earthwork
3 months

Primary Equipment Description	Offroad Equip Category	HP Estimate	Primary Equip Quantity	Activity Schedule Estimate (Days)	Duration of Use (Hours/ Day)	Total Hours of Utilization 6,120	HP Used for OFFROAD	2012 SCAB ROG (lbs/hr)	2012 SCAB SOX (lbs/hr)	2012 SCAB CO2 (lbs/hr)	2012 SCAB ROG lbs/day	2012 SCAB SOx lbs/day	2012 SCAB CO2 lbs/day	2012 SCAB ROG (tons)	2012 SCAB SOX (tons)	2012 SCAB CO2 (tons)
Grader	Grader	185	1	90	6	540	250	0.1407	0.0445	172.1132	0.8440	0.2669	1032.6790	0.0380	0.0120	46.4706
Rough-Terrain Forklifts	Rough Terrain Forklift	99	2	90	4	720	120	0.0955	0.0007	62.4498	0.7640	0.0059	499.5985	0.0344	0.0003	22.4819
Track Type Dozer	Crawler Tractor	185	1	90	6	540	250	0.1764	0.0019	166.1315	1.0584	0.0112	996.7893	0.0476	0.0005	44.8555
Excavator	Excavator	85	1	90	8	720	120	0.0998	0.0519	73.6231	0.7981	0.4149	588.9848	0.0359	0.0187	26.5043
Rubber-Tired Loaders	Rubber Tired Loader	78	1	90	8	720	120	0.0971	0.0007	58.9135	0.7765	0.0055	471.3081	0.0349	0.0002	21.2089
Rollers	Roller	100	1	90	6	540	120	0.0921	0.0494	58.9887	0.5526	0.2962	353.9325	0.0249	0.0133	15.9270
Scrapers	Scraper	365	1	90	6	540	500	0.3186	0.0032	321.4286	1.9118	0.0189	1928.5717	0.0860	0.0009	86.7857
DumpTruck	Grader	473	1	90	4	360	500	0.2065	0.0567	272.3340	0.8262	0.2268	1089.3359	0.0372	0.0102	49.0201
4000 Gallon Water Truck	Off-highway Truck	250	1	90	8	720	250	0.1326	0.0368	166.5454	1.0605	0.2948	1332.3634	0.0477	0.0133	59.9564
ATV Gator Carts	Other Construction Equipment	100	1	90	8	720	120	0.0915	0.0503	80.8587	0.7318	0.4021	646.8700	0.0329	0.0181	29.1091

Concrete Foundations
3 months

Primary Equipment Description	Offroad Equip Category	HP Estimate	Primary Equip Quantity	Activity Schedule Estimate (Days)	Duration of Use (Hours/ Day)	Total Hours of Utilization 8,100	HP Used for OFFROAD	SCAB ROG (lbs/hr)	SCAB SOX (lbs/hr)	SCAB CO2 (lbs/hr)	2012 SCAB ROG lbs/day	2012 SCAB PM lbs/day	2012 SCAB CO2 lbs/day	2012 SCAB ROG (tons)	2012 SCAB SOX (tons)	2012 SCAB CO2 (tons)
Pavers	Paving Equipment	173	1	90	6	540	250	0.1207	0.0429	122.2913	0.7241	0.2577	733.7479	0.0326	0.0116	33.0187
Concrete Pump	Concrete Pumps	10	4	90	4	1440	50	0.0949	0.0251	34.3349	1.5184	0.4015	549.3579	0.0683	0.0181	24.7211
10,000 lb Rough Terrain Fork Lift	Rough Terrain Forklift	99	2	90	6	1080	120	0.0955	0.0007	62.4498	1.1460	0.0088	749.3978	0.0516	0.0004	33.7229
Concrete Truck	Off-highway Truck	250	2	90	4	720	250	0.1326	0.0368	166.5454	1.0605	0.2948	1332.3634	0.0477	0.0133	59.9564
Drum Type Compactor	Paving Equipment	250	1	90	6	540	250	0.1207	0.0429	122.2913	0.7241	0.2577	733.7479	0.0326	0.0116	33.0187
ATV Gator Carts	Other Construction Equipment	100	1	90	6	540	120	0.0915	0.0503	80.8587	0.5488	0.3016	485.1525	0.0247	0.0136	21.8319
Welders	Welders	50	6	90	6	3240	50	0.0886	0.0219	25.9581	3.1913	0.7899	934.4901	0.1436	0.0355	42.0521

Table A-3a. Offroad Emissions Calculation - Using SCAB Emission Factors

2012 SCAB emission factors (EFs) corresponding to OFFROAD2007 model are applied to CO2, ROG, and SOX.
Tier 2 and 3 EFs are applied to NOx, PM, and CO. Calculation details are provided in *Offroad Tier 2* and *Offroad Tier 3* worksheets.
Load factors are used in conjunction with Tier 2and 3 EFs.

Offroad Equipment Project Total

ROG lbs/day	SOx lbs/day	CO2 lbs/day	ROG (tons)	SOX (tons)	CO2 (tons)
32.93	11.35	33598.70	1.54	0.32	1,082.07

Structural Steel Work
4 months

Primary Equipment Description	Offroad Equip Category	HP Estimate	Primary Equip Quantity	Activity Schedule Estimate (Days)	Duration of Use (Hours/ Day)	Total Hours of Utilization 8,760	HP Used for OFFROAD	SCAB ROG (lbs/hr)	SCAB SOX (lbs/hr)	SCAB CO2 (lbs/hr)	2012 SCAB ROG lbs/day	2012 SCAB PM lbs/day	2012 SCAB CO2 lbs/day	2012 SCAB ROG (tons)	2012 SCAB SOX (tons)	2012 SCAB CO2 (tons)
10,000 lb Rough Terrain Fork Lift	Rough Terrain Forklift	99	2	120	5	1200	120	0.0955	0.0007	62.4498	0.9550	0.0073	624.4981	0.0573	0.0004	37.4699
30 Ton Crane Truck	Off-highway Truck	99	1	120	5	600	175	0.1441	0.0014	125.0878	0.7206	0.0070	625.4389	0.0432	0.0004	37.5263
80 Ton Rough Terrain Cranes	Off-highway Truck	250	1	120	6	720	250	0.1400	0.0019	166.5454	0.8398	0.0112	999.2724	0.0504	0.0007	59.9563
Compressor Truck	Air Compressor	25	2	120	8	1920	50	0.0266	0.0002	14.4462	0.4253	0.0029	231.1396	0.0255	0.0002	13.8684
Welders	Welders	50	6	120	6	4320	50	0.0886	0.0219	25.9581	3.1913	0.7899	934.4901	0.1915	0.0474	56.0694

Electrical/Instrumentation Work
2 months

Primary Equipment Description	Offroad Equip Category	HP Estimate	Primary Equip Quantity	Activity Schedule Estimate (Days)	Duration of Use (Hours/ Day)	Total Hours of Utilization 3,240	HP Used for OFFROAD	SCAB ROG (lb/hr)	SCAB SOX (lb/hr)	SCAB CO2 (lb/hr)	2012 SCAB ROG lbs/day	2012 SCAB PM lbs/day	2012 SCAB CO2 lbs/day	2012 SCAB ROG (tons)	2012 SCAB SOX (tons)	2012 SCAB CO2 (tons)
30 Ton Crane Truck	Off-highway Truck	99	1	60	4	240	175	0.1441	0.0014	125.0878	0.5764	0.0056	500.3511	0.0173	0.0002	15.0105
20,000 lb. Rough Terrain Fork Lift	Rough Terrain Forklift	99	2	60	6	720	120	0.0955	0.0007	62.4498	1.1460	0.0088	749.3978	0.0344	0.0003	22.4819
Carryall Vehicles	Off-highway Truck	180	2	60	4	480	250	0.1326	0.0368	166.5454	1.0605	0.2948	1332.3634	0.0318	0.0088	39.9709
Generator	Generator Sets	30	3	60	10	1800	50	0.0785	0.0213	30.6230	2.3555	0.6396	918.6894	0.0707	0.0192	27.5607

Architectural and Landscape
2 months

Primary Equipment Description	Offroad Equip Category	HP Estimate	Primary Equip Quantity	Activity Schedule Estimate (Days)	Duration of Use (Hours/ Day)	Total Hours of Utilization 4,680	HP Used for OFFROAD	SCAB ROG (lbs/hr)	SCAB SOX (lbs/hr)	SCAB CO2 (lbs/hr)	2012 SCAB ROG lbs/day	2012 SCAB PM lbs/day	2012 SCAB CO2 lbs/day	2012 SCAB ROG (tons)	2012 SCAB SOX (tons)	2012 SCAB CO2 (tons)
Front Loader	Tractor/loader/backhoe	78	1	60	8	480	120	0.0694	0.0006	51.7280	0.5555	0.0049	413.8241	0.0167	0.0001	12.4147
30 Ton Crane Truck	Off-highway Truck	99	1	60	8	480	175	0.1441	0.0014	125.0878	1.1529	0.0113	1000.7022	0.0346	0.0003	30.0211
20,000 lb. Rough Terrain Fork Lift	Rough Terrain Forklift	99	1	60	4	240	120	0.0955	0.0007	62.4498	0.3820	0.0029	249.7993	0.0115	0.0001	7.4940
Vibratory Compactor	Paving Equipment	80	1	60	2	120	120	0.1028	0.0538	54.4994	0.2055	0.1076	108.9988	0.0062	0.0032	3.2700
Backhoe	Tractor/loader/backhoe	85	1	60	8	480	120	0.0634	0.0337	51.7280	0.5074	0.2693	413.8241	0.0152	0.0081	12.4147
Trencher	Trencher	75	1	60	8	480	120	0.1212	0.0629	64.8951	0.9696	0.5030	519.1612	0.0291	0.0151	15.5748
Manlifts	Aerial Lift	75	2	60	8	960	120	0.0509	0.0272	38.0718	0.8143	0.4358	609.1489	0.0244	0.0131	18.2745
Generator	Generator Sets	30	3	60	8	1440	50	0.0785	0.0213	30.6230	1.8844	0.5117	734.9515	0.0565	0.0154	22.0485

Substation and O&M Bldgs
2 months

Primary Equipment Description	Offroad Equip Category	HP Estimate	Primary Equip Quantity	Activity Schedule Estimate (Days)	Duration of Use (Hours/ Day)	Total Hours of Utilization 9,000	HP Used for OFFROAD	SCAB ROG (lbs/hr)	SCAB SOX (lbs/hr)	SCAB CO2 (lbs/hr)	2012 SCAB ROG lbs/day	2012 SCAB PM lbs/day	2012 SCAB CO2 lbs/day	2012 SCAB ROG (tons)	2012 SCAB SOX (tons)	2012 SCAB CO2 (tons)
Front Loader	Tractor/loader/backhoe	78	1	60	8	480	120	0.0694	0.0006	51.7280	0.5555	0.0049	413.8241	0.0167	0.0001	12.4147
30 Ton Crane Truck	Off-highway Truck	99	1	60	8	480	120	0.0185	0.0044	15.3491	0.1481	0.0349	122.7929	0.0044	0.0010	3.6838
Track Type Dozer	Crawler Tractor	185	1	90	8	720	250	0.1764	0.0019	166.1315	1.4112	0.0150	1329.0524	0.0635	0.0007	59.8074
Excavator	Excavator	85	1	90	8	720	120	0.0998	0.0519	73.6231	0.7981	0.4149	588.9848	0.0359	0.0187	26.5043
Rollers	Roller	100	1	90	8	720	120	0.0921	0.0494	58.9887	0.7368	0.3949	471.9100	0.0332	0.0178	21.2359
4000 Gallon Water Truck	Off-highway Truck	250	2	90	8	1440	250	0.1326	0.0368	166.5454	2.1209	0.5896	2664.7267	0.0954	0.0265	119.9127
20,000 lb. Rough Terrain Fork Lift	Rough Terrain Forklift	99	1	60	4	240	120	0.0955	0.0007	62.4498	0.3820	0.0029	249.7993	0.0115	0.0001	7.4940
Vibratory Compactor	Paving Equipment	80	1	60	2	120	120	0.0949	0.0251	34.3349	0.1898	0.0502	68.6697	0.0057	0.0015	2.0601
Backhoe	Tractor/loader/backhoe	85	1	60	8	480	120	0.5377	0.1947	586.8779	4.3017	1.5573	4695.0230	0.1291	0.0467	140.8507
Trencher	Trencher	75	1	60	8	480	120	0.0589	0.0206	25.6027	0.4710	0.1646	204.8214	0.0141	0.0049	6.1446
Manlifts	Aerial Lift	75	2	60	8	960	120	0.0842	0.0396	63.6073	1.3479	0.6331	1017.7171	0.0404	0.0190	30.5315
ATV Gator Carts	Other Construction Equipment	100	1	90	8	720	120	0.0915	0.0503	80.8587	0.7318	0.4021	646.8700	0.0329	0.0181	29.1091
Generator	Generator Sets	30	3	60	8	1440	50	0.3746	0.1182	485.7419	8.9896	2.8362	11657.8049	0.2697	0.0851	349.7341

Table A-3a. Offroad Emissions Calculation - Using SCAB Emission Factors

2012 SCAB emission factors (EFs) corresponding to OFFROAD2007 model are applied to CO2, ROG, and SOX.
Tier 2 and 3 EFs are applied to NOx, PM, and CO. Calculation details are provided in *Offroad Tier 2* and *Offroad Tier 3* worksheets.
Load factors are used in conjunction with Tier 2and 3 EFs.

Offroad Equipment Project Total

ROG lbs/day	SOx lbs/day	CO2 lbs/day	ROG (tons)	SOX (tons)	CO2 (tons)
32.93	11.35	33598.70	1.54	0.32	1,082.07

Transmission Line Installation

12 months

Primary Equipment Description	Offroad Equip Category	HP Estimate	Primary Equip Quantity	Activity Schedule Estimate (Days)	Duration of Use (Hours/ Day)	Total Hours of Utilization 5,116	HP Used for OFFROAD	2012 SCAB ROG (lbs/hr)	2012 SCAB SOX (lbs/hr)	2012 SCAB CO2 (lbs/hr)	2012 SCAB ROG lbs/day	2012 SCAB SOX lbs/day	2012 SCAB CO2 lbs/day	2012 SCAB ROG (tons)	2012 SCAB SOX (tons)	2012 SCAB CO2 (tons)
Sleeving Rigs	Other Gen Indust Equipment	85	1	152	4	608	120	0.5779	0.2075	555.2765	2.3116	0.8301	2221.1061	0.1757	0.0631	168.8041
Hydralic Pump Motor	Pumps	10	2	10	5	100	15	0.2050	0.0901	143.8979	2.0499	0.9009	1438.9789	0.0102	0.0045	7.1949
580 Case Backhoe	Tractor/loader/backhoe	120	1	152	2	304	120	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Spacing Carts	Other Gen Indust Equipment	10	4	152	4	2432	15	0.2916	0.1087	262.4958	4.6649	1.7389	4199.9328	0.3545	0.1322	319.1949
3 Drum Strawline Pullers	Other Gen Indust Equipment	85	1	152	4	608	120	0.1284	0.0703	80.2066	0.5135	0.2812	320.8265	0.0390	0.0214	24.3828
60lk Puller	Other Gen Indust Equipment	250	1	152	3	456	250	0.1661	0.0750	154.5445	0.4984	0.2249	463.6335	0.0379	0.0171	35.2361
Triple Conductor Tensioner	Other Gen Indust Equipment	250	1	152	2	304	250	0.1661	0.0750	154.5445	0.3323	0.1499	309.0890	0.0253	0.0114	23.4908
Sag Cat w2 winches	Grader	350	1	152	2	304	500	0.1894	0.0642	256.5709	0.3787	0.1285	513.1418	0.0288	0.0098	38.9988

Decommissioning

6 months

Primary Equipment Description	Offroad Equip Category	HP Estimate	Primary Equip Quantity	Activity Schedule Estimate (Days)	Duration of Use (Hours/ Day)	Total Hours of Utilization 9,720	HP Used for OFFROAD	2012 SCAB ROG (lbs/hr)	2012 SCAB SOX (lbs/hr)	2012 SCAB CO2 (lbs/hr)	2012 SCAB ROG lbs/day	2012 SCAB SOx lbs/day	2012 SCAB CO2 lbs/day	2012 SCAB ROG (tons)	2012 SCAB SOX (tons)	2012 SCAB CO2 (tons)
Grader	Grader	185	1	180	6	1080	250	0.1168	0.0489	106.3152	0.7010	0.2934	637.8910	0.0631	0.0264	57.4102
Rough-Terrain Forklifts	Rough Terrain Forklift	99	2	180	4	1440	120	0.0955	0.0007	62.4498	0.7640	0.0059	499.5985	0.0688	0.0005	44.9639
Track Type Dozer	Crawler Tractor	185	1	180	6	1080	250	0.1764	0.0019	166.1315	1.0584	0.0112	996.7893	0.0953	0.0010	89.7110
Excavator	Excavator	85	1	180	8	1440	120	0.9669	0.3422	1354.8352	7.7349	2.7378	10838.6817	0.6961	0.2464	975.4814
Rubber-Tired Loaders	Rubber Tired Loader	78	1	180	8	1440	120	0.0971	0.0007	58.9135	0.7765	0.0055	471.3081	0.0699	0.0005	42.4177
80 Ton Rough Terrain Cranes	Off-highway Truck	250	1	180	6	1080	250	0.1400	0.0019	166.5454	0.8398	0.0112	999.2724	0.0756	0.0010	89.9345
DumpTruck	Grader	473	1	180	4	720	500	0.0072	0.0018	6.1697	0.0287	0.0070	24.6790	0.0026	0.0006	2.2211
4000 Gallon Water Truck	Off-highway Truck	250	1	180	8	1440	250	0.2648	0.0928	262.4927	2.1181	0.7423	2099.9416	0.1906	0.0668	188.9947
											14.02	**3.81**	**16568.16**	**1.26**	**0.34**	**1491.13**

Table A-4. Offroad Emissions Calculations - Using Tier 2 Emission Factors

Tier 2 emission factors (EFs) are applied to NOx, PM, and CO. Load Factors (LFs) are used in conjunction with Tier 2 EFs.
2014 SCAB EFs (OFFROAD2007) are applied to CO2, ROG, and SOX. Calculation detail is provided in Offroad SCAB worksheet.

Offroad Equipment Project Total

NOX lbs/day	PM lbs/day	CO lbs/day	NOX (tons)	PM (tons)	CO (tons)
99.36	4.61	63.31	13.90	0.62	8.61

Site Preparation/Grading/Earthwork
3 months

Primary Equipment Description	Offroad Equip Category	HP Estimate	Primary Equip Quantity	Activity Schedule Estimate (Days)	Duration of Use (Hours/ Day)	Total Hours of Utilization 4,320	Load Factor for Tier 2	HP Used for OFFROAD	TIER 2 NOX (lbs/hr)	TIER 2 PM (lbs/hr)	TIER 2 CO (lbs/hr)	TIER 2 NOX lbs/day	TIER 2 PM lbs/day	TIER 2 CO lbs/day	TIER 2 CO (tons)	TIER 2 PM (tons)	TIER 2 CO (tons)
Road Grader	Grader	185	1	90	6	540	0.61	250	1.2191	0.0373	0.6468	7.31	0.22	3.88	0.3291	0.0101	0.1746
Rough-Terrain Forklifts	Rough Terrain Forklift	99	2	90	4	720	0.6	250	0.7333	0.0393	0.4845	5.87	0.31	3.88	0.2640	0.0141	0.1744
Track Type Dozer	Grader	185	1	90	6	540	0.61	500	1.2191	0.0373	0.6468	7.31	0.22	3.88	0.3291	0.0101	0.1746
Excavator	Excavator	85	1	90	8	720	0.57	120	0.5981	0.0320	0.3952	4.79	0.26	3.16	0.2153	0.0115	0.1423
Rubber-Tired Loaders	Rubber Tired Loader	78	1	90	8	720	0.54	250	0.5200	0.0279	0.3436	4.16	0.22	2.75	0.1872	0.0100	0.1237
Rollers	Roller	100	1	90	6	540	0.56	120	0.6049	0.0272	0.4568	3.63	0.16	2.74	0.1633	0.0073	0.1233
Scrapers	Scraper	365	1	90	6	540	0.72	250	2.7810	0.0869	1.5063	16.69	0.52	9.04	0.7509	0.0235	0.4067
DumpTruck	Grader	473	1	90	4	360	0.57	500	2.8530	0.0892	1.5454	11.41	0.36	6.18	0.5135	0.0160	0.2782
4000 Gallon Water Truck	Off-highway Truck	250	1	90	8	720	0.57	250	1.5394	0.0471	0.8168	12.31	0.38	6.53	0.5542	0.0170	0.2940
ATV Gator Carts	Other Construction Equipment	100	1	90	4	360	0.62	120	0.6698	0.0301	0.5057	2.68	0.12	2.02	0.1206	0.0054	0.0910

Concrete Foundations
3 months

Primary Equipment Description	Offroad Equip Category	HP Estimate	Primary Equip Quantity	Activity Schedule Estimate (Days)	Duration of Use (Hours/ Day)	Total Hours of Utilization 8,100	Load Factor for Tier 2	HP Used for OFFROAD	TIER 2 NOX (lbs/hr)	TIER 2 PM (lbs/hr)	TIER 2 CO (lbs/hr)	TIER 2 NOX lbs/day	TIER 2 PM lbs/day	TIER 2 CO lbs/day	TIER 2 CO (tons)	TIER 2 PM (tons)	TIER 2 CO (tons)
Pavers	Paving Equipment	173	1	90	6	540	0.53	250	0.9905	0.0445	0.7479	5.94	0.27	4.49	0.2674	0.0120	0.2019
Concrete Pump	Concrete Pumps	10	4	90	4	1440	0.74	50	0.0914	0.0098	0.0979	1.46	0.16	1.57	0.0658	0.0070	0.0705
10,000 lb Rough Terrain Fork Lift	Rough Terrain Forklift	99	2	90	6	1080	0.6	250	0.7333	0.0393	0.4845	8.80	0.47	5.81	0.3960	0.0212	0.2616
Concrete Truck	Off-highway Truck	250	2	90	4	720	0.57	250	1.5394	0.0471	0.8168	12.31	0.38	6.53	0.5542	0.0170	0.2940
Drum Type Compactor	Paving Equipment	250	1	90	6	540	0.53	250	1.4313	0.0438	0.7595	8.59	0.26	4.56	0.3865	0.0118	0.2051
ATV Gator Carts	Other Construction Equipment	100	1	90	6	540	0.53	250	0.5725	0.0257	0.4323	3.44	0.15	2.59	0.1546	0.0069	0.1167
Welders	Welders	50	6	90	6	3240	0.45	50	0.2778	0.0149	0.1835	10.00	0.54	6.61	0.4500	0.0241	0.2973

Table A-4. Offroad Emissions Calculations - Using Tier 2 Emission Factors

Tier 2 emission factors (EFs) are applied to NOx, PM, and CO. Load Factors (LFs) are used in conjunction with Tier 2 EFs.
2014 SCAB EFs (OFFROAD2007) are applied to CO2, ROG, and SOX. Calculation detail is provided in Offroad SCAB worksheet.

Offroad Equipment Project Total

NOX lbs/day	PM lbs/day	CO lbs/day	NOX (tons)	PM (tons)	CO (tons)
99.36	4.61	63.31	13.90	0.62	8.61

Structural Steel Work
4 months

Primary Equipment Description	Offroad Equip Category	HP Estimate	Primary Equip Quantity	Activity Schedule Estimate (Days)	Duration of Use (Hours/ Day)	Total Hours of Utilization 8,520	Load Factor for Tier 2	HP Used for OFFROAD	TIER 2 NOX (lbs/hr)	TIER 2 PM (lbs/hr)	TIER 2 CO (lbs/hr)	TIER 2 NOX lbs/day	TIER 2 PM lbs/day	TIER 2 CO lbs/day	TIER 2 NOX (tons)	TIER 2 PM (tons)	TIER 2 CO (tons)
10,000 lb Rough Terrain Fork Lift	Rough Terrain Forklift	99	2	120	5	1200	0.6	250	0.7333	0.0393	0.4845	7.33	0.39	4.85	0.4400	0.0236	0.2907
30 Ton Crane Truck	Off-highway Truck	99	1	120	5	600	0.57	500	0.6967	0.0373	0.4603	3.48	0.19	2.30	0.2090	0.0112	0.1381
80 Ton Rough Terrain Cranes	Off-highway Truck	250	1	120	4	480	0.57	500	1.5394	0.0471	0.8168	6.16	0.19	3.27	0.3694	0.0113	0.1960
Compressor Truck	Off-highway Truck	25	2	120	8	1920	0.57	500	0.1759	0.0141	0.1288	2.81	0.23	2.06	0.1689	0.0136	0.1237
Welders	Welders	50	6	120	6	4320	0.45	50	0.2778	0.0149	0.1835	10.00	0.54	6.61	0.6000	0.0321	0.3964

Electrical/Instrumentation Work
2 months

Primary Equipment Description	Offroad Equip Category	HP Estimate	Primary Equip Quantity	Activity Schedule Estimate (Days)	Duration of Use (Hours/ Day)	Total Hours of Utilization 3,240	Load Factor for Tier 2	HP Used for OFFROAD	TIER 2 NOX (lb/hr)	TIER 2 PM (lb/hr)	TIER 2 CO (lb/hr)	TIER 2 NOX lbs/day	TIER 2 PM lbs/day	TIER 2 CO lbs/day	NOX (tons)	PM (tons)	CO (tons)
30 Ton Crane Truck	Off-highway Truck	99	1	60	4	240	0.57	500	0.6967	0.0373	0.4603	2.79	0.15	1.84	0.0836	0.0045	0.0552
20,000 lb. Rough Terrain Fork Lift	Rough Terrain Forklift	99	2	60	6	720	0.6	500	0.7333	0.0393	0.4845	8.80	0.47	5.81	0.2640	0.0141	0.1744
Carryall Vehicles	Off-highway Truck	180	2	60	4	480	0.57	250	1.1083	0.0339	0.5881	8.87	0.27	4.70	0.2660	0.0081	0.1411
Generator	Generator Sets	30	3	60	10	1800	0.74	50	0.2741	0.0220	0.2007	8.22	0.66	6.02	0.2467	0.0198	0.1806

Architectural and Landscape **Upgrade**
2 months

Primary Equipment Description	Offroad Equip Category	HP Estimate	Primary Equip Quantity	Activity Schedule Estimate (Days)	Duration of Use (Hours/ Day)	Total Hours of Utilization 4,680	Load Factor for Tier 2	HP Used for OFFROAD	TIER 2 NOX (lbs/hr)	TIER 2 PM (lbs/hr)	TIER 2 CO (lbs/hr)	TIER 2 NOX lbs/day	TIER 2 PM lbs/day	TIER 2 CO lbs/day	TIER 2 NOX (tons)	TIER 2 PM (tons)	TIER 2 CO (tons)
Front Loader	Tractor/loader/backhoe	78	1	60	8	480	0.55	250	0.5296	0.0284	0.3499	4.24	0.23	2.80	0.1271	0.0068	0.0840
30 Ton Crane Truck	Off-highway Truck	99	1	60	8	480	0.57	250	0.6967	0.0373	0.4603	5.57	0.30	3.68	0.1672	0.0090	0.1105
20,000 lb. Rough Terrain Fork Lift	Rough Terrain Forklift	99	1	60	4	240	0.6	250	0.7333	0.0393	0.4845	2.93	0.16	1.94	0.0880	0.0047	0.0581
Vibratory Compactor	Paving Equipment	80	1	60	2	120	0.53	120	0.5235	0.0280	0.3459	1.05	0.06	0.69	0.0314	0.0017	0.0208
Backhoe	Tractor/loader/backhoe	85	1	60	8	480	0.55	120	0.5772	0.0309	0.3813	4.62	0.25	3.05	0.1385	0.0074	0.0915
Trencher	Trencher	75	1	60	8	480	0.75	120	0.6944	0.0372	0.4588	5.56	0.30	3.67	0.1667	0.0089	0.1101
Manlifts	Aerial Lift	75	2	60	8	960	0.46	120	0.4259	0.0228	0.2814	6.81	0.37	4.50	0.2044	0.0110	0.1351
Generator	Generator Sets	30	3	60	8	1440	0.74	50	0.2741	0.0220	0.2007	6.58	0.53	4.82	0.1973	0.0159	0.1445

Substation and O&M Bldgs
2 months

Primary Equipment Description	Offroad Equip Category	HP Estimate	Primary Equip Quantity	Activity Schedule Estimate (Days)	Duration of Use (Hours/ Day)	Total Hours of Utilization 8,220	Load Factor for Tier 2	HP Used for OFFROAD	TIER 2 NOX (lbs/hr)	TIER 2 PM (lbs/hr)	TIER 2 CO (lbs/hr)	TIER 2 NOX lbs/day	TIER 2 PM lbs/day	TIER 2 CO lbs/day	TIER 2 NOX (tons)	TIER 2 PM (tons)	TIER 2 CO (tons)
Front Loader	Tractor/loader/backhoe	78	1	60	6	360	0.55	250	0.5296	0.0284	0.3499	3.18	0.17	2.10	0.0953	0.0051	0.0630
30 Ton Crane Truck	Off-highway Truck	99	1	60	6	360	0.57	250	0.6967	0.0373	0.4603	4.18	0.22	2.76	0.1254	0.0067	0.0829
Track Type Dozer	Grader	185	1	90	6	540	0.61	500	1.2191	0.0373	0.6468	7.31	0.22	3.88	0.3291	0.0101	0.1746
Excavator	Excavator	85	1	90	6	540	0.57	120	0.5981	0.0320	0.3952	3.59	0.19	2.37	0.1615	0.0087	0.1067
Rollers	Roller	100	1	90	6	540	0.56	120	0.6049	0.0272	0.4568	3.63	0.16	2.74	0.1633	0.0073	0.1233
4000 Gallon Water Truck	Off-highway Truck	250	2	90	8	1440	0.57	250	1.5394	0.0471	0.8168	24.63	0.75	13.07	1.1083	0.0339	0.5881
20,000 lb. Rough Terrain Fork Lift	Rough Terrain Forklift	99	1	60	4	240	0.6	250	0.7333	0.0393	0.4845	2.93	0.16	1.94	0.0880	0.0047	0.0581
Vibratory Compactor	Paving Equipment	80	1	60	2	120	0.53	120	0.5235	0.0280	0.3459	1.05	0.06	0.69	0.0314	0.0017	0.0208
Backhoe	Tractor/loader/backhoe	85	1	60	8	480	0.55	120	0.5772	0.0309	0.3813	4.62	0.25	3.05	0.1385	0.0074	0.0915
Trencher	Trencher	75	1	60	8	480	0.75	120	0.6944	0.0372	0.4588	5.56	0.30	3.67	0.1667	0.0089	0.1101
Manlifts	Aerial Lift	75	2	60	8	960	0.46	120	0.4259	0.0228	0.2814	6.81	0.37	4.50	0.2044	0.0110	0.1351
ATV Gator Carts	Other Construction Equipment	100	1	90	8	720	0.62	120	0.6698	0.0301	0.5057	5.36	0.24	4.05	0.2411	0.0108	0.1821
Generator	Generator Sets	30	3	60	8	1440	0.74	50	0.2741	0.0220	0.2007	6.58	0.53	4.82	0.1973	0.0159	0.1445

Table A-4. Offroad Emissions Calculations - Using Tier 2 Emission Factors

Tier 2 emission factors (EFs) are applied to NOx, PM, and CO. Load Factors (LFs) are used in conjunction with Tier 2 EFs.
2014 SCAB EFs (OFFROAD2007) are applied to CO2, ROG, and SOX. Calculation detail is provided in Offroad SCAB worksheet.

Offroad Equipment Project Total

NOX lbs/day	PM lbs/day	CO lbs/day	NOX (tons)	PM (tons)	CO (tons)
99.36	4.61	63.31	13.90	0.62	8.61

Transmission Line Installation
12 months

Primary Equipment Description	Offroad Equip Category	HP Estimate	Primary Equip Quantity	Activity Schedule Estimate (Days)	Duration of Use (Hours/ Day)	Total Hours of Utilization 5,116	Load Factor for Tier 2	HP Used for OFFROAD	TIER 2 NOX (lbs/hr)	TIER 2 PM (lbs/hr)	TIER 2 CO (lbs/hr)	TIER 2 NOX lbs/day	TIER 2 PM lbs/day	TIER 2 CO lbs/day	TIER 2 NOX (tons)	TIER 2 PM (tons)	TIER 2 CO (tons)
Sleeving Rigs	Other Gen Indust Equipment	85	1	152	4	608	0.51	120	0.5352	0.0287	0.3536	2.14	0.11	1.41	0.1627	0.0087	0.1075
Hydralic Pump Motor	Pumps	10	2	10	5	100	0.74	15	0.0914	0.0098	0.0979	0.91	0.10	0.98	0.0046	0.0005	0.0049
580 Case Backhoe	Tractor/loader/backhoe	120	1	152	2	304	0.55	120	0.7130	0.0320	0.5384	1.43	0.06	1.08	0.1084	0.0049	0.0818
Spacing Carts	Other Gen Indust Equipment	10	4	152	4	2432	0.51	15	0.0630	0.0067	0.0675	1.01	0.11	1.08	0.0766	0.0082	0.0820
3 Drum Strawline Pullers	Other Gen Indust Equipment	85	1	152	4	608	0.51	120	0.5352	0.0287	0.3536	2.14	0.11	1.41	0.1627	0.0087	0.1075
60lk Puller	Other Gen Indust Equipment	250	1	152	3	456	0.51	250	1.3773	0.0422	0.7308	4.13	0.13	2.19	0.3140	0.0096	0.1666
Triple Conductor Tensioner	Other Gen Indust Equipment	250	1	152	2	304	0.51	250	1.3773	0.0422	0.7308	2.75	0.08	1.46	0.2094	0.0064	0.1111
Sag Cat w2 winches	Grader	350	1	152	2	304	0.61	500	2.2593	0.0706	1.2238	4.52	0.14	2.45	0.3434	0.0107	0.1860

Decommissioning
6 months

Primary Equipment Description	Offroad Equip Category	HP Estimate	Primary Equip Quantity	Activity Schedule Estimate (Days)	Duration of Use (Hours/ Day)	Total Hours of Utilization 9,720	Load Factor for Tier 2	HP Used for OFFROAD	TIER 2 NOX (lbs/hr)	TIER 2 PM (lbs/hr)	TIER 2 CO (lbs/hr)	TIER 2 NOX lbs/day	TIER 2 PM lbs/day	TIER 2 CO lbs/day	TIER 2 NOX (tons)	TIER 2 PM (tons)	TIER 2 CO (tons)
Grader	Grader	185	1	180	6	1080	0.61	250	1.2191	0.0373	0.6468	7.3144	0.2239	3.8811	0.6583	0.0202	0.3493
Rough-Terrain Forklifts	Rough Terrain Forklift	99	2	180	4	1440	0.6	250	0.7333	0.0393	0.4845	5.8667	0.3143	3.8762	0.5280	0.0283	0.3489
Track Type Dozer	Crawler Tractor	185	1	180	6	1080	0.61	500	1.2191	0.0373	0.6468	7.3144	0.2239	3.8811	0.6583	0.0202	0.3493
Excavator	Excavator	85	1	180	8	1440	0.57	120	0.5981	0.0320	0.3952	4.7852	0.2563	3.1616	0.4307	0.0231	0.2845
Rubber-Tired Loaders	Rubber Tired Loader	78	1	180	8	1440	0.54	480	0.5200	0.0279	0.3436	4.1600	0.2229	2.7486	0.3744	0.0201	0.2474
80 Ton Rough Terrain Cranes	Off-highway Truck	250	1	180	6	1080	0.57	250	1.5394	0.0471	0.8168	9.2361	0.2827	4.9008	0.8313	0.0254	0.4411
DumpTruck	Grader	473	1	180	4	720	0.57	500	2.8530	0.0892	1.5454	11.4121	0.3566	6.1815	1.0271	0.0321	0.5563
4000 Gallon Water Truck	Off-highway Truck	250	1	180	8	1440	0.57	250	1.5394	0.0471	0.8168	12.3148	0.3770	6.5344	1.1083	0.0339	0.5881
												62.40	**2.26**	**35.17**	**5.62**	**0.20**	**3.16**

Table A-5. ARB and USEPA Off-Road Compression-Ignition (Diesel) Engine Standards (NMHC+NOx/CO/PM in g/bhp-hr). When ARB and USEPA standards differ, the standards shown here represent the more stringent of the two.

Maximum horsepower	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015+
<11	See Table 2 footnote (a)					7.8 / 6.0 / 0.75					5.6 / 6.0 / 0.6			5.6 / 6.0 / 0.30[a]							
11≤hp<25						7.1 / 4.9 / 0.60					5.6 / 4.9 / 0.60			5.6 / 4.9 / 0.30							
25≤hp<50	-					7.1 /4.1 / 0.60				5.6 / 4.1 / 0.45				5.6 / 4.1 / 0.22					3.5 / 4.1 / 0.02		
50≤hp< 75						- / 6.9 / - / -[b]				5.6 / 3.7 / 0.30				3.5 / 3.7 / 0.22[c]					3.5 / 3.7 / 0.02[c]		
75≤hp<100														3.5 / 3.7 / 0.30			0.14 / 2.5 / 3.7 / 0.015[b,d]				0.14 / 0.30 / 3.7 / 0.015[b]
100≤hp<175									4.9 / 3.7 / 0.22				3.0 / 3.7 / 0.22								
175≤hp<300									4.9 / 2.6 / 0.15			3.0 / 2.6 / 0.15[e]					0.14 / 1.5 / 2.6 / 0.015[b,d]				0.14 / 0.30 / 2.2 / 0.015[b]
300≤hp<600	-		1.0 / 6.9 / 8.5 / 0.40[b]				4.8 / 2.6 / 0.15														
600≤hp≤750																					
Mobile Machines > 750hp	-					1.0 / 6.9 / 8.5 / 0.40[b]					4.8 / 2.6 / 0.15						0.30 / 2.6 / 2.6 / 0.07[b]				0.14 / 2.6 / 2.6 / 0.03[b]
750hp<GEN ≤1200hp																					0.14 / 0.50 / 2.6 / 0.02[b]
GEN>1200 hp																	0.30 / 0.50 / 2.6 / 0.07[b]				

a) The PM standard for hand-start, air cooled, direct injection engines below 11 hp may be delayed until 2010 and be set at 0.45 g/bhp-hr.
b) Standards given are NMHC/NOx/CO/PM in g/bhp-hr.
c) Engine families in this power category may alternately meet Tier 3 PM standards (0.30 g/bhp-hr) from 2008-2011 in exchange for introducing final PM standards in 2012.
d) The implementation schedule shown is the three-year alternate NOx approach. Other schedules are available.
e) Certain manufacturers have agreed to comply with these standards by 2005.

: Tier 1 : Tier 2 : Tier 3 : Tier 4 Interim / Final

Table A-5. ARB and USEPA Off-Road Compression-Ignition (Diesel) Engine Standards (NMHC+NOx/CO/PM in g/bhp-hr).

	TIER 2 Emission Factors						TIER 3 Emission Factors						% reduction from TIER 2 to TIER 3		
	NOx		CO		PM		NOx		CO		PM		NOx	CO	PM
Maximum horsepower	g/bhp-hr	lb/bhp-hr	g/bhp-hr	lb/bhp-hr	g/bhp-hr	lb/bhp-hr	g/bhp-hr	lb/bhp-hr	g/bhp-hr	lb/bhp-hr	g/bhp-hr	lb/bhp-hr			
<11	5.6	0.0123457	6	0.0132275	0.6	0.0013228	5.6	0.0123457	6	0.0132275	0.6	0.0013228	0.00%	0.00%	0.00%
11≤hp<25	5.6	0.0123457	4.9	0.0108025	0.6	0.0013228	5.6	0.0123457	4.9	0.0108025	0.6	0.0013228	0.00%	0.00%	0.00%
25≤hp<50	5.6	0.0123457	4.1	0.0090388	0.45	0.0009921	5.6	0.0123457	4.1	0.0090388	0.45	0.0009921	0.00%	0.00%	0.00%
50≤hp< 75	5.6	0.0123457	3.7	0.008157	0.3	0.0006614	5.6	0.0123457	3.7	0.008157	0.3	0.0006614	0.00%	0.00%	0.00%
75≤hp<100	5.6	0.0123457	3.7	0.008157	0.3	0.0006614	3.5	0.007716	3.7	0.008157	0.3	0.0006614	37.50%	0.00%	0.00%
100≤hp<175	4.9	0.0108025	3.7	0.008157	0.22	0.000485	3	0.0066138	3.7	0.008157	0.22	0.000485	38.78%	0.00%	0.00%
175≤hp<300	4.9	0.0108025	2.6	0.0057319	0.15	0.0003307	3	0.0066138	2.6	0.0057319	0.15	0.0003307	38.78%	0.00%	0.00%
300≤hp<600	4.8	0.010582	2.6	0.0057319	0.15	0.0003307	3	0.0066138	2.6	0.0057319	0.15	0.0003307	37.50%	0.00%	0.00%
600≤hp≤750	4.8	0.010582	2.6	0.0057319	0.15	0.0003307	3	0.0066138	2.6	0.0057319	0.15	0.0003307	37.50%	0.00%	0.00%
Mobile Machines > 750hp	4.8	0.010582	2.6	0.0057319	0.15	0.0003307	4.8	0.010582	2.6	0.0057319	0.15	0.0003307	0.00%	0.00%	0.00%
	4.8	0.010582	2.6	0.0057319	0.15	0.0003307	4.8	0.010582	2.6	0.0057319	0.15	0.0003307	0.00%	0.00%	0.00%
750hp<GEN ≤1200hp	4.8	0.010582	2.6	0.0057319	0.15	0.0003307	4.8	0.010582	2.6	0.0057319	0.15	0.0003307	0.00%	0.00%	0.00%
GEN>1200 hp	4.8	0.010582	2.6	0.0057319	0.15	0.0003307	4.8	0.010582	2.6	0.0057319	0.15	0.0003307	0.00%	0.00%	0.00%

: Tier 2

: Tier 3

Table A-6. PSR Offroad Load Factors

Used in conjunction with Tier 2-3 emission factors.

Source: mailout MSC99-32, http://www.arb.ca.gov/msei/onroad/downloads/pubs/mo9932.zip (4/2/2009)

Category	Equipment	HP	P/N	Activity (hrs/yr)	Load
Agricultural	Agricultural Mowers	120	P	363	0.43
	Agricultural Tractors	50	P	475	0.70
		120	P	475	0.70
		175	P	475	0.70
		250	N	475	0.70
		500	N	475	0.70
	Balers	50	P	95	0.58
		120	P	95	0.58
	Combines	120	P	150	0.70
		175	P	150	0.70
		250	N	150	0.70
		500	N	150	0.70
	Hydro Power Units	50	P	790	0.48
		120	P	790	0.48
	Irrigation Pumps	50	P	749	0.65
		120	P	749	0.65
		175	P	749	0.65
		250	N	749	0.65
		500	N	749	0.65
	Other Agricultural Equipment	50	P	381	0.51
		120	P	381	0.51
		175	P	381	0.51
		250	N	381	0.51
		500	N	381	0.51
	Sprayers	50	P	90	0.50
		120	P	90	0.50
		175	P	90	0.50
		250	N	90	0.50
		500	N	90	0.50
	Swathers	120	P	110	0.55
		175	P	110	0.55
	Tillers >5 HP	250	N	172	0.78
		500	N	172	0.78
Commercial	Air Compressors	50	P	815	0.48
		120	P	815	0.48
		175	P	815	0.48
		250	N	815	0.48
		500	N	815	0.48
		750	N	815	0.48
		9999	N	815	0.48
	Generator Sets	50	N	338	0.74
		120	N	338	0.74
		175	N	338	0.74
		250	N	338	0.74
		500	N	338	0.74
		750	N	338	0.74
		9999	N	338	0.74
	Pressure Washers	50	P	145	0.30
		120	P	145	0.30
	Pumps	50	P	403	0.74
		120	P	403	0.74

Table A-6. PSR Offroad Load Factors

Used in conjunction with Tier 2-3 emission factors.

Source: mailout MSC99-32, http://www.arb.ca.gov/msei/onroad/downloads/pubs/mo9932.zip (4/2/2009)

Category	Equipment	HP	P/N	Activity (hrs/yr)	Load
		175	P	403	0.74
		250	N	403	0.74
		500	N	403	0.74
		9999	N	403	0.74
	Welders	50	P	643	0.45
		120	P	643	0.45
		175	P	643	0.45
Construction	Bore/Drill Rigs	50	P	726	0.75
		120	P	726	0.75
		175	P	726	0.75
		250	N	726	0.75
		500	N	726	0.75
		750	N	726	0.75
		9999	N	726	0.75
	Concrete/Industrial Saws	50	P	580	0.73
		120	P	580	0.73
		175	P	580	0.73
	Cranes	50	P	1464	0.43
		120	P	1464	0.43
		175	P	1464	0.43
		250	N	1464	0.43
		500	N	1464	0.43
		750	N	1464	0.43
	Crawler Tractors	50	P	936	0.64
		120	P	936	0.64
		175	P	936	0.64
		250	N	936	0.64
		500	N	936	0.64
		750	N	936	0.64
		9999	N	936	0.64
	Crushing/Proc. Equipment	50	P	955	0.78
		120	P	955	0.78
		175	P	955	0.78
		250	N	955	0.78
		500	N	955	0.78
		750	N	955	0.78
		9999	N	955	0.78
	Excavators	50	P	1162	0.57
		120	P	1162	0.57
		175	P	1162	0.57
		250	N	1162	0.57
		500	N	1162	0.57
		750	N	1162	0.57
	Graders	50	P	965	0.61
		120	P	965	0.61
		175	P	965	0.61
		250	N	965	0.61
		500	N	965	0.61
		750	N	965	0.61
	Off-Highway Tractors	120	P	855	0.65
		175	P	855	0.65

Table A-6. PSR Offroad Load Factors

Used in conjunction with Tier 2-3 emission factors.

Source: mailout MSC99-32, http://www.arb.ca.gov/msei/onroad/downloads/pubs/mo9932.zip (4/2/2009)

Category	Equipment	HP	P/N	Activity (hrs/yr)	Load
		250	N	855	0.65
		750	N	855	0.65
		9999	N	855	0.65
	Off-Highway Trucks	175	P	1641	0.57
		250	N	1641	0.57
		500	N	1641	0.57
		750	N	1641	0.57
		9999	N	1641	0.57
	Other Construction Equipment	50	P	606	0.62
		120	P	606	0.62
		175	P	606	0.62
		500	N	606	0.62
	Pavers	50	P	828	0.62
		120	P	828	0.62
		175	P	828	0.62
		250	N	828	0.62
		500	N	828	0.62
	Paving Equipment	50	P	622	0.53
		120	P	622	0.53
		175	P	622	0.53
		250	N	622	0.53
	Rollers	50	P	748	0.56
		120	P	748	0.56
		175	P	748	0.56
		250	N	748	0.56
		500	N	748	0.56
	Rough Terrain Forklifts	50	P	1198	0.60
		120	P	1198	0.60
		175	P	1198	0.60
		250	N	1198	0.60
		500	N	1198	0.60
	Rubber Tired Dozers	175	P	899	0.59
		250	N	899	0.59
		500	N	899	0.59
		750	N	899	0.59
		9999	N	899	0.59
	Rubber Tired Loaders	50	P	1346	0.54
		120	P	1346	0.54
		175	P	1346	0.54
		250	N	1346	0.54
		500	N	1346	0.54
		750	N	1346	0.54
		9999	N	1346	0.54
	Scrapers	120	P	1090	0.72
		175	P	1090	0.72
		250	N	1090	0.72
		500	N	1090	0.72
		750	N	1090	0.72
	Signal Boards	50	P	535	0.78
		120	P	535	0.78
		175	P	535	0.78

Table A-6. PSR Offroad Load Factors

Used in conjunction with Tier 2-3 emission factors.

Source: mailout MSC99-32, http://www.arb.ca.gov/msei/onroad/downloads/pubs/mo9932.zip (4/2/2009)

Category	Equipment	HP	P/N	Activity (hrs/yr)	Load
		250	N	535	0.78
	Skid Steer Loaders	50	P	811	0.55
		120	P	811	0.55
	Surfacing Equipment	50	P	561	0.45
		120	P	561	0.45
		175	P	561	0.45
		250	N	561	0.45
		500	N	561	0.45
		750	N	561	0.45
	Tractors/Loaders/Backhoes	50	P	1135	0.55
		120	P	1135	0.55
		175	P	1135	0.55
		250	N	1135	0.55
	Trenchers	50	P	620	0.75
		120	P	620	0.75
		175	P	620	0.75
		250	N	620	0.75
		500	N	620	0.75
		750	N	620	0.75
Dredging	Compressor (Dredging)	50	P	815	0.48
		120	P	815	0.48
	Crane	750	N	1464	0.43
	Deck/door engine	250	N	142	0.80
	Dredger	175	P	878	0.51
		250	N	878	0.51
		750	N	878	0.51
	Generator (Dredging)	50	P	1011	0.74
		120	P	1011	0.74
		175	P	1011	0.74
		250	N	1011	0.74
		500	N	1011	0.74
		750	N	1011	0.74
		9999	N	1011	0.74
	Hoist/swing/winch	50	P	878	0.51
		120	P	878	0.51
		175	P	878	0.51
		250	N	878	0.51
		500	N	878	0.51
		750	N	878	0.51
		9999	N	878	0.51
	Other (Dredging)	120	P	878	0.51
		175	P	878	0.51
		250	N	878	0.51
		500	N	878	0.51
	Pump (Dredging)	175	P	403	0.74
		250	N	403	0.74
		500	N	403	0.74
		9999	N	403	0.74
Drilling	Compressors (Workover)	120	P	1231	0.60
		175	P	1231	0.60
		250	N	1231	0.60

Table A-6. PSR Offroad Load Factors

Used in conjunction with Tier 2-3 emission factors.

Source: mailout MSC99-32, http://www.arb.ca.gov/msei/onroad/downloads/pubs/mo9932.zip (4/2/2009)

Category	Equipment	HP	P/N	Activity (hrs/yr)	Load
		750	N	1231	0.60
	Generator (Drilling)	120	P	1231	0.60
		175	P	1231	0.60
		250	N	1231	0.60
		750	N	1231	0.60
	Generator (Workover)	120	P	1231	0.60
		175	P	1231	0.60
		250	N	1231	0.60
		750	N	1231	0.60
		9999	N	1231	0.60
	Lift (Drilling)	250	N	1231	0.60
		750	N	1231	0.60
	Other Drilling Equipment	120	P	1231	0.60
		175	P	1231	0.60
		250	N	1231	0.60
		750	N	1231	0.60
		9999	N	1231	0.60
	Other Workover Equipment	120	P	1231	0.60
		175	P	1231	0.60
		250	N	1231	0.60
		750	N	1231	0.60
		9999	N	1231	0.60
	Pump (Drilling)	120	P	1231	0.60
		175	P	1231	0.60
		250	N	1231	0.60
		750	N	1231	0.60
		9999	N	1231	0.60
	Pump (Workover)	120	P	1231	0.60
		175	P	1231	0.60
		250	N	1231	0.60
		750	N	1231	0.60
		9999	N	1231	0.60
	Snubbing	120	P	1231	0.60
	Swivel	120	P	1231	0.60
		175	P	1231	0.60
		250	N	1231	0.60
		750	N	1231	0.60
Ground Support Equipment	A/C Tug Narrow Body	250	N	606.1839847	0.80
	A/C Tug Wide Body	500	N	759.2692308	0.80
	Air Conditioner	175	N	808.1666667	0.75
	Air Start Unit	500	N	332.9655172	0.90
	Baggage Tug	120	N	1623.8	0.55
	Belt Loader	120	N	1037.643678	0.50
	Bobtail	120	N	1867.428571	0.55
	Cargo Loader	120	N	901.7941176	0.50
	Cargo Tractors	120	N	101	0.54
	Catering Truck	250	N	1600	0.52
	Forklift	175	P	731.5	0.30
	Fuel Truck	250	N	3489.166667	0.25
	Generator	175	N	1629.714286	0.78
	Ground Power Unit	175	N	968.4296875	0.75

Table A-6. PSR Offroad Load Factors

Used in conjunction with Tier 2-3 emission factors.

Source: mailout MSC99-32, http://www.arb.ca.gov/msei/onroad/downloads/pubs/mo9932.zip (4/2/2009)

Category	Equipment	HP	P/N	Activity (hrs/yr)	Load
	Hydrant Truck	175	N	224.25	0.70
	Lav Truck	175	N	1306.5	0.25
	Lift	120	N	917.3636364	0.50
	Other	175	N	1645.590909	0.50
	Passenger Stand	120	N	70	0.59
	Service Truck	175	N	1930.75	0.20
	Sweeper	120	N	12	0.51
Industrial	Aerial Lifts	50	P	384	0.46
		120	P	384	0.46
		500	N	384	0.46
		750	N	384	0.46
	Forklifts	50	P	1800	0.30
		120	P	1800	0.30
		175	P	1800	0.30
		250	N	1800	0.30
		500	N	1800	0.30
	Other General Industrial Equipment	50	N	878	0.51
		120	N	878	0.51
		175	N	878	0.51
		250	N	878	0.51
		500	N	878	0.51
		750	N	878	0.51
		9999	N	878	0.51
	Other Material Handling Equipment	50	N	421	0.59
		120	N	421	0.59
		175	N	421	0.59
		250	N	421	0.59
		500	N	421	0.59
	Sweepers/Scrubbers	50	N	1220	0.68
		120	N	1220	0.68
		175	N	1220	0.68
		250	N	1220	0.68
Lawn and Garden	Chippers/Stump Grinders	120	P	465	0.73
		175	P	465	0.73
		250	N	465	0.73
		500	N	465	0.73
		750	N	465	0.73
	Leaf Blowers/Vacuums	120	N	120	0.40
		250	N	120	0.40
	Snowblowers	175	P	400	0.65
		250	N	400	0.65
		500	N	400	0.65
Logging	Fellers/Bunchers	120	P	1276	0.71
		175	P	1276	0.71
		250	N	1276	0.71
		500	N	1276	0.71
		750	N	1276	0.71
	Shredders	175	P	120	0.40
	Skidders	120	P	1442	0.74
		175	P	1442	0.74
		250	N	1442	0.74

Table A-6. PSR Offroad Load Factors

Used in conjunction with Tier 2-3 emission factors.

Source: mailout MSC99-32, http://www.arb.ca.gov/msei/onroad/downloads/pubs/mo9932.zip (4/2/2009)

Category	Equipment	HP	P/N	Activity (hrs/yr)	Load
		500	N	1442	0.74
Military Tactical Support	A/C unit	120	P	300	0.60
		250	N	300	0.60
		500	N	300	0.60
	Aircraft Support	120	P	300	0.60
		175	P	300	0.60
	Cart	120	P	300	0.60
		175	P	300	0.60
		250	N	300	0.60
	Communications	50	P	300	0.60
		120	P	300	0.60
	Compressor (Military)	50	P	300	0.60
		120	P	300	0.60
		175	P	300	0.60
		250	N	300	0.60
		500	N	300	0.60
	Crane	120	P	300	0.60
		175	P	300	0.60
		250	N	300	0.60
	Deicer	120	P	300	0.60
	Generator (Military)	50	P	300	0.60
		120	P	300	0.60
		175	P	300	0.60
		250	N	300	0.60
		500	N	300	0.60
	Hydraulic unit	120	P	300	0.60
	Lift (Military)	120	P	300	0.60
	Light	50	P	300	0.60
	Other tactical support equipment	50	P	300	0.60
		120	P	300	0.60
		175	P	300	0.60
		250	N	300	0.60
		500	N	300	0.60
		750	N	300	0.60
	Pressure Washer	175	P	300	0.60
	Pump (Military)	50	P	300	0.60
		120	P	300	0.60
	Start Cart	120	P	300	0.60
		500	N	300	0.60
	Test Stand	120	P	300	0.60
		175	P	300	0.60
		250	N	300	0.60
		500	N	300	0.60
	Welder	50	P	300	0.60
		120	P	300	0.60
Misc. Portable Equipment	Misc Portable Equipment	120	P	484	0.56
		175	P	484	0.56
		250	N	484	0.56
		500	N	484	0.56
		750	N	484	0.56
		9999	N	484	0.56

Table A-6. PSR Offroad Load Factors

Used in conjunction with Tier 2-3 emission factors.

Source: mailout MSC99-32, http://www.arb.ca.gov/msei/onroad/downloads/pubs/mo9932.zip (4/2/2009)

Category	Equipment	HP	P/N	Activity (hrs/yr)	Load
Transport Refrigeration	Transport Refrigeration Unit	50	N	1341	0.28
		120	P	1341	0.28

Table A-7. Onroad Emissions Calculation - Solar Field

Emission factors generated by EMFAC assuming 1990-2012 composite fleet of light, medium, and heavy duty vehicles.

Overall Onroa

NOX lbs/day	ROG lbs/day	PM lbs/day	CO lbs/day	SOX lbs/day	CO2 lbs/day	NOX (ton)
33.84	19.10	4.04	207.51	0.02	34,903.50	4.69

Light Duty Autos and Trucks

Overall Personnel to Work Sites / Worker Commute Trips *	Workers	Months	Veh/Day	RT/day (mi)	Miles/Day	Total Miles	NOX (lb/1000mi)	ROG (lb/1000mi)	PM (lb/1000mi)	CO (lb/1000mi)	SOX (lb/1000mi)	CO2 (lb/1000mi)	NOX lbs/day	ROG lbs/day	PM lbs/day	CO lbs/day	SOX lbs/day	CO2 lbs/day	NOX (ton)
							Composite Emissions for Fleet of Vehicles												
Maximum Labor Force	400	12	400	40	16,000	4,224,000	0.9045	0.7538	0.1508	8.3920	0.0000	1356.7839	14.47	12.06	2.41	134.27	0.00	21708.54	1.9104
Typical Labor Force	200	10	200	40	8,000	1,760,000	0.9045	0.7538	0.1508	8.3920	0.0000	1356.7839	7.24	6.03	1.21	67.14	0.00	10854.27	0.7960
* Estimated rideshare factor	1			SubTot Personnel (mi)		5,984,000													

Max Daily 2

Operational Emissions - Light Duty	RT/day (mi)	Vehicle Days	Total Miles	NOX (lb/1000mi)	ROG (lb/1000mi)	PM (lb/1000mi)	CO (lb/1000mi)	SOX (lb/1000mi)	CO2 (lb/1000mi)	NOX lbs/day	ROG lbs/day	PM lbs/day	CO lbs/day	SOX lbs/day	CO2 lbs/day	NOX (ton)
SubTot Crew and QA/QC Mobilize (mi)	40	1,610	64,400	0.9045	0.7538	0.1508	8.3920	0.0000	1356.7839	0.07	0.06	0.01	0.67	0.00	108.54	0.0291

TOTAL Light Duty Autos and Trucks (vmt) 6,048,400

Medium to Heavy Duty Trucks Max Daily 2

Operational Emissions - Medium Duty	RT/day (mi)	Vehicle Days	Total Miles	NOX (lb/1000mi)	ROG (lb/1000mi)	PM (lb/1000mi)	CO (lb/1000mi)	SOX (lb/1000mi)	CO2 (lb/1000mi)	NOX lbs/day	ROG lbs/day	PM lbs/day	CO lbs/day	SOX lbs/day	CO2 lbs/day	NOX (ton)
				Composite Emissions for Fleet of Vehicles												
Splicing/testing vans, dump trucks under 200hp	40	100	4,000	4.0000	0.7500	0.0000	8.7500	0.0000	2000.0000	0.32	0.06	0.00	0.70	0.00	160.00	0.0080
Water transportation	40	100	4,000	4.0000	0.7500	0.0000	8.7500	0.0000	2000.0000	0.32	0.06	0.00	0.70	0.00	160.00	0.0080
Fuel transportation	40	100	4,000	4.0000	0.7500	0.0000	8.7500	0.0000	2000.0000	0.32	0.06	0.00	0.70	0.00	160.00	0.0080

TOTAL Medium Duty Trucks (vmt) 12,000

Heavy-Heavy Duty Trucks Max Daily 7

Operational Emissions - Heavy Duty	RT/day (mi)	Vehicle Days	Total Miles	NOX (lb/1000mi)	ROG (lb/1000mi)	PM (lb/1000mi)	CO (lb/1000mi)	SOX (lb/1000mi)	CO2 (lb/1000mi)	NOX lbs/day	ROG lbs/day	PM lbs/day	CO lbs/day	SOX lbs/day	CO2 lbs/day	NOX (ton)
				Composite Emissions for Fleet of Vehicles												
Local material deliveries and waste removal	40	1,995	79,800	26.4213	1.8405	0.9816	7.9346	0.0409	4171.7791	7.40	0.52	0.27	2.22	0.01	1168.10	1.0542
Equipment deliveries	20	1,995	39,900	26.4213	1.8405	0.9816	7.9346	0.0409	4171.7791	3.70	0.26	0.14	1.11	0.01	584.05	0.5271
Transmission Line deliveries (occurs during line construction)	40	74	26640	26.4213	1.8405	0.9816	7.9346	0.0409	4171.7791	7.40	0.52	0.27	2.22	0.01	1168.10	0.3519

TOTAL Heavy-Heavy Duty Trucks (vmt) 146,340

Table A-7. Onroad Emissions Calculation - Solar Field

Emission factors generated by EMFAC assuming 1990-2012 composite fleet of light, medium, and heavy duty vehicles.

ıd Emissions

ROG (ton)	PM (ton)	CO (ton)	SOX (ton)	CO2 (ton)
2.42	0.53	26.01	0.00	4,420.44

Light Duty Autos and Trucks

Total Emissions for Vehicles

Overall Personnel to Work Sites Worker Commute Trips *	Workers	Months	Veh/Day	RT/day (mi)	Miles/Day	Total Miles	ROG (ton)	PM (ton)	CO (ton)	SOX (ton)	CO2 (ton)
Maximum Labor Force	400	12	400	40	16,000	4,224,000	1.5920	0.3184	17.7238	0.0000	2865.5276
Typical Labor Force	200	10	200	40	8,000	1,760,000	0.6633	0.1327	7.3849	0.0000	1193.9698
* Estimated rideshare factor	1			**SubTot Personnel (mi)**		**5,984,000**					

Max Daily 2

Operational Emissions - Light Duty	RT/day (mi)	Vehicle Days	Total Miles	ROG (ton)	PM (ton)	CO (ton)	SOX (ton)	CO2 (ton)
SubTot Crew and QA/QC Mobilize (mi)	40	1,610	64,400	0.0243	0.0049	0.2702	0.0000	43.6884

TOTAL Light Duty Autos and Trucks (vmt) **6,048,400**

Medium to Heavy Duty Trucks Max Daily 2

Total Emissions for Vehicles

Operational Emissions - Medium Duty	RT/day (mi)	Vehicle Days	Total Miles	ROG (ton)	PM (ton)	CO (ton)	SOX (ton)	CO2 (ton)
Splicing/testing vans, dump trucks under 200hp	40	100	4,000	0.0015	0.0000	0.0175	0.0000	4.0000
Water transportation	40	100	4,000	0.0015	0.0000	0.0175	0.0000	4.0000
Fuel transportation	40	100	4,000	0.0015	0.0000	0.0175	0.0000	4.0000

TOTAL Medium Duty Trucks (vmt) **12,000**

Heavy-Heavy Duty Trucks Max Daily 7

Total Emissions for Vehicles

Operational Emissions - Heavy Duty	RT/day (mi)	Vehicle Days	Total Miles	ROG (ton)	PM (ton)	CO (ton)	SOX (ton)	CO2 (ton)
Local material deliveries and waste removal	40	1,995	79,800	0.0734	0.0392	0.3166	0.0016	166.4540
Equipment deliveries	20	1,995	39,900	0.0367	0.0196	0.1583	0.0008	83.2270
Transmission Line deliveries (occurs during line construction)	40	74	26640	0.0245	0.0131	0.1057	0.0005	55.5681

TOTAL Heavy-Heavy Duty Trucks (vmt) **146,340**

Table A-8. Onroad Vehicle Mix and Schedules - Solar Field - Palo Verde Mesa Solar Project

Source: Equipment mix and schedules from similar projects

Total Vehicle Workdays		
Light	Medium	Heavy
1,610.00	100.00	2,325.00

Site Preparation

1 month

Primary Equipment Description	HP Estimate	Primary Equip Quantity	Activity Schedule Estimate (Days)	Duration of Use (Hours/ Day)	Total Hours of Utilization	Onroad Vehicle Category	Light Duty Fractional Total Vehicle Workdays	Medium Duty Fractional Total Vehicle Workdays	Heavy Duty Fractional Total Vehicle Workdays
					2,460				
1/2 Ton Pick-up Truck, 4X4	200	6	30	4	720	light	60.0		
Mechanic Truck	300	2	30	8	480	heavy			40.0
Fuel Truck	300	2	30	8	480	heavy			40.0
40' Flat Bed Truck & Trailer	350	2	30	10	600	heavy			50.0
Dump Truck (Trash)	350	1	30	6	180	heavy			15.0

Grading and Earthwork

3 months

Primary Equipment Description	HP Estimate	Primary Equip Quantity	Activity Schedule Estimate (Days)	Duration of Use (Hours/ Day)	Total Hours of Utilization	Onroad Vehicle Category	Light Duty Fractional Total Vehicle Workdays	Medium Duty Fractional Total Vehicle Workdays	Heavy Duty Fractional Total Vehicle Workdays
					9,000				
1/2 Ton Pick-up Truck, 4X4	200	6	90	4	2160	light	180.0		
Mechanic Truck	300	2	90	8	1440	heavy			120.0
Fuel Truck	300	2	90	8	1440	heavy			120.0
40' Flat Bed Truck & Trailer	350	2	90	10	1800	heavy			150.0
Dump Truck	350	4	90	6	2160	heavy			180.0

Concrete Foundations

3 months

Primary Equipment Description	HP Estimate	Primary Equip Quantity	Activity Schedule Estimate (Days)	Duration of Use (Hours/ Day)	Total Hours of Utilization	Onroad Vehicle Category	Light Duty Fractional Total Vehicle Workdays	Medium Duty Fractional Total Vehicle Workdays	Heavy Duty Fractional Total Vehicle Workdays
					10,800				
1/2 Ton Pick-up Truck, 4X4	200	6	90	4	2160	light	180.0		
Mechanic Truck	300	2	90	8	1440	heavy			120.0
Fuel Truck	300	2	90	8	1440	heavy			120.0
10 cu.yd. Concrete Mixer Trucks	425	8	90	8	5760	heavy			480.0

Structural Steel Work

4 months

Primary Equipment Description	HP Estimate	Primary Equip Quantity	Activity Schedule Estimate (Days)	Duration of Use (Hours/ Day)	Total Hours of Utilization	Onroad Vehicle Category	Light Duty Fractional Total Vehicle Workdays	Medium Duty Fractional Total Vehicle Workdays	Heavy Duty Fractional Total Vehicle Workdays
					18,960				
1/2 Ton Pick-up Truck, 4X4	200	8	120	4	3840	light	320.0		
1 Ton Crew Cab 4X4	300	1	120	2	240	light	20.0		
30 Ton Boom Truck	300	1	120	2	240	heavy			20.0
1 Ton Crew Cab Flat Bed, 4X4	300	9	120	4	4320	light	360.0		
40' Flat Bed Truck & Trailer	350	2	120	10	2400	heavy			200.0
3/4 Ton Pick-up Truck, 4X4	300	4	120	4	1920	light	160.0		
1 Ton Crew Cab Flat Bed, 4X4	300	2	120	4	960	light	80.0		
Wire Trucks & Trailers	350	6	120	6	4320	heavy			360.0
Dump Truck (Trash)	350	1	120	6	720	heavy			60.0

Table A-8. Onroad Vehicle Mix and Schedules - Solar Field - Palo Verde Mesa Solar Project

Source: Equipment mix and schedules from similar projects

Total Vehicle Workdays		
Light	Medium	Heavy
1,610.00	100.00	2,325.00

Electrical/Instrumentation Work

2 months

Primary Equipment Description	HP Estimate	Primary Equip Quantity	Activity Schedule Estimate (Days)	Duration of Use (Hours/ Day)	Total Hours of Utilization	Onroad Vehicle Category	Light Duty Fractional Total Vehicle Workdays	Medium Duty Fractional Total Vehicle Workdays	Heavy Duty Fractional Total Vehicle Workdays
					3,180				
Foreman Truck	180	1	60	4	240	light	20.0		
Mechanic Truck	250	1	60	10	600	heavy			50.0
5-Ton Flatbed Truck	180	5	60	5	1500	heavy			125.0
Pickup Trucks	180	4	60	2	480	light	40.0		
Crew Trucks	180	2	60	2	240	light	20.0		
Support Trucks	180	1	60	2	120	light	10.0		

Architectural and Landscape

2 months

Primary Equipment Description	HP Estimate	Primary Equip Quantity	Activity Schedule Estimate (Days)	Duration of Use (Hours/ Day)	Total Hours of Utilization	Onroad Vehicle Category	Light Duty Fractional Total Vehicle Workdays	Medium Duty Fractional Total Vehicle Workdays	Heavy Duty Fractional Total Vehicle Workdays
					3,180				
1/2 Ton Pick-up Truck, 4X4	200	6	60	2	720	light	60.0		
Fuel Truck	300	2	60	3	360	heavy			30.0
Crew Trucks	180	2	60	5	600	light	50.0		
5 CY Dump Trucks	180	2	60	10	1200	medium		100.0	
Mulch Truck	350	1	60	5	300	heavy			25.0

Testing

1 month

Primary Equipment Description	HP Estimate	Primary Equip Quantity	Activity Schedule Estimate (Days)	Duration of Use (Hours/ Day)	Total Hours of Utilization	Onroad Vehicle Category	Light Duty Fractional Total Vehicle Workdays	Medium Duty Fractional Total Vehicle Workdays	Heavy Duty Fractional Total Vehicle Workdays
					840				
1/2 Ton Pick-up Truck, 4X4	200	1	30	8	240	light	20.0		
1/2 Ton Pick-up Truck, 4X4	200	1	30	8	240	light	20.0		
1 Ton Crew Cab 4X4	300	1	30	4	120	light	10.0		
Water Trucks	350	1	30	8	240	heavy			20.0

Estimated Deliveries from Port to Marshalling Yard and Miscellaneous Hardware

Material	No. Deliveries	Origin	RIV Co R/T Miles	
Transmission Lines				
Steel	74	Long Beach	150	11100
Conductors	74	Long Beach	150	11100
Misc Hardware	74	Local	60	4440
				26640
				0
				0
				0
				0

Table A-9. Onroad Emission Factors - Solar Field

Source: EMFAC2007 v.2.3, burden reports for Riverside County.

Composite fleet: 1990 - 2012 for light, medium, and heavy duty vehicle classes

Riverside County Vehicle Class	2012 Fleet (VMT/1000)
LDA-TOT	191
LDT1-TOT	111
LDT2-TOT	96
MDV-TOT	51
LHDT1-TOT	18
LHDT2-TOT	4
MHDT-TOT	7
HHDT-TOT	489

1990-2012 Composite Fleet County-Wide

NOX (ton/day)	ROG (ton/day)	PM (ton/day)	CO (ton/day)	SOX (ton/day)	CO2 (ton/day)
0.05	0.05	0.01	0.63	0.00	120.00
0.06	0.06	0.01	0.55	0.00	80.00
0.07	0.04	0.01	0.49	0.00	70.00
0.04	0.02	0.00	0.24	0.00	50.00
0.04	0.01	0.00	0.04	0.00	20.00
0.02	0.00	0.00	0.03	0.00	0.00
0.06	0.00	0.00	0.04	0.00	10.00
6.46	0.45	0.24	1.94	0.01	1020.00

NOX (lb/1000mi)	ROG (lb/1000mi)	PM (lb/1000mi)	CO (lb/1000mi)	SOX (lb/1000mi)	CO2 (lb/1000mi)
0.524	0.524	0.105	6.597	0.000	1256.545
1.081	1.081	0.180	9.910	0.000	1441.441
1.458	0.833	0.208	10.208	0.000	1458.333
1.569	0.784	0.000	9.412	0.000	1960.784
4.444	1.111	0.000	4.444	0.000	2222.222
10.000	0.000	0.000	15.000	0.000	0.000
17.143	0.000	0.000	11.429	0.000	2857.143
26.421	1.840	0.982	7.935	0.041	4171.779

Riverside Composite Vehicle Class	2012 Fleet (VMT/1000)
Light Duty Autos and Trucks Composite	398
Medium to Heavy Trucks Composite	80
Heavy-Heavy Duty Trucks Composite	489

1990-2011 Composite Fleet County-Wide

NOX (ton/day)	ROG (ton/day)	PM (ton/day)	CO (ton/day)	SOX (ton/day)	CO2 (ton/day)
0.18	0.15	0.03	1.67	0.00	270.00
0.16	0.03	0.00	0.35	0.00	80.00
6.46	0.45	0.24	1.94	0.01	1020.00

NOX (lb/1000mi)	ROG (lb/1000mi)	PM (lb/1000mi)	CO (lb/1000mi)	SOX (lb/1000mi)	CO2 (lb/1000mi)
0.905	0.754	0.151	8.392	0.000	1356.784
4.000	0.750	0.000	8.750	0.000	2000.000
26.421	1.840	0.982	7.935	0.041	4171.779

	LDA-TOT	LDT1-TOT	LDT2-TOT	MDV-TOT	LHDT1-TOT	LHDT2-TOT	MHDT-TOT	HHDT-TOT
Vehicles	5219	2983	2465	1365	401	116	135	2766
VMT/1000	191	111	96	51	18	4	7	489
Trips	33148	18724	15604	8702	11044	2765	4200	14854
Reactive Organic Gas Emissions								
Run Exh	0.02	0.02	0.02	0.01	0	0	0	0.4
Idle Exh	0	0	0	0	0	0	0	0.05
Start Ex	0.01	0.01	0.01	0	0	0	0	0
Total Ex	0.03	0.03	0.02	0.01	0	0	0	0.45
Diurnal	0	0	0	0	0	0	0	0
Hot Soak	0.01	0	0	0	0	0	0	0
Running	0.01	0.02	0.01	0	0	0	0	0
Resting	0	0	0	0	0	0	0	0
Total	0.05	0.06	0.04	0.02	0.01	0	0	0.45
Carbon Monoxide Emissions								
Run Exh	0.48	0.42	0.38	0.19	0.01	0.01	0.02	1.67
Idle Exh	0	0	0	0	0	0	0	0.23
Start Ex	0.16	0.12	0.11	0.06	0.03	0.01	0.02	0.04
Total Ex	0.63	0.55	0.49	0.24	0.04	0.03	0.04	1.94
Oxides of Nitrogen Emissions								
Run Exh	0.04	0.05	0.05	0.03	0.02	0.01	0.05	5.85
Idle Exh	0	0	0	0	0	0	0	0.6
Start Ex	0.01	0.01	0.01	0.01	0.02	0	0	0
Total Ex	0.05	0.06	0.07	0.04	0.04	0.02	0.06	6.46
Carbon Dioxide Emissions (000)								
Run Exh	0.11	0.08	0.07	0.05	0.02	0	0.01	0.98
Idle Exh	0	0	0	0	0	0	0	0.03
Start Ex	0	0	0	0	0	0	0	0
Total Ex	0.12	0.08	0.07	0.05	0.02	0	0.01	1.02
Total Particulate Emissions								
Run Exh	0	0	0.01	0	0	0	0	0.2
Idle Exh	0	0	0	0	0	0	0	0.01
Start Ex	0	0	0	0	0	0	0	0
Total Ex	0	0	0.01	0	0	0	0	0.2
TireWear	0	0	0	0	0	0	0	0.02
BrakeWr	0	0	0	0	0	0	0	0.02
Total	0.01	0.01	0.01	0	0	0	0	0.24
Lead	0	0	0	0	0	0	0	0
SOx	0	0	0	0	0	0	0	0.01
Fuel Consumption (000 gallons)								
Gasoline	11.97	8.24	7.55	5.44	1.69	0.32	0.09	0.25
Diesel	0.01	0.22	0.01	0.01	0.24	0.11	0.86	91.3

< --- > Title : Palo Verde Mesa Solar Project
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2011/09/16 17:00:07
Scen Year: 2012 -- All model years in the range 1990 to 2012 selected
Season : Annual
Area : Riverside (MD/MDAQMD)
I/M Stat : COO Basic (2005)
Emissions: Tons Per Day

Table A-10. Fugitive Dust Generating Activity Estimates - Solar Field - Palo Verde Mesa Solar Project

Proposed Activity Sites and Areas	
(Activity Areas)	**Site**
Source: Project Description Table B-3, B-7, B-9.	
Site Area	**(acres)**
Total site area	3400.0
Construction Staging Areas and Fly Yards	
Staging Area	20.0
Total Activity Sites and Areas (acres)	3420.0
Duration of Activity (months)	**3**
Total Acres	**3,420**

Proposed Access Roads	**Riverside**
(Grading)	**County**
Assume 1% of site would be used for access roads	**(acres)**
Proposed Solar Field Access Roads	34

Proposed Structures - Solar Array	**Average**	**Riverside**	
(Excavation, Material Unloading)	**Excavation**	**County**	**All Links**
	(cu.yd per #)	**#**	**(cu.yd)**
Each Structure			
Total	1	1425600	1,425,600
			All Links
Avg Rate of Excavation	**(cu.yd/day)**	**(cu.yd)**	**(cu.yd)**
Each Structure	250	1,425,600	1,425,600

Table A-11. Fugitive Dust Emissions by Activity - Solar Field - Palo Verde Mesa Solar Project

Source: Emission factors from USEPA AP-42 and South Coast Air Quality Management District, where noted.

								SubTotals of Fugitive Dust Emissions			
								Overall Fugitive Dust Emissions			
						PM10	**PM2.5**			**PM10**	**PM2.5**
						lbs/day	**lbs/day**			**(ton)**	**(ton)**
						38.9	**8.2**	**Overall Proposed Proj.**		**5.1**	**1.0**
Activity Sites and Areas											
Source: "Improvement of Specific Emission Factors (BACM Project No. 1), Final Report", prepared for											
South Coast AQMD by Midwest Research Institute, March 1996											
E = Level 2 Factor = tonPM10/ac-month	0.011	tonPM10/acre-month		22	= activity days/mo					Overall	Overall
f = 0.21 for PM2.5	0.21	PM2.5 fraction (SCAQMD Methodology for PM 2.5, October 2006)		Activity Areas	Activity Areas	PM10	PM2.5		Activity Areas	PM10	PM2.5
Control Effectiveness (watering) =	75.0%	Emission Factors		(acres)	(ac-day)	(lb/day)	(lb/day)		(acres)	(ton)	(ton)
		5.5000	lbPM10 (per acre activity-per mo)	3,420	155	38.86	---		3,420	0.8	---
		1.1550	lbPM2.5 (per acre activity-per mo)	3,420	155	---	8.16		3,420	---	0.2
Access Roads											
Source: "Improvement of Specific Emission Factors (BACM Project No. 1), Final Report", prepared for											Overall
South Coast AQMD by Midwest Research Institute, March 1996											PM2.5
E = Level 2 Factor = tonPM10/ac-month	0.011	tonPM10/acre-month		22	= activity days/mo					Overall	(ton)
f = 0.21 for PM2.5	0.21	PM2.5 fraction (SCAQMD Methodology for PM 2.5, October 2006)		Activity Areas	Activity Areas	PM10	PM2.5		Activity Areas	PM10	---
Control Effectiveness (watering) =	75.0%	Emission Factors		(acre-mo)	(ac-day)	(lb/day)	(lb/day)		(acre-mo)	(ton)	
		5.5000	lbPM10 (per acre activity-per mo)	34	2	0.39	---		34	0.0	---
		1.1550	lbPM2.5 (per acre activity-per mo)	34	2	---	0.08		34	---	0.0
										Overall	Overall
Grading (Bulldozing of Overburden)				Doz/Grad/Scrap		PM10	PM2.5	Doz/Grad/Scrap		PM10	PM2.5
Source: USEPA AP-42, Table 11.9-1, 10/98		Emission Factors		(hr/day)		(lb/day)	(lb/day)	(hr)		(ton)	(ton)
E = 0.75 * (s^1.5) / (M^1.4) = lbPM10/hr		0.143	lbPM10 (per hr bulldozer or grader)	24		3.44	---	1,080		0.1	---
E = 0.105 * 5.7 * (s^1.2) / (M^1.3) = lbPM2.5/hr		0.077	lbPM2.5 (per hr bulldozer or grader)	24		---	1.85	1,080		---	0.0
s = silt content =	8.50	percent (average for construction sites, USEPA AP-42 Table 13.2.2-1)									
M = moisture content =	12.00	percent (SCAQMD CEQA Handbook Table A9-9-G-1, with watering)									
										Overall	Overall
Excavation / Trenching (Removal of Overburden)				Excavation		PM10	PM2.5	Excavation		PM10	PM2.5
Source: USEPA AP-42, Table 11.9-2 (dragline operations), 10/98		Emission Factors		(yd3/day)		(lb/day)	(lb/day)	(cu.yd)		(ton)	(ton)
E = 0.75 * 0.0021 (d^0.7)/(M^0.3) = lbPM10/yd3		0.0006	lbPM10 (per yd3 excavated)	250		0.14	---	1,425,600		0.411	---
E = 0.017 * 0.0021 (d^1.1)/(M^0.3) = lbPM2.5/yd3		0.0000	lbPM2.5 (per yd3 excavated)	250		---	0.01	1,425,600		---	0.018
d = drop height =	5	ft (estimate)									
M = moisture content =	12.00	percent (SCAQMD CEQA Handbook Table A9-9-G-1, with watering)									
Material Unloading/Loading											
Source: USEPA AP-42, p. 13.2.4-3, 11/06											
E = (k)(0.0032)[(U/5)^1.3]/[(M/2)^1.4] = lb/ton											
U = average wind speed =	15.00	mph (upper bound wind, p.13.2.4-4)									
M = moisture content =	12.00	percent (SCAQMD CEQA Handbook Table A9-9-G-1, with watering)		2	= transfers					Overall	Overall
lb of material / yd3 =	2600.00	for moist soil		Excavation	Unloading	PM10	PM2.5	Excavation	Unloading	PM10	PM2.5
		Emission Factors		(yd3/day)	(yd3/day)	(lb/day)	(lb/day)	(cu.yd)	(cu.yd)	(ton)	(ton)
k = 0.35 for PM10	0.35	for PM10	0.00012 lbPM10 (per yd3 unloaded)	250	500	0.06	---	1,425,600	2,851,200	0.176	---
k = 0.053 for PM2.5	0.05	for PM2.5	0.00002 lbPM2.5 (per yd3 unloaded)	250	500	---	0.01	1,425,600	2,851,200	---	0.027

Palo Verde - Construction and Operations

Riverside-Mojave Desert MDAQMD County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	3,500.00	User Defined Unit	3,420.00	3,500.00	0

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	2.6	**Precipitation Freq (Days)**	28
Climate Zone	10			**Operational Year**	2019
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	630.89	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Input the O&M Building (3,500 sf) on the 3,420 acre project site

Construction Phase - Overall duration of 3-years based on Project Description, with general phase overlap based on SRA AQ Report

Off-road Equipment - Equipment list incorporated from SRA's AQ Report

Off-road Equipment - Equipment list incorporated from SRA's AQ Report

Off-road Equipment - Equipment list incorporated from SRA's AQ Report

Off-road Equipment - Equipment list incorporated from SRA's AQ Report

Off-road Equipment - Equipment list incorporated from SRA's AQ Report

Off-road Equipment - Equipment list incorporated from SRA's AQ Report

Off-road Equipment - Equipment list incorporated from SRA's AQ Report

Trips and VMT - Workers and material delivery trucks based on SRA AQ Report

Grading - Matched potential daily area graded of 157 acres (site + access roads) and material loading/unloading of 1,425,600 CY (balanced on-site)

Vehicle Trips - 12 full time employees assumed per Project Description

Energy Use - Updated Title 24 electricity and natural gas energy intensity for Gen Light Industrial to match 2013 Title 24 standards (25% reduction versus 2008 standards)

Water And Wastewater - Indoor water use based on CalEEMod General Light Industrial, adjusted for the O&M Building size

Solid Waste - Solid Waste assumes 1.24 tons/year per 1,000 sf of Gen Light Industrial building

Construction Off-road Equipment Mitigation - Mitigation: Tier 2 engines for all equipment, water exposed area 2x per day, limit vehicle speed to 15 mph

Operational Off-Road Equipment - Added 2 water trucks (8 hrs/day for 10 days/yr) and 2 forklifts and 2 Loaders (each 8 hrs/day for 25 days/yr) to estimate potential operations for O&M

Table Name	Column Name	Default Value	New Value
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
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tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00

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tblConstructionPhase	PhaseEndDate	8/23/2019	11/23/2018
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tblConstructionPhase	PhaseStartDate	6/1/2019	9/1/2018
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tblEnergyUse	NT24NG	0.00	12.42
tblEnergyUse	T24E	0.00	3.13
tblEnergyUse	T24NG	0.00	18.46
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tblOffRoadEquipment	PhaseName		Substation and O&M Buildings
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tblOffRoadEquipment	UsageHours	8.00	6.00
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tblOperationalOffRoadEquipment	OperDaysPerYear	260.00	10.00
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tblTripsAndVMT	HaulingTripNumber	0.00	450.00
tblTripsAndVMT	HaulingTripNumber	0.00	120.00
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tblTripsAndVMT	WorkerTripNumber	20.00	32.00
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tblVehicleTrips	CC_TTP	0.00	28.00
tblVehicleTrips	CNW_TL	6.60	20.00
tblVehicleTrips	CNW_TTP	0.00	13.00
tblVehicleTrips	CW_TL	14.70	20.00

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tblVehicleTrips	PR_TP	0.00	100.00
tblVehicleTrips	ST_TR	0.00	3.5000e-003
tblVehicleTrips	SU_TR	0.00	3.5000e-003
tblVehicleTrips	WD_TR	0.00	3.5000e-003
tblWater	IndoorWaterUseRate	0.00	809,375.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2016	0.5812	4.4530	5.7699	9.1600e-003	0.9210	0.2263	1.1473	0.3051	0.2092	0.5143	0.0000	744.3637	744.3637	0.1145	0.0000	746.7675
2017	1.5145	8.0335	16.1216	0.0280	1.6693	0.4291	2.0984	0.4442	0.4041	0.8483	0.0000	2,077.7177	2,077.7177	0.2458	0.0000	2,082.8785
2018	0.9939	5.6433	11.4552	0.0221	1.3477	0.2845	1.6322	0.3584	0.2659	0.6243	0.0000	1,600.4130	1,600.4130	0.1933	0.0000	1,604.4713
2019	0.1002	0.7364	0.7732	1.8300e-003	0.0566	0.0370	0.0936	0.0152	0.0344	0.0496	0.0000	147.2696	147.2696	0.0249	0.0000	147.7919
Total	**3.1897**	**18.8662**	**34.1200**	**0.0611**	**3.9946**	**0.9769**	**4.9715**	**1.1230**	**0.9134**	**2.0364**	**0.0000**	**4,569.7639**	**4,569.7639**	**0.5783**	**0.0000**	**4,581.9091**

2.1 Overall Construction

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					
2016	0.3282	3.5654	5.6701	9.1600e-003	0.6561	0.1112	0.7673	0.2017	0.1101	0.3119	0.0000	744.3633	744.3633	0.1145	0.0000	746.7671
2017	0.9179	7.6226	15.9211	0.0280	1.6693	0.2690	1.9383	0.4442	0.2667	0.7109	0.0000	2,077.7170	2,077.7170	0.2458	0.0000	2,082.8778
2018	0.6810	5.7819	11.5746	0.0221	1.3477	0.2065	1.5542	0.3584	0.2050	0.5634	0.0000	1,600.4124	1,600.4124	0.1933	0.0000	1,604.4707
2019	0.0565	0.7918	0.8118	1.8300e-003	0.0566	0.0253	0.0819	0.0152	0.0250	0.0402	0.0000	147.2695	147.2695	0.0249	0.0000	147.7918
Total	**1.9836**	**17.7616**	**33.9776**	**0.0611**	**3.7298**	**0.6119**	**4.3417**	**1.0196**	**0.6068**	**1.6264**	**0.0000**	**4,569.7622**	**4,569.7622**	**0.5783**	**0.0000**	**4,581.9074**

	ROG	NOx	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	**37.81**	**5.85**	**0.42**	**0.00**	**6.63**	**37.36**	**12.67**	**9.21**	**33.57**	**20.14**	**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	tons/yr										MT/yr					
Area	0.0208	3.0000e-004	0.0325	0.0000		1.2000e-004	1.2000e-004		1.2000e-004	1.2000e-004	0.0000	0.0625	0.0625	1.7000e-004	0.0000	0.0661
Energy	5.8000e-004	5.3000e-003	4.4500e-003	3.0000e-005		4.0000e-004	4.0000e-004		4.0000e-004	4.0000e-004	0.0000	21.3122	21.3122	8.3000e-004	2.5000e-004	21.4081
Mobile	0.0164	0.1027	0.2660	6.9000e-004	0.0347	2.8500e-003	0.0375	9.3200e-003	2.6300e-003	0.0120	0.0000	53.4440	53.4440	1.3100e-003	0.0000	53.4714
Offroad	0.0147	0.1409	0.1081	1.9000e-004		8.4900e-003	8.4900e-003		7.8100e-003	7.8100e-003	0.0000	17.2281	17.2281	5.4500e-003	0.0000	17.3426
Waste						0.0000	0.0000		0.0000	0.0000	0.8810	0.0000	0.8810	0.0521	0.0000	1.9743
Water						0.0000	0.0000		0.0000	0.0000	0.2568	3.0159	3.2727	0.0265	6.5000e-004	4.0314
Total	**0.0524**	**0.2492**	**0.4110**	**9.1000e-004**	**0.0347**	**0.0119**	**0.0465**	**9.3200e-003**	**0.0110**	**0.0203**	**1.1378**	**95.0627**	**96.2004**	**0.0863**	**9.0000e-004**	**98.2939**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0208	3.0000e-004	0.0325	0.0000		1.2000e-004	1.2000e-004		1.2000e-004	1.2000e-004	0.0000	0.0625	0.0625	1.7000e-004	0.0000	0.0661
Energy	5.8000e-004	5.3000e-003	4.4500e-003	3.0000e-005		4.0000e-004	4.0000e-004		4.0000e-004	4.0000e-004	0.0000	21.3122	21.3122	8.3000e-004	2.5000e-004	21.4081
Mobile	0.0164	0.1027	0.2660	6.9000e-004	0.0347	2.8500e-003	0.0375	9.3200e-003	2.6300e-003	0.0120	0.0000	53.4440	53.4440	1.3100e-003	0.0000	53.4714
Offroad	0.0147	0.1409	0.1081	1.9000e-004		8.4900e-003	8.4900e-003		7.8100e-003	7.8100e-003	0.0000	17.2281	17.2281	5.4500e-003	0.0000	17.3426
Waste						0.0000	0.0000		0.0000	0.0000	0.8810	0.0000	0.8810	0.0521	0.0000	1.9743
Water						0.0000	0.0000		0.0000	0.0000	0.2568	3.0159	3.2727	0.0265	6.5000e-004	4.0309
Total	**0.0524**	**0.2492**	**0.4110**	**9.1000e-004**	**0.0347**	**0.0119**	**0.0465**	**9.3200e-003**	**0.0110**	**0.0203**	**1.1378**	**95.0627**	**96.2004**	**0.0863**	**9.0000e-004**	**98.2935**

	ROG	NOx	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	**28.01**	**56.55**	**26.31**	**20.88**	**0.00**	**71.59**	**18.24**	**0.00**	**71.26**	**38.51**	**0.00**	**18.12**	**17.91**	**6.31**	**0.00**	**17.64**

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 Prep/Grading/Earthwork	Grading	6/1/2016	12/1/2016	5	132	
2	Substation and O&M Buildings	Trenching	10/5/2016	10/12/2018	5	528	
3	Concrete Foundations	Trenching	1/1/2017	5/5/2017	5	90	
4	Structural Steel Work	Trenching	5/6/2017	10/20/2017	5	120	
5	Transmission Line Installation	Trenching	5/29/2018	5/31/2019	5	264	
6	Electrical/Instrumentation	Trenching	9/1/2018	11/23/2018	5	60	
7	Architectural and Landscape	Architectural Coating	11/1/2018	1/23/2019	5	60	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 5,250; Non-Residential Outdoor: 1,750 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Prep/Grading/Earthwork	Excavators	1	8.00	85	0.38
Site Prep/Grading/Earthwork	Graders	1	6.00	185	0.41
Site Prep/Grading/Earthwork	Other Construction Equipment	1	4.00	100	0.42
Site Prep/Grading/Earthwork	Rollers	1	6.00	100	0.38
Site Prep/Grading/Earthwork	Rough Terrain Forklifts	2	4.00	99	0.40
Site Prep/Grading/Earthwork	Rubber Tired Dozers	1	6.00	185	0.40
Site Prep/Grading/Earthwork	Rubber Tired Loaders	1	8.00	78	0.36
Site Prep/Grading/Earthwork	Scrapers	1	6.00	365	0.48
Site Prep/Grading/Earthwork	Tractors/Loaders/Backhoes	0	0.00	97	0.37
Substation and O&M Buildings	Aerial Lifts	2	8.00	75	0.31
Substation and O&M Buildings	Excavators	1	6.00	85	0.38

Substation and O&M Buildings	Generator Sets	3	8.00	30	0.74
Substation and O&M Buildings	Off-Highway Trucks	1	6.00	99	0.38
Substation and O&M Buildings	Other Construction Equipment	1	8.00	100	0.42
Substation and O&M Buildings	Plate Compactors	1	2.00	80	0.43
Substation and O&M Buildings	Rollers	1	6.00	100	0.38
Substation and O&M Buildings	Rough Terrain Forklifts	1	4.00	99	0.40
Substation and O&M Buildings	Rubber Tired Dozers	1	6.00	185	0.40
Substation and O&M Buildings	Skid Steer Loaders	1	6.00	78	0.37
Substation and O&M Buildings	Tractors/Loaders/Backhoes	1	8.00	85	0.37
Substation and O&M Buildings	Trenchers	1	8.00	75	0.50
Concrete Foundations	Cement and Mortar Mixers	4	4.00	10	0.56
Concrete Foundations	Other Construction Equipment	1	6.00	100	0.42
Concrete Foundations	Pavers	1	6.00	173	0.42
Concrete Foundations	Plate Compactors	1	6.00	250	0.43
Concrete Foundations	Rough Terrain Forklifts	2	6.00	99	0.40
Concrete Foundations	Welders	6	6.00	50	0.45
Structural Steel Work	Air Compressors	2	8.00	25	0.48
Structural Steel Work	Cranes	1	4.00	250	0.29
Structural Steel Work	Off-Highway Trucks	1	5.00	99	0.38
Structural Steel Work	Rough Terrain Forklifts	2	5.00	99	0.40
Structural Steel Work	Welders	6	6.00	50	0.45
Transmission Line Installation	Graders	1	2.00	350	0.41
Transmission Line Installation	Other General Industrial Equipment	1	4.00	85	0.34
Transmission Line Installation	Other General Industrial Equipment	4	4.00	10	0.34
Transmission Line Installation	Other General Industrial Equipment	1	4.00	85	0.34
Transmission Line Installation	Other General Industrial Equipment	1	3.00	250	0.34
Transmission Line Installation	Other General Industrial Equipment	1	2.00	250	0.34
Transmission Line Installation	Pumps	2	5.00	10	0.74

Transmission Line Installation	Tractors/Loaders/Backhoes	1	2.00	120	0.37
Electrical/Instrumentation	Generator Sets	3	10.00	30	0.74
Electrical/Instrumentation	Off-Highway Trucks	1	4.00	99	0.38
Electrical/Instrumentation	Other Construction Equipment	2	4.00	180	0.42
Electrical/Instrumentation	Rough Terrain Forklifts	2	6.00	99	0.40
Architectural and Landscape	Aerial Lifts	2	8.00	75	0.31
Architectural and Landscape	Air Compressors	0	0.00	78	0.48
Architectural and Landscape	Generator Sets	3	8.00	30	0.74
Architectural and Landscape	Off-Highway Trucks	1	8.00	99	0.38
Architectural and Landscape	Plate Compactors	1	2.00	80	0.43
Architectural and Landscape	Rough Terrain Forklifts	1	4.00	99	0.40
Architectural and Landscape	Skid Steer Loaders	1	8.00	78	0.37
Architectural and Landscape	Tractors/Loaders/Backhoes	1	8.00	85	0.37
Architectural and Landscape	Trenchers	1	8.00	75	0.50

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 Prep/Grading/Earthwo	9	32.00	14.00	450.00	20.00	30.00	20.00	LD_Mix	HDT_Mix	HHDT
Substation and O&M Buildings	15	800.00	4.00	0.00	20.00	30.00	20.00	LD_Mix	HDT_Mix	HHDT
Concrete Foundations	15	32.00	24.00	0.00	20.00	30.00	20.00	LD_Mix	HDT_Mix	HHDT
Structural Steel Work	12	32.00	14.00	120.00	20.00	30.00	20.00	LD_Mix	HDT_Mix	HHDT
Transmission Line Installation	12	48.00	4.00	0.00	20.00	60.00	20.00	LD_Mix	HDT_Mix	HHDT
Electrical/Instrumentation	8	32.00	12.00	0.00	20.00	30.00	20.00	LD_Mix	HDT_Mix	HHDT
Architectural and Landscape	11	32.00	10.00	0.00	20.00	30.00	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Site Prep/Grading/Earthwork - 2016

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					0.4815	0.0000	0.4815	0.1880	0.0000	0.1880	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.2392	2.6886	1.4741	2.2300e-003		0.1408	0.1408		0.1295	0.1295	0.0000	210.4653	210.4653	0.0635	0.0000	211.7984
Total	**0.2392**	**2.6886**	**1.4741**	**2.2300e-003**	**0.4815**	**0.1408**	**0.6223**	**0.1880**	**0.1295**	**0.3175**	**0.0000**	**210.4653**	**210.4653**	**0.0635**	**0.0000**	**211.7984**

3.2 Site Prep/Grading/Earthwork - 2016

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	4.6100e-003	0.0469	0.0653	1.6000e-004	3.8900e-003	1.4700e-003	5.3600e-003	1.0700e-003	1.3500e-003	2.4200e-003	0.0000	14.6077	14.6077	8.0000e-005	0.0000	14.6093
Vendor	0.0185	0.2325	0.2587	7.7000e-004	0.0240	7.5000e-003	0.0315	6.7300e-003	6.9000e-003	0.0136	0.0000	70.2895	70.2895	3.2000e-004	0.0000	70.2962
Worker	0.0141	0.0264	0.2459	3.7000e-004	0.0316	2.2000e-004	0.0318	8.3800e-003	2.0000e-004	8.5900e-003	0.0000	26.4299	26.4299	1.8100e-003	0.0000	26.4679
Total	**0.0372**	**0.3059**	**0.5700**	**1.3000e-003**	**0.0594**	**9.1900e-003**	**0.0686**	**0.0162**	**8.4500e-003**	**0.0246**	**0.0000**	**111.3271**	**111.3271**	**2.2100e-003**	**0.0000**	**111.3734**

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					0.2167	0.0000	0.2167	0.0846	0.0000	0.0846	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0741	1.9491	1.3816	2.2300e-003		0.0584	0.0584		0.0584	0.0584	0.0000	210.4650	210.4650	0.0635	0.0000	211.7982
Total	**0.0741**	**1.9491**	**1.3816**	**2.2300e-003**	**0.2167**	**0.0584**	**0.2751**	**0.0846**	**0.0584**	**0.1430**	**0.0000**	**210.4650**	**210.4650**	**0.0635**	**0.0000**	**211.7982**

3.2 Site Prep/Grading/Earthwork - 2016

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	4.6100e-003	0.0469	0.0653	1.6000e-004	3.8900e-003	1.4700e-003	5.3600e-003	1.0700e-003	1.3500e-003	2.4200e-003	0.0000	14.6077	14.6077	8.0000e-005	0.0000	14.6093
Vendor	0.0185	0.2325	0.2587	7.7000e-004	0.0240	7.5000e-003	0.0315	6.7300e-003	6.9000e-003	0.0136	0.0000	70.2895	70.2895	3.2000e-004	0.0000	70.2962
Worker	0.0141	0.0264	0.2459	3.7000e-004	0.0316	2.2000e-004	0.0318	8.3800e-003	2.0000e-004	8.5900e-003	0.0000	26.4299	26.4299	1.8100e-003	0.0000	26.4679
Total	**0.0372**	**0.3059**	**0.5700**	**1.3000e-003**	**0.0594**	**9.1900e-003**	**0.0686**	**0.0162**	**8.4500e-003**	**0.0246**	**0.0000**	**111.3271**	**111.3271**	**2.2100e-003**	**0.0000**	**111.3734**

3.3 Substation and O&M Buildings - 2016

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	0.1345	1.1115	0.7564	1.0900e-003		0.0727	0.0727		0.0679	0.0679	0.0000	97.6292	97.6292	0.0272	0.0000	98.1994
Total	**0.1345**	**1.1115**	**0.7564**	**1.0900e-003**		**0.0727**	**0.0727**		**0.0679**	**0.0679**	**0.0000**	**97.6292**	**97.6292**	**0.0272**	**0.0000**	**98.1994**

3.3 Substation and O&M Buildings - 2016

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	2.5300e-003	0.0317	0.0353	1.1000e-004	3.2700e-003	1.0200e-003	4.2900e-003	9.2000e-004	9.4000e-004	1.8600e-003	0.0000	9.5849	9.5849	4.0000e-005	0.0000	9.5859
Worker	0.1678	0.3154	2.9342	4.4200e-003	0.3768	2.6500e-003	0.3794	0.1000	2.4200e-003	0.1025	0.0000	315.3572	315.3572	0.0216	0.0000	315.8104
Total	**0.1703**	**0.3471**	**2.9695**	**4.5300e-003**	**0.3800**	**3.6700e-003**	**0.3837**	**0.1010**	**3.3600e-003**	**0.1043**	**0.0000**	**324.9421**	**324.9421**	**0.0216**	**0.0000**	**325.3962**

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	0.0466	0.9633	0.7491	1.0900e-003		0.0399	0.0399		0.0399	0.0399	0.0000	97.6291	97.6291	0.0272	0.0000	98.1993
Total	**0.0466**	**0.9633**	**0.7491**	**1.0900e-003**		**0.0399**	**0.0399**		**0.0399**	**0.0399**	**0.0000**	**97.6291**	**97.6291**	**0.0272**	**0.0000**	**98.1993**

3.3 Substation and O&M Buildings - 2016

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	2.5300e-003	0.0317	0.0353	1.1000e-004	3.2700e-003	1.0200e-003	4.2900e-003	9.2000e-004	9.4000e-004	1.8600e-003	0.0000	9.5849	9.5849	4.0000e-005	0.0000	9.5859
Worker	0.1678	0.3154	2.9342	4.4200e-003	0.3768	2.6500e-003	0.3794	0.1000	2.4200e-003	0.1025	0.0000	315.3572	315.3572	0.0216	0.0000	315.8104
Total	**0.1703**	**0.3471**	**2.9695**	**4.5300e-003**	**0.3800**	**3.6700e-003**	**0.3837**	**0.1010**	**3.3600e-003**	**0.1043**	**0.0000**	**324.9421**	**324.9421**	**0.0216**	**0.0000**	**325.3962**

3.3 Substation and O&M Buildings - 2017

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	0.5144	4.3392	3.0809	4.5100e-003		0.2769	0.2769		0.2582	0.2582	0.0000	397.8254	397.8254	0.1104	0.0000	400.1433
Total	**0.5144**	**4.3392**	**3.0809**	**4.5100e-003**		**0.2769**	**0.2769**		**0.2582**	**0.2582**	**0.0000**	**397.8254**	**397.8254**	**0.1104**	**0.0000**	**400.1433**

3.3 Substation and O&M Buildings - 2017

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	9.2100e-003	0.1128	0.1312	4.3000e-004	0.0135	3.7000e-003	0.0172	3.7800e-003	3.4000e-003	7.1800e-003	0.0000	38.8249	38.8249	1.6000e-004	0.0000	38.8284
Worker	0.5709	1.1310	10.3448	0.0182	1.5549	0.0103	1.5652	0.4128	9.4900e-003	0.4223	0.0000	1,245.9831	1,245.9831	0.0803	0.0000	1,247.6693
Total	**0.5801**	**1.2438**	**10.4759**	**0.0187**	**1.5683**	**0.0140**	**1.5824**	**0.4166**	**0.0129**	**0.4295**	**0.0000**	**1,284.8080**	**1,284.8080**	**0.0805**	**0.0000**	**1,286.4976**

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	0.1922	3.9754	3.0915	4.5100e-003		0.1647	0.1647		0.1647	0.1647	0.0000	397.8249	397.8249	0.1104	0.0000	400.1428
Total	**0.1922**	**3.9754**	**3.0915**	**4.5100e-003**		**0.1647**	**0.1647**		**0.1647**	**0.1647**	**0.0000**	**397.8249**	**397.8249**	**0.1104**	**0.0000**	**400.1428**

3.3 Substation and O&M Buildings - 2017

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	9.2100e-003	0.1128	0.1312	4.3000e-004	0.0135	3.7000e-003	0.0172	3.7800e-003	3.4000e-003	7.1800e-003	0.0000	38.8249	38.8249	1.6000e-004	0.0000	38.8284
Worker	0.5709	1.1310	10.3448	0.0182	1.5549	0.0103	1.5652	0.4128	9.4900e-003	0.4223	0.0000	1,245.9831	1,245.9831	0.0803	0.0000	1,247.6693
Total	**0.5801**	**1.2438**	**10.4759**	**0.0187**	**1.5683**	**0.0140**	**1.5824**	**0.4166**	**0.0129**	**0.4295**	**0.0000**	**1,284.8080**	**1,284.8080**	**0.0805**	**0.0000**	**1,286.4976**

3.3 Substation and O&M Buildings - 2018

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	0.3563	3.0908	2.3688	3.5500e-003		0.1871	0.1871		0.1746	0.1746	0.0000	309.6722	309.6722	0.0858	0.0000	311.4744
Total	**0.3563**	**3.0908**	**2.3688**	**3.5500e-003**		**0.1871**	**0.1871**		**0.1746**	**0.1746**	**0.0000**	**309.6722**	**309.6722**	**0.0858**	**0.0000**	**311.4744**

3.3 Substation and O&M Buildings - 2018

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	6.5400e-003	0.0778	0.0947	3.4000e-004	0.0106	2.7100e-003	0.0133	2.9700e-003	2.5000e-003	5.4700e-003	0.0000	30.0375	30.0375	1.2000e-004	0.0000	30.0400
Worker	0.3840	0.7931	7.1842	0.0144	1.2260	7.8800e-003	1.2338	0.3255	7.2700e-003	0.3328	0.0000	944.6360	944.6360	0.0584	0.0000	945.8631
Total	**0.3905**	**0.8709**	**7.2788**	**0.0147**	**1.2366**	**0.0106**	**1.2472**	**0.3285**	**9.7700e-003**	**0.3382**	**0.0000**	**974.6735**	**974.6735**	**0.0586**	**0.0000**	**975.9031**

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	0.1516	3.1345	2.4375	3.5500e-003		0.1299	0.1299		0.1299	0.1299	0.0000	309.6718	309.6718	0.0858	0.0000	311.4740
Total	**0.1516**	**3.1345**	**2.4375**	**3.5500e-003**		**0.1299**	**0.1299**		**0.1299**	**0.1299**	**0.0000**	**309.6718**	**309.6718**	**0.0858**	**0.0000**	**311.4740**

3.3 Substation and O&M Buildings - 2018

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	6.5400e-003	0.0778	0.0947	3.4000e-004	0.0106	2.7100e-003	0.0133	2.9700e-003	2.5000e-003	5.4700e-003	0.0000	30.0375	30.0375	1.2000e-004	0.0000	30.0400
Worker	0.3840	0.7931	7.1842	0.0144	1.2260	7.8800e-003	1.2338	0.3255	7.2700e-003	0.3328	0.0000	944.6360	944.6360	0.0584	0.0000	945.8631
Total	**0.3905**	**0.8709**	**7.2788**	**0.0147**	**1.2366**	**0.0106**	**1.2472**	**0.3285**	**9.7700e-003**	**0.3382**	**0.0000**	**974.6735**	**974.6735**	**0.0586**	**0.0000**	**975.9031**

3.4 Concrete Foundations - 2017

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	0.1626	0.9211	0.8379	1.2000e-003		0.0593	0.0593		0.0569	0.0569	0.0000	98.2185	98.2185	0.0254	0.0000	98.7527
Total	**0.1626**	**0.9211**	**0.8379**	**1.2000e-003**		**0.0593**	**0.0593**		**0.0569**	**0.0569**	**0.0000**	**98.2185**	**98.2185**	**0.0254**	**0.0000**	**98.7527**

3.4 Concrete Foundations - 2017

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0191	0.2344	0.2724	9.0000e-004	0.0280	7.6800e-003	0.0357	7.8500e-003	7.0600e-003	0.0149	0.0000	80.6364	80.6364	3.4000e-004	0.0000	80.6436
Worker	7.9000e-003	0.0157	0.1432	2.5000e-004	0.0215	1.4000e-004	0.0217	5.7200e-003	1.3000e-004	5.8500e-003	0.0000	17.2521	17.2521	1.1100e-003	0.0000	17.2754
Total	**0.0270**	**0.2500**	**0.4157**	**1.1500e-003**	**0.0495**	**7.8200e-003**	**0.0573**	**0.0136**	**7.1900e-003**	**0.0208**	**0.0000**	**97.8885**	**97.8885**	**1.4500e-003**	**0.0000**	**97.9190**

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	0.0433	0.9047	0.7243	1.2000e-003		0.0348	0.0348		0.0348	0.0348	0.0000	98.2184	98.2184	0.0254	0.0000	98.7526
Total	**0.0433**	**0.9047**	**0.7243**	**1.2000e-003**		**0.0348**	**0.0348**		**0.0348**	**0.0348**	**0.0000**	**98.2184**	**98.2184**	**0.0254**	**0.0000**	**98.7526**

3.4 Concrete Foundations - 2017

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0191	0.2344	0.2724	9.0000e-004	0.0280	7.6800e-003	0.0357	7.8500e-003	7.0600e-003	0.0149	0.0000	80.6364	80.6364	3.4000e-004	0.0000	80.6436
Worker	7.9000e-003	0.0157	0.1432	2.5000e-004	0.0215	1.4000e-004	0.0217	5.7200e-003	1.3000e-004	5.8500e-003	0.0000	17.2521	17.2521	1.1100e-003	0.0000	17.2754
Total	**0.0270**	**0.2500**	**0.4157**	**1.1500e-003**	**0.0495**	**7.8200e-003**	**0.0573**	**0.0136**	**7.1900e-003**	**0.0208**	**0.0000**	**97.8885**	**97.8885**	**1.4500e-003**	**0.0000**	**97.9190**

3.5 Structural Steel Work - 2017

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	0.2038	1.0653	0.8917	1.3700e-003		0.0646	0.0646		0.0629	0.0629	0.0000	109.4309	109.4309	0.0263	0.0000	109.9822
Total	**0.2038**	**1.0653**	**0.8917**	**1.3700e-003**		**0.0646**	**0.0646**		**0.0629**	**0.0629**	**0.0000**	**109.4309**	**109.4309**	**0.0263**	**0.0000**	**109.9822**

3.5 Structural Steel Work - 2017

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	1.1200e-003	0.0109	0.0167	4.0000e-005	1.0400e-003	3.5000e-004	1.3800e-003	2.8000e-004	3.2000e-004	6.1000e-004	0.0000	3.8266	3.8266	2.0000e-005	0.0000	3.8270
Vendor	0.0149	0.1823	0.2119	7.0000e-004	0.0218	5.9700e-003	0.0277	6.1100e-003	5.4900e-003	0.0116	0.0000	62.7172	62.7172	2.7000e-004	0.0000	62.7228
Worker	0.0105	0.0209	0.1910	3.4000e-004	0.0287	1.9000e-004	0.0289	7.6200e-003	1.8000e-004	7.8000e-003	0.0000	23.0028	23.0028	1.4800e-003	0.0000	23.0339
Total	**0.0265**	**0.2140**	**0.4196**	**1.0800e-003**	**0.0515**	**6.5100e-003**	**0.0580**	**0.0140**	**5.9900e-003**	**0.0200**	**0.0000**	**89.5465**	**89.5465**	**1.7700e-003**	**0.0000**	**89.5836**

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	0.0487	1.0345	0.7941	1.3700e-003		0.0411	0.0411		0.0411	0.0411	0.0000	109.4308	109.4308	0.0263	0.0000	109.9821
Total	**0.0487**	**1.0345**	**0.7941**	**1.3700e-003**		**0.0411**	**0.0411**		**0.0411**	**0.0411**	**0.0000**	**109.4308**	**109.4308**	**0.0263**	**0.0000**	**109.9821**

3.5 Structural Steel Work - 2017

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	1.1200e-003	0.0109	0.0167	4.0000e-005	1.0400e-003	3.5000e-004	1.3800e-003	2.8000e-004	3.2000e-004	6.1000e-004	0.0000	3.8266	3.8266	2.0000e-005	0.0000	3.8270
Vendor	0.0149	0.1823	0.2119	7.0000e-004	0.0218	5.9700e-003	0.0277	6.1100e-003	5.4900e-003	0.0116	0.0000	62.7172	62.7172	2.7000e-004	0.0000	62.7228
Worker	0.0105	0.0209	0.1910	3.4000e-004	0.0287	1.9000e-004	0.0289	7.6200e-003	1.8000e-004	7.8000e-003	0.0000	23.0028	23.0028	1.4800e-003	0.0000	23.0339
Total	**0.0265**	**0.2140**	**0.4196**	**1.0800e-003**	**0.0515**	**6.5100e-003**	**0.0580**	**0.0140**	**5.9900e-003**	**0.0200**	**0.0000**	**89.5465**	**89.5465**	**1.7700e-003**	**0.0000**	**89.5836**

3.6 Transmission Line Installation - 2018

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	0.0867	0.7942	0.4910	1.0100e-003		0.0432	0.0432		0.0400	0.0400	0.0000	89.6358	89.6358	0.0267	0.0000	90.1958
Total	**0.0867**	**0.7942**	**0.4910**	**1.0100e-003**		**0.0432**	**0.0432**		**0.0400**	**0.0400**	**0.0000**	**89.6358**	**89.6358**	**0.0267**	**0.0000**	**90.1958**

3.6 Transmission Line Installation - 2018

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	7.3900e-003	0.1117	0.1058	5.1000e-004	0.0160	4.0800e-003	0.0201	4.4900e-003	3.7600e-003	8.2500e-003	0.0000	44.9605	44.9605	1.8000e-004	0.0000	44.9642
Worker	0.0174	0.0360	0.3259	6.5000e-004	0.0556	3.6000e-004	0.0560	0.0148	3.3000e-004	0.0151	0.0000	42.8542	42.8542	2.6500e-003	0.0000	42.9099
Total	**0.0248**	**0.1477**	**0.4318**	**1.1600e-003**	**0.0717**	**4.4400e-003**	**0.0761**	**0.0193**	**4.0900e-003**	**0.0234**	**0.0000**	**87.8147**	**87.8147**	**2.8300e-003**	**0.0000**	**87.8741**

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	0.0266	0.7381	0.5186	1.0100e-003		0.0202	0.0202		0.0202	0.0202	0.0000	89.6357	89.6357	0.0267	0.0000	90.1957
Total	**0.0266**	**0.7381**	**0.5186**	**1.0100e-003**		**0.0202**	**0.0202**		**0.0202**	**0.0202**	**0.0000**	**89.6357**	**89.6357**	**0.0267**	**0.0000**	**90.1957**

3.6 Transmission Line Installation - 2018

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	7.3900e-003	0.1117	0.1058	5.1000e-004	0.0160	4.0800e-003	0.0201	4.4900e-003	3.7600e-003	8.2500e-003	0.0000	44.9605	44.9605	1.8000e-004	0.0000	44.9642
Worker	0.0174	0.0360	0.3259	6.5000e-004	0.0556	3.6000e-004	0.0560	0.0148	3.3000e-004	0.0151	0.0000	42.8542	42.8542	2.6500e-003	0.0000	42.9099
Total	**0.0248**	**0.1477**	**0.4318**	**1.1600e-003**	**0.0717**	**4.4400e-003**	**0.0761**	**0.0193**	**4.0900e-003**	**0.0234**	**0.0000**	**87.8147**	**87.8147**	**2.8300e-003**	**0.0000**	**87.8741**

3.6 Transmission Line Installation - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0556	0.5022	0.3327	7.1000e-004		0.0264	0.0264		0.0245	0.0245	0.0000	62.0895	62.0895	0.0187	0.0000	62.4830
Total	**0.0556**	**0.5022**	**0.3327**	**7.1000e-004**		**0.0264**	**0.0264**		**0.0245**	**0.0245**	**0.0000**	**62.0895**	**62.0895**	**0.0187**	**0.0000**	**62.4830**

3.6 Transmission Line Installation - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	4.7800e-003	0.0699	0.0686	3.6000e-004	0.0113	2.7100e-003	0.0140	3.1500e-003	2.4900e-003	5.6500e-003	0.0000	31.0625	31.0625	1.2000e-004	0.0000	31.0650
Worker	0.0106	0.0229	0.2068	4.6000e-004	0.0391	2.5000e-004	0.0394	0.0104	2.3000e-004	0.0106	0.0000	29.0331	29.0331	1.7600e-003	0.0000	29.0701
Total	**0.0154**	**0.0928**	**0.2754**	**8.2000e-004**	**0.0504**	**2.9600e-003**	**0.0533**	**0.0135**	**2.7200e-003**	**0.0163**	**0.0000**	**60.0956**	**60.0956**	**1.8800e-003**	**0.0000**	**60.1351**

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	0.0187	0.5191	0.3647	7.1000e-004		0.0142	0.0142		0.0142	0.0142	0.0000	62.0895	62.0895	0.0187	0.0000	62.4829
Total	**0.0187**	**0.5191**	**0.3647**	**7.1000e-004**		**0.0142**	**0.0142**		**0.0142**	**0.0142**	**0.0000**	**62.0895**	**62.0895**	**0.0187**	**0.0000**	**62.4829**

3.6 Transmission Line Installation - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	4.7800e-003	0.0699	0.0686	3.6000e-004	0.0113	2.7100e-003	0.0140	3.1500e-003	2.4900e-003	5.6500e-003	0.0000	31.0625	31.0625	1.2000e-004	0.0000	31.0650
Worker	0.0106	0.0229	0.2068	4.6000e-004	0.0391	2.5000e-004	0.0394	0.0104	2.3000e-004	0.0106	0.0000	29.0331	29.0331	1.7600e-003	0.0000	29.0701
Total	**0.0154**	**0.0928**	**0.2754**	**8.2000e-004**	**0.0504**	**2.9600e-003**	**0.0533**	**0.0135**	**2.7200e-003**	**0.0163**	**0.0000**	**60.0956**	**60.0956**	**1.8800e-003**	**0.0000**	**60.1351**

3.7 Electrical/Instrumentation - 2018

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	0.0464	0.2817	0.2870	4.6000e-004		0.0154	0.0154		0.0151	0.0151	0.0000	36.7146	36.7146	7.5600e-003	0.0000	36.8733
Total	**0.0464**	**0.2817**	**0.2870**	**4.6000e-004**		**0.0154**	**0.0154**		**0.0151**	**0.0151**	**0.0000**	**36.7146**	**36.7146**	**7.5600e-003**	**0.0000**	**36.8733**

3.7 Electrical/Instrumentation - 2018

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	5.7400e-003	0.0683	0.0831	3.0000e-004	9.3100e-003	2.3800e-003	0.0117	2.6100e-003	2.1900e-003	4.8000e-003	0.0000	26.3743	26.3743	1.1000e-004	0.0000	26.3766
Worker	4.5000e-003	9.2800e-003	0.0841	1.7000e-004	0.0144	9.0000e-005	0.0144	3.8100e-003	9.0000e-005	3.9000e-003	0.0000	11.0592	11.0592	6.8000e-004	0.0000	11.0735
Total	**0.0102**	**0.0776**	**0.1673**	**4.7000e-004**	**0.0237**	**2.4700e-003**	**0.0261**	**6.4200e-003**	**2.2800e-003**	**8.7000e-003**	**0.0000**	**37.4335**	**37.4335**	**7.9000e-004**	**0.0000**	**37.4501**

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	0.0200	0.3532	0.2969	4.6000e-004		0.0184	0.0184		0.0184	0.0184	0.0000	36.7146	36.7146	7.5600e-003	0.0000	36.8733
Total	**0.0200**	**0.3532**	**0.2969**	**4.6000e-004**		**0.0184**	**0.0184**		**0.0184**	**0.0184**	**0.0000**	**36.7146**	**36.7146**	**7.5600e-003**	**0.0000**	**36.8733**

3.7 Electrical/Instrumentation - 2018

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	5.7400e-003	0.0683	0.0831	3.0000e-004	9.3100e-003	2.3800e-003	0.0117	2.6100e-003	2.1900e-003	4.8000e-003	0.0000	26.3743	26.3743	1.1000e-004	0.0000	26.3766
Worker	4.5000e-003	9.2800e-003	0.0841	1.7000e-004	0.0144	9.0000e-005	0.0144	3.8100e-003	9.0000e-005	3.9000e-003	0.0000	11.0592	11.0592	6.8000e-004	0.0000	11.0735
Total	**0.0102**	**0.0776**	**0.1673**	**4.7000e-004**	**0.0237**	**2.4700e-003**	**0.0261**	**6.4200e-003**	**2.2800e-003**	**8.7000e-003**	**0.0000**	**37.4335**	**37.4335**	**7.9000e-004**	**0.0000**	**37.4501**

3.8 Architectural and Landscape - 2018

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					
Archit. Coating	0.0291					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0432	0.3330	0.3208	4.8000e-004		0.0199	0.0199		0.0188	0.0188	0.0000	40.7916	40.7916	0.0105	0.0000	41.0117
Total	**0.0722**	**0.3330**	**0.3208**	**4.8000e-004**		**0.0199**	**0.0199**		**0.0188**	**0.0188**	**0.0000**	**40.7916**	**40.7916**	**0.0105**	**0.0000**	**41.0117**

3.8 Architectural and Landscape - 2018

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	3.4300e-003	0.0408	0.0497	1.8000e-004	5.5600e-003	1.4200e-003	6.9800e-003	1.5600e-003	1.3100e-003	2.8700e-003	0.0000	15.7513	15.7513	6.0000e-005	0.0000	15.7527
Worker	3.2200e-003	6.6500e-003	0.0603	1.2000e-004	0.0103	7.0000e-005	0.0104	2.7300e-003	6.0000e-005	2.7900e-003	0.0000	7.9257	7.9257	4.9000e-004	0.0000	7.9360
Total	**6.6500e-003**	**0.0474**	**0.1099**	**3.0000e-004**	**0.0159**	**1.4900e-003**	**0.0173**	**4.2900e-003**	**1.3700e-003**	**5.6600e-003**	**0.0000**	**23.6771**	**23.6771**	**5.5000e-004**	**0.0000**	**23.6887**

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					
Archit. Coating	0.0291					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0216	0.4125	0.3338	4.8000e-004		0.0190	0.0190		0.0190	0.0190	0.0000	40.7916	40.7916	0.0105	0.0000	41.0116
Total	**0.0507**	**0.4125**	**0.3338**	**4.8000e-004**		**0.0190**	**0.0190**		**0.0190**	**0.0190**	**0.0000**	**40.7916**	**40.7916**	**0.0105**	**0.0000**	**41.0116**

3.8 Architectural and Landscape - 2018

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	3.4300e-003	0.0408	0.0497	1.8000e-004	5.5600e-003	1.4200e-003	6.9800e-003	1.5600e-003	1.3100e-003	2.8700e-003	0.0000	15.7513	15.7513	6.0000e-005	0.0000	15.7527
Worker	3.2200e-003	6.6500e-003	0.0603	1.2000e-004	0.0103	7.0000e-005	0.0104	2.7300e-003	6.0000e-005	2.7900e-003	0.0000	7.9257	7.9257	4.9000e-004	0.0000	7.9360
Total	**6.6500e-003**	**0.0474**	**0.1099**	**3.0000e-004**	**0.0159**	**1.4900e-003**	**0.0173**	**4.2900e-003**	**1.3700e-003**	**5.6600e-003**	**0.0000**	**23.6771**	**23.6771**	**5.5000e-004**	**0.0000**	**23.6887**

3.8 Architectural and Landscape - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.0115					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0154	0.1246	0.1254	1.9000e-004		7.0100e-003	7.0100e-003		6.6300e-003	6.6300e-003	0.0000	15.9477	15.9477	4.0500e-003	0.0000	16.0328
Total	**0.0268**	**0.1246**	**0.1254**	**1.9000e-004**		**7.0100e-003**	**7.0100e-003**		**6.6300e-003**	**6.6300e-003**	**0.0000**	**15.9477**	**15.9477**	**4.0500e-003**	**0.0000**	**16.0328**

3.8 Architectural and Landscape - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.2500e-003	0.0144	0.0183	7.0000e-005	2.2000e-003	5.3000e-004	2.7300e-003	6.2000e-004	4.9000e-004	1.1000e-003	0.0000	6.1180	6.1180	2.0000e-005	0.0000	6.1185
Worker	1.1000e-003	2.3800e-003	0.0215	5.0000e-005	4.0700e-003	3.0000e-005	4.0900e-003	1.0800e-003	2.0000e-005	1.1000e-003	0.0000	3.0187	3.0187	1.8000e-004	0.0000	3.0226
Total	**2.3500e-003**	**0.0168**	**0.0398**	**1.2000e-004**	**6.2700e-003**	**5.6000e-004**	**6.8200e-003**	**1.7000e-003**	**5.1000e-004**	**2.2000e-003**	**0.0000**	**9.1368**	**9.1368**	**2.0000e-004**	**0.0000**	**9.1411**

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					
Archit. Coating	0.0115					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	8.5500e-003	0.1631	0.1320	1.9000e-004		7.5200e-003	7.5200e-003		7.5200e-003	7.5200e-003	0.0000	15.9477	15.9477	4.0500e-003	0.0000	16.0327
Total	**0.0200**	**0.1631**	**0.1320**	**1.9000e-004**		**7.5200e-003**	**7.5200e-003**		**7.5200e-003**	**7.5200e-003**	**0.0000**	**15.9477**	**15.9477**	**4.0500e-003**	**0.0000**	**16.0327**

3.8 Architectural and Landscape - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.2500e-003	0.0144	0.0183	7.0000e-005	2.2000e-003	5.3000e-004	2.7300e-003	6.2000e-004	4.9000e-004	1.1000e-003	0.0000	6.1180	6.1180	2.0000e-005	0.0000	6.1185
Worker	1.1000e-003	2.3800e-003	0.0215	5.0000e-005	4.0700e-003	3.0000e-005	4.0900e-003	1.0800e-003	2.0000e-005	1.1000e-003	0.0000	3.0187	3.0187	1.8000e-004	0.0000	3.0226
Total	**2.3500e-003**	**0.0168**	**0.0398**	**1.2000e-004**	**6.2700e-003**	**5.6000e-004**	**6.8200e-003**	**1.7000e-003**	**5.1000e-004**	**2.2000e-003**	**0.0000**	**9.1368**	**9.1368**	**2.0000e-004**	**0.0000**	**9.1411**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0164	0.1027	0.2660	6.9000e-004	0.0347	2.8500e-003	0.0375	9.3200e-003	2.6300e-003	0.0120	0.0000	53.4440	53.4440	1.3100e-003	0.0000	53.4714
Unmitigated	0.0164	0.1027	0.2660	6.9000e-004	0.0347	2.8500e-003	0.0375	9.3200e-003	2.6300e-003	0.0120	0.0000	53.4440	53.4440	1.3100e-003	0.0000	53.4714

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
User Defined Industrial	12.25	12.25	12.25	89,180	89,180
Total	12.25	12.25	12.25	89,180	89,180

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
User Defined Industrial	20.00	20.00	20.00	59.00	28.00	13.00	100	0	0

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.318186	0.082605	0.124254	0.174131	0.069789	0.006036	0.006424	0.207676	0.002412	0.001423	0.002727	0.000325	0.004011

4.4 Fleet Mix

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	15.5446	15.5446	7.1000e-004	1.5000e-004	15.6054
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	15.5446	15.5446	7.1000e-004	1.5000e-004	15.6054
NaturalGas Mitigated	5.8000e-004	5.3000e-003	4.4500e-003	3.0000e-005		4.0000e-004	4.0000e-004		4.0000e-004	4.0000e-004	0.0000	5.7676	5.7676	1.1000e-004	1.1000e-004	5.8027
NaturalGas Unmitigated	5.8000e-004	5.3000e-003	4.4500e-003	3.0000e-005		4.0000e-004	4.0000e-004		4.0000e-004	4.0000e-004	0.0000	5.7676	5.7676	1.1000e-004	1.1000e-004	5.8027

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					
User Defined Industrial	108080	5.8000e-004	5.3000e-003	4.4500e-003	3.0000e-005		4.0000e-004	4.0000e-004		4.0000e-004	4.0000e-004	0.0000	5.7676	5.7676	1.1000e-004	1.1000e-004	5.8027
Total		**5.8000e-004**	**5.3000e-003**	**4.4500e-003**	**3.0000e-005**		**4.0000e-004**	**4.0000e-004**		**4.0000e-004**	**4.0000e-004**	**0.0000**	**5.7676**	**5.7676**	**1.1000e-004**	**1.1000e-004**	**5.8027**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
User Defined Industrial	108080	5.8000e-004	5.3000e-003	4.4500e-003	3.0000e-005		4.0000e-004	4.0000e-004		4.0000e-004	4.0000e-004	0.0000	5.7676	5.7676	1.1000e-004	1.1000e-004	5.8027
Total		**5.8000e-004**	**5.3000e-003**	**4.4500e-003**	**3.0000e-005**		**4.0000e-004**	**4.0000e-004**		**4.0000e-004**	**4.0000e-004**	**0.0000**	**5.7676**	**5.7676**	**1.1000e-004**	**1.1000e-004**	**5.8027**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
User Defined Industrial	54320	15.5446	7.1000e-004	1.5000e-004	15.6054
Total		**15.5446**	**7.1000e-004**	**1.5000e-004**	**15.6054**

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
User Defined Industrial	54320	15.5446	7.1000e-004	1.5000e-004	15.6054
Total		**15.5446**	**7.1000e-004**	**1.5000e-004**	**15.6054**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0208	3.0000e-004	0.0325	0.0000		1.2000e-004	1.2000e-004		1.2000e-004	1.2000e-004	0.0000	0.0625	0.0625	1.7000e-004	0.0000	0.0661
Unmitigated	0.0208	3.0000e-004	0.0325	0.0000		1.2000e-004	1.2000e-004		1.2000e-004	1.2000e-004	0.0000	0.0625	0.0625	1.7000e-004	0.0000	0.0661

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	4.0600e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0137					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	3.0800e-003	3.0000e-004	0.0325	0.0000		1.2000e-004	1.2000e-004		1.2000e-004	1.2000e-004	0.0000	0.0625	0.0625	1.7000e-004	0.0000	0.0661
Total	**0.0208**	**3.0000e-004**	**0.0325**	**0.0000**		**1.2000e-004**	**1.2000e-004**		**1.2000e-004**	**1.2000e-004**	**0.0000**	**0.0625**	**0.0625**	**1.7000e-004**	**0.0000**	**0.0661**

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	4.0600e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0137					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	3.0800e-003	3.0000e-004	0.0325	0.0000		1.2000e-004	1.2000e-004		1.2000e-004	1.2000e-004	0.0000	0.0625	0.0625	1.7000e-004	0.0000	0.0661
Total	**0.0208**	**3.0000e-004**	**0.0325**	**0.0000**		**1.2000e-004**	**1.2000e-004**		**1.2000e-004**	**1.2000e-004**	**0.0000**	**0.0625**	**0.0625**	**1.7000e-004**	**0.0000**	**0.0661**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	3.2727	0.0265	6.5000e-004	4.0309
Unmitigated	3.2727	0.0265	6.5000e-004	4.0314

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
User Defined Industrial	0.809375 / 0	3.2727	0.0265	6.5000e-004	4.0314
Total		**3.2727**	**0.0265**	**6.5000e-004**	**4.0314**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
User Defined Industrial	0.809375 / 0	3.2727	0.0265	6.5000e-004	4.0309
Total		**3.2727**	**0.0265**	**6.5000e-004**	**4.0309**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	0.8810	0.0521	0.0000	1.9743
Unmitigated	0.8810	0.0521	0.0000	1.9743

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
User Defined Industrial	4.34	0.8810	0.0521	0.0000	1.9743
Total		**0.8810**	**0.0521**	**0.0000**	**1.9743**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
User Defined Industrial	4.34	0.8810	0.0521	0.0000	1.9743
Total		**0.8810**	**0.0521**	**0.0000**	**1.9743**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type
Forklifts	2	8.00	25	99	0.20	Diesel
Off-Highway Trucks	2	8.00	10	250	0.38	Diesel
Tractors/Loaders/Backhoes	2	8.00	25	85	0.37	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					
Forklifts	4.4500e-003	0.0397	0.0332	4.0000e-005		3.0800e-003	3.0800e-003		2.8300e-003	2.8300e-003	0.0000	3.8175	3.8175	1.2100e-003	0.0000	3.8429
Off-Highway Trucks	5.1400e-003	0.0500	0.0245	8.0000e-005		1.9900e-003	1.9900e-003		1.8300e-003	1.8300e-003	0.0000	7.2986	7.2986	2.3100e-003	0.0000	7.3471
Tractors/Loaders/Backhoes	5.1000e-003	0.0512	0.0505	7.0000e-005		3.4200e-003	3.4200e-003		3.1400e-003	3.1400e-003	0.0000	6.1121	6.1121	1.9300e-003	0.0000	6.1527
Total	**0.0147**	**0.1409**	**0.1081**	**1.9000e-004**		**8.4900e-003**	**8.4900e-003**		**7.8000e-003**	**7.8000e-003**	**0.0000**	**17.2281**	**17.2281**	**5.4500e-003**	**0.0000**	**17.3426**

10.0 Vegetation

Palo Verde - Construction and Operations

Riverside-Mojave Desert MDAQMD County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	3,500.00	User Defined Unit	3,420.00	3,500.00	0

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	2.6	**Precipitation Freq (Days)**	28
Climate Zone	10			**Operational Year**	2019
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	630.89	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Input the O&M Building (3,500 sf) on the 3,420 acre project site

Construction Phase - Overall duration of 3-years based on Project Description, with general phase overlap based on SRA AQ Report

Off-road Equipment - Equipment list incorporated from SRA's AQ Report

Off-road Equipment - Equipment list incorporated from SRA's AQ Report

Off-road Equipment - Equipment list incorporated from SRA's AQ Report

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Off-road Equipment - Equipment list incorporated from SRA's AQ Report

Off-road Equipment - Equipment list incorporated from SRA's AQ Report

Off-road Equipment - Equipment list incorporated from SRA's AQ Report

Trips and VMT - Workers and material delivery trucks based on SRA AQ Report

Grading - Matched potential daily area graded of 157 acres (site + access roads) and material loading/unloading of 1,425,600 CY (balanced on-site)

Vehicle Trips - 12 full time employees assumed per Project Description

Energy Use - Updated Title 24 electricity and natural gas energy intensity for Gen Light Industrial to match 2013 Title 24 standards (25% reduction versus 2008 standards)

Water And Wastewater - Indoor water use based on CalEEMod General Light Industrial, adjusted for the O&M Building size

Solid Waste - Solid Waste assumes 1.24 tons/year per 1,000 sf of Gen Light Industrial building

Construction Off-road Equipment Mitigation - Mitigation: Tier 2 engines for all equipment, water exposed area 2x per day, limit vehicle speed to 15 mph

Operational Off-Road Equipment - Added 2 water trucks (8 hrs/day for 10 days/yr) and 2 forklifts and 2 Loaders (each 8 hrs/day for 25 days/yr) to estimate potential operations for O&M

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tblTripsAndVMT	VendorTripLength	6.60	30.00
tblTripsAndVMT	VendorTripLength	6.60	30.00
tblTripsAndVMT	VendorTripNumber	0.00	14.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	0.00	24.00
tblTripsAndVMT	VendorTripNumber	0.00	14.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	0.00	12.00
tblTripsAndVMT	VendorTripNumber	0.00	10.00
tblTripsAndVMT	WorkerTripLength	16.80	20.00
tblTripsAndVMT	WorkerTripLength	16.80	20.00
tblTripsAndVMT	WorkerTripLength	16.80	20.00
tblTripsAndVMT	WorkerTripLength	16.80	20.00
tblTripsAndVMT	WorkerTripLength	16.80	20.00
tblTripsAndVMT	WorkerTripLength	16.80	20.00
tblTripsAndVMT	WorkerTripLength	16.80	20.00
tblTripsAndVMT	WorkerTripNumber	23.00	32.00
tblTripsAndVMT	WorkerTripNumber	38.00	800.00
tblTripsAndVMT	WorkerTripNumber	38.00	32.00
tblTripsAndVMT	WorkerTripNumber	30.00	32.00
tblTripsAndVMT	WorkerTripNumber	30.00	48.00
tblTripsAndVMT	WorkerTripNumber	20.00	32.00
tblTripsAndVMT	WorkerTripNumber	0.00	32.00
tblVehicleTrips	CC_TL	6.60	20.00
tblVehicleTrips	CC_TTP	0.00	28.00
tblVehicleTrips	CNW_TL	6.60	20.00
tblVehicleTrips	CNW_TTP	0.00	13.00
tblVehicleTrips	CW_TL	14.70	20.00

tblVehicleTrips	CW_TTP	0.00	59.00
tblVehicleTrips	PR_TP	0.00	100.00
tblVehicleTrips	ST_TR	0.00	3.5000e-003
tblVehicleTrips	SU_TR	0.00	3.5000e-003
tblVehicleTrips	WD_TR	0.00	3.5000e-003
tblWater	IndoorWaterUseRate	0.00	809,375.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2016	13.8058	90.6464	142.1079	0.2321	20.4789	4.6975	25.1764	6.3523	4.3509	10.7032	0.0000	20,174.5327	20,174.5327	2.8041	0.0000	20,233.4182
2017	12.5931	68.0369	126.2430	0.2305	13.3858	3.7290	17.1149	3.5605	3.5100	7.0705	0.0000	19,082.7306	19,082.7306	2.2770	0.0000	19,130.5476
2018	10.5885	61.9238	116.0276	0.2372	14.0093	3.1392	17.1485	3.7241	2.9451	6.6692	0.0000	19,073.0950	19,073.0950	2.2790	0.0000	19,120.9542
2019	4.7322	27.4215	30.0307	0.0643	1.6881	1.4297	3.1178	0.4545	1.3393	1.7938	0.0000	5,724.4520	5,724.4520	0.9693	0.0000	5,744.8076
Total	**41.7196**	**248.0285**	**414.4091**	**0.7640**	**49.5622**	**12.9954**	**62.5576**	**14.0914**	**12.1453**	**26.2368**	**0.0000**	**64,054.8103**	**64,054.8103**	**8.3294**	**0.0000**	**64,229.7276**

2.1 Overall Construction (Maximum Daily Emission)

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					
2016	8.5123	74.7383	140.4748	0.2321	16.4664	2.4078	18.8742	4.7855	2.3867	7.1722	0.0000	20,174.5327	20,174.5327	2.8041	0.0000	20,233.4182
2017	7.4634	64.8746	123.8010	0.2305	13.3858	2.3226	15.7084	3.5605	2.2999	5.8605	0.0000	19,082.7306	19,082.7306	2.2770	0.0000	19,130.5476
2018	6.9345	64.0099	117.3854	0.2372	14.0093	2.3837	16.3930	3.7241	2.3644	6.0885	0.0000	19,073.0950	19,073.0950	2.2790	0.0000	19,120.9542
2019	3.2556	32.2627	31.3921	0.0643	1.6881	1.2655	2.9536	0.4545	1.2560	1.7104	0.0000	5,724.4520	5,724.4520	0.9693	0.0000	5,744.8076
Total	**26.1658**	**235.8855**	**413.0531**	**0.7640**	**45.5497**	**8.3796**	**53.9293**	**12.5247**	**8.3070**	**20.8317**	**0.0000**	**64,054.8103**	**64,054.8103**	**8.3294**	**0.0000**	**64,229.7276**

	ROG	NOx	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	**37.28**	**4.90**	**0.33**	**0.00**	**8.10**	**35.52**	**13.79**	**11.12**	**31.60**	**20.60**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.1313	3.3500e-003	0.3608	3.0000e-005		1.3000e-003	1.3000e-003		1.3000e-003	1.3000e-003		0.7660	0.7660	2.0800e-003		0.8096
Energy	3.1900e-003	0.0290	0.0244	1.7000e-004		2.2100e-003	2.2100e-003		2.2100e-003	2.2100e-003		34.8364	34.8364	6.7000e-004	6.4000e-004	35.0484
Mobile	0.0887	0.5477	1.3630	3.8000e-003	0.1936	0.0157	0.2093	0.0520	0.0145	0.0664		324.0050	324.0050	7.9400e-003		324.1717
Offroad	1.7926	17.2762	11.5875	0.0251		0.9183	0.9183		0.8448	0.8448		2,484.6996	2,484.6996	0.7861		2,501.2083
Total	**2.0159**	**17.8563**	**13.3357**	**0.0291**	**0.1936**	**0.9375**	**1.1312**	**0.0520**	**0.8628**	**0.9148**		**2,844.3070**	**2,844.3070**	**0.7968**	**6.4000e-004**	**2,861.2381**

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	0.1313	3.3500e-003	0.3608	3.0000e-005		1.3000e-003	1.3000e-003		1.3000e-003	1.3000e-003		0.7660	0.7660	2.0800e-003		0.8096
Energy	3.1900e-003	0.0290	0.0244	1.7000e-004		2.2100e-003	2.2100e-003		2.2100e-003	2.2100e-003		34.8364	34.8364	6.7000e-004	6.4000e-004	35.0484
Mobile	0.0887	0.5477	1.3630	3.8000e-003	0.1936	0.0157	0.2093	0.0520	0.0145	0.0664		324.0050	324.0050	7.9400e-003		324.1717
Offroad	1.7926	17.2762	11.5875	0.0251		0.9183	0.9183		0.8448	0.8448		2,484.6996	2,484.6996	0.7861		2,501.2083
Total	**2.0159**	**17.8563**	**13.3357**	**0.0291**	**0.1936**	**0.9375**	**1.1312**	**0.0520**	**0.8628**	**0.9148**		**2,844.3070**	**2,844.3070**	**0.7968**	**6.4000e-004**	**2,861.2381**

	ROG	NOx	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	**88.93**	**96.75**	**86.89**	**86.25**	**0.00**	**97.95**	**81.18**	**0.00**	**97.92**	**92.35**	**0.00**	**87.36**	**87.36**	**98.66**	**0.00**	**87.42**

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 Prep/Grading/Earthwork	Grading	6/1/2016	12/1/2016	5	132	
2	Substation and O&M Buildings	Trenching	10/5/2016	10/12/2018	5	528	
3	Concrete Foundations	Trenching	1/1/2017	5/5/2017	5	90	
4	Structural Steel Work	Trenching	5/6/2017	10/20/2017	5	120	
5	Transmission Line Installation	Trenching	5/29/2018	5/31/2019	5	264	
6	Electrical/Instrumentation	Trenching	9/1/2018	11/23/2018	5	60	
7	Architectural and Landscape	Architectural Coating	11/1/2018	1/23/2019	5	60	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 5,250; Non-Residential Outdoor: 1,750 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Prep/Grading/Earthwork	Excavators	1	8.00	85	0.38
Site Prep/Grading/Earthwork	Graders	1	6.00	185	0.41
Site Prep/Grading/Earthwork	Other Construction Equipment	1	4.00	100	0.42
Site Prep/Grading/Earthwork	Rollers	1	6.00	100	0.38
Site Prep/Grading/Earthwork	Rough Terrain Forklifts	2	4.00	99	0.40
Site Prep/Grading/Earthwork	Rubber Tired Dozers	1	6.00	185	0.40
Site Prep/Grading/Earthwork	Rubber Tired Loaders	1	8.00	78	0.36
Site Prep/Grading/Earthwork	Scrapers	1	6.00	365	0.48
Site Prep/Grading/Earthwork	Tractors/Loaders/Backhoes	0	0.00	97	0.37
Substation and O&M Buildings	Aerial Lifts	2	8.00	75	0.31
Substation and O&M Buildings	Excavators	1	6.00	85	0.38

Substation and O&M Buildings	Generator Sets	3	8.00	30	0.74
Substation and O&M Buildings	Off-Highway Trucks	1	6.00	99	0.38
Substation and O&M Buildings	Other Construction Equipment	1	8.00	100	0.42
Substation and O&M Buildings	Plate Compactors	1	2.00	80	0.43
Substation and O&M Buildings	Rollers	1	6.00	100	0.38
Substation and O&M Buildings	Rough Terrain Forklifts	1	4.00	99	0.40
Substation and O&M Buildings	Rubber Tired Dozers	1	6.00	185	0.40
Substation and O&M Buildings	Skid Steer Loaders	1	6.00	78	0.37
Substation and O&M Buildings	Tractors/Loaders/Backhoes	1	8.00	85	0.37
Substation and O&M Buildings	Trenchers	1	8.00	75	0.50
Concrete Foundations	Cement and Mortar Mixers	4	4.00	10	0.56
Concrete Foundations	Other Construction Equipment	1	6.00	100	0.42
Concrete Foundations	Pavers	1	6.00	173	0.42
Concrete Foundations	Plate Compactors	1	6.00	250	0.43
Concrete Foundations	Rough Terrain Forklifts	2	6.00	99	0.40
Concrete Foundations	Welders	6	6.00	50	0.45
Structural Steel Work	Air Compressors	2	8.00	25	0.48
Structural Steel Work	Cranes	1	4.00	250	0.29
Structural Steel Work	Off-Highway Trucks	1	5.00	99	0.38
Structural Steel Work	Rough Terrain Forklifts	2	5.00	99	0.40
Structural Steel Work	Welders	6	6.00	50	0.45
Transmission Line Installation	Graders	1	2.00	350	0.41
Transmission Line Installation	Other General Industrial Equipment	1	4.00	85	0.34
Transmission Line Installation	Other General Industrial Equipment	4	4.00	10	0.34
Transmission Line Installation	Other General Industrial Equipment	1	4.00	85	0.34
Transmission Line Installation	Other General Industrial Equipment	1	3.00	250	0.34
Transmission Line Installation	Other General Industrial Equipment	1	2.00	250	0.34
Transmission Line Installation	Pumps	2	5.00	10	0.74

Transmission Line Installation	Tractors/Loaders/Backhoes	1	2.00	120	0.37
Electrical/Instrumentation	Generator Sets	3	10.00	30	0.74
Electrical/Instrumentation	Off-Highway Trucks	1	4.00	99	0.38
Electrical/Instrumentation	Other Construction Equipment	2	4.00	180	0.42
Electrical/Instrumentation	Rough Terrain Forklifts	2	6.00	99	0.40
Architectural and Landscape	Aerial Lifts	2	8.00	75	0.31
Architectural and Landscape	Air Compressors	0	0.00	78	0.48
Architectural and Landscape	Generator Sets	3	8.00	30	0.74
Architectural and Landscape	Off-Highway Trucks	1	8.00	99	0.38
Architectural and Landscape	Plate Compactors	1	2.00	80	0.43
Architectural and Landscape	Rough Terrain Forklifts	1	4.00	99	0.40
Architectural and Landscape	Skid Steer Loaders	1	8.00	78	0.37
Architectural and Landscape	Tractors/Loaders/Backhoes	1	8.00	85	0.37
Architectural and Landscape	Trenchers	1	8.00	75	0.50

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 Prep/Grading/Earthwo	9	32.00	14.00	450.00	20.00	30.00	20.00	LD_Mix	HDT_Mix	HHDT
Substation and O&M Buildings	15	800.00	4.00	0.00	20.00	30.00	20.00	LD_Mix	HDT_Mix	HHDT
Concrete Foundations	15	32.00	24.00	0.00	20.00	30.00	20.00	LD_Mix	HDT_Mix	HHDT
Structural Steel Work	12	32.00	14.00	120.00	20.00	30.00	20.00	LD_Mix	HDT_Mix	HHDT
Transmission Line Installation	12	48.00	4.00	0.00	20.00	60.00	20.00	LD_Mix	HDT_Mix	HHDT
Electrical/Instrumentation	8	32.00	12.00	0.00	20.00	30.00	20.00	LD_Mix	HDT_Mix	HHDT
Architectural and Landscape	11	32.00	10.00	0.00	20.00	30.00	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Site Prep/Grading/Earthwork - 2016

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					7.2955	0.0000	7.2955	2.8487	0.0000	2.8487			0.0000			0.0000
Off-Road	3.6234	40.7360	22.3342	0.0338		2.1325	2.1325		1.9619	1.9619		3,515.1248	3,515.1248	1.0603		3,537.3909
Total	**3.6234**	**40.7360**	**22.3342**	**0.0338**	**7.2955**	**2.1325**	**9.4281**	**2.8487**	**1.9619**	**4.8106**		**3,515.1248**	**3,515.1248**	**1.0603**		**3,537.3909**

3.2 Site Prep/Grading/Earthwork - 2016

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	0.0675	0.6975	0.9022	2.4200e-003	0.0598	0.0223	0.0821	0.0164	0.0205	0.0369		243.6235	243.6235	1.2900e-003		243.6506
Vendor	0.2755	3.4470	3.6691	0.0117	0.3685	0.1138	0.4823	0.1033	0.1047	0.2079		1,172.4702	1,172.4702	5.4000e-003		1,172.5835
Worker	0.2111	0.3652	3.4670	5.6200e-003	0.4865	3.3700e-003	0.4899	0.1290	3.0800e-003	0.1321		441.9956	441.9956	0.0302		442.6300
Total	**0.5542**	**4.5098**	**8.0382**	**0.0198**	**0.9148**	**0.1395**	**1.0543**	**0.2487**	**0.1283**	**0.3769**		**1,858.0892**	**1,858.0892**	**0.0369**		**1,858.8640**

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					3.2830	0.0000	3.2830	1.2819	0.0000	1.2819			0.0000			0.0000
Off-Road	1.1223	29.5321	20.9338	0.0338		0.8846	0.8846		0.8846	0.8846	0.0000	3,515.1248	3,515.1248	1.0603		3,537.3909
Total	**1.1223**	**29.5321**	**20.9338**	**0.0338**	**3.2830**	**0.8846**	**4.1676**	**1.2819**	**0.8846**	**2.1665**	**0.0000**	**3,515.1248**	**3,515.1248**	**1.0603**		**3,537.3909**

3.2 Site Prep/Grading/Earthwork - 2016

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	0.0675	0.6975	0.9022	2.4200e-003	0.0598	0.0223	0.0821	0.0164	0.0205	0.0369		243.6235	243.6235	1.2900e-003		243.6506
Vendor	0.2755	3.4470	3.6691	0.0117	0.3685	0.1138	0.4823	0.1033	0.1047	0.2079		1,172.4702	1,172.4702	5.4000e-003		1,172.5835
Worker	0.2111	0.3652	3.4670	5.6200e-003	0.4865	3.3700e-003	0.4899	0.1290	3.0800e-003	0.1321		441.9956	441.9956	0.0302		442.6300
Total	**0.5542**	**4.5098**	**8.0382**	**0.0198**	**0.9148**	**0.1395**	**1.0543**	**0.2487**	**0.1283**	**0.3769**		**1,858.0892**	**1,858.0892**	**0.0369**		**1,858.8640**

3.3 Substation and O&M Buildings - 2016

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	4.2712	35.2846	24.0135	0.0347		2.3088	2.3088		2.1539	2.1539		3,416.4374	3,416.4374	0.9502		3,436.3906
Total	**4.2712**	**35.2846**	**24.0135**	**0.0347**		**2.3088**	**2.3088**		**2.1539**	**2.1539**		**3,416.4374**	**3,416.4374**	**0.9502**		**3,436.3906**

3.3 Substation and O&M Buildings - 2016

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0787	0.9849	1.0483	3.3500e-003	0.1053	0.0325	0.1378	0.0295	0.0299	0.0594		334.9915	334.9915	1.5400e-003		335.0239
Worker	5.2783	9.1311	86.6736	0.1405	12.1633	0.0842	12.2475	3.2254	0.0769	3.3023		11,049.8898	11,049.8898	0.7552		11,065.7489
Total	**5.3570**	**10.1160**	**87.7219**	**0.1438**	**12.2686**	**0.1167**	**12.3853**	**3.2549**	**0.1068**	**3.3617**		**11,384.8812**	**11,384.8812**	**0.7567**		**11,400.7728**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.4788	30.5804	23.7809	0.0347		1.2671	1.2671		1.2671	1.2671	0.0000	3,416.4374	3,416.4374	0.9502		3,436.3906
Total	**1.4788**	**30.5804**	**23.7809**	**0.0347**		**1.2671**	**1.2671**		**1.2671**	**1.2671**	**0.0000**	**3,416.4374**	**3,416.4374**	**0.9502**		**3,436.3906**

3.3 Substation and O&M Buildings - 2016

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0787	0.9849	1.0483	3.3500e-003	0.1053	0.0325	0.1378	0.0295	0.0299	0.0594		334.9915	334.9915	1.5400e-003		335.0239
Worker	5.2783	9.1311	86.6736	0.1405	12.1633	0.0842	12.2475	3.2254	0.0769	3.3023		11,049.8898	11,049.8898	0.7552		11,065.7489
Total	**5.3570**	**10.1160**	**87.7219**	**0.1438**	**12.2686**	**0.1167**	**12.3853**	**3.2549**	**0.1068**	**3.3617**		**11,384.8812**	**11,384.8812**	**0.7567**		**11,400.7728**

3.3 Substation and O&M Buildings - 2017

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	3.9567	33.3785	23.6993	0.0347		2.1296	2.1296		1.9861	1.9861		3,373.2877	3,373.2877	0.9359		3,392.9422
Total	**3.9567**	**33.3785**	**23.6993**	**0.0347**		**2.1296**	**2.1296**		**1.9861**	**1.9861**		**3,373.2877**	**3,373.2877**	**0.9359**		**3,392.9422**

3.3 Substation and O&M Buildings - 2017

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0696	0.8493	0.9457	3.3400e-003	0.1051	0.0285	0.1336	0.0295	0.0262	0.0556		328.7911	328.7911	1.4100e-003		328.8206
Worker	4.3611	7.9265	74.3319	0.1403	12.1633	0.0794	12.2427	3.2254	0.0730	3.2984		10,578.8115	10,578.8115	0.6809		10,593.1094
Total	**4.4307**	**8.7759**	**75.2776**	**0.1436**	**12.2684**	**0.1079**	**12.3763**	**3.2548**	**0.0992**	**3.3540**		**10,907.6026**	**10,907.6026**	**0.6823**		**10,921.9300**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.4788	30.5804	23.7809	0.0347		1.2671	1.2671		1.2671	1.2671	0.0000	3,373.2877	3,373.2877	0.9359		3,392.9422
Total	**1.4788**	**30.5804**	**23.7809**	**0.0347**		**1.2671**	**1.2671**		**1.2671**	**1.2671**	**0.0000**	**3,373.2877**	**3,373.2877**	**0.9359**		**3,392.9422**

3.3 Substation and O&M Buildings - 2017

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0696	0.8493	0.9457	3.3400e-003	0.1051	0.0285	0.1336	0.0295	0.0262	0.0556		328.7911	328.7911	1.4100e-003		328.8206
Worker	4.3611	7.9265	74.3319	0.1403	12.1633	0.0794	12.2427	3.2254	0.0730	3.2984		10,578.8115	10,578.8115	0.6809		10,593.1094
Total	**4.4307**	**8.7759**	**75.2776**	**0.1436**	**12.2684**	**0.1079**	**12.3763**	**3.2548**	**0.0992**	**3.3540**		**10,907.6026**	**10,907.6026**	**0.6823**		**10,921.9300**

3.3 Substation and O&M Buildings - 2018

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	3.4765	30.1545	23.1102	0.0347		1.8252	1.8252		1.7029	1.7029		3,330.2938	3,330.2938	0.9229		3,349.6752
Total	**3.4765**	**30.1545**	**23.1102**	**0.0347**		**1.8252**	**1.8252**		**1.7029**	**1.7029**		**3,330.2938**	**3,330.2938**	**0.9229**		**3,349.6752**

3.3 Substation and O&M Buildings - 2018

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0628	0.7425	0.8671	3.3200e-003	0.1050	0.0265	0.1315	0.0294	0.0244	0.0537		322.6187	322.6187	1.3400e-003		322.6468
Worker	3.7280	7.0455	65.6754	0.1402	12.1633	0.0769	12.2402	3.2254	0.0709	3.2963		10,172.0846	10,172.0846	0.6284		10,185.2810
Total	**3.7908**	**7.7880**	**66.5425**	**0.1435**	**12.2683**	**0.1034**	**12.3716**	**3.2548**	**0.0953**	**3.3500**		**10,494.7033**	**10,494.7033**	**0.6297**		**10,507.9278**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.4788	30.5804	23.7809	0.0347		1.2671	1.2671		1.2671	1.2671	0.0000	3,330.2938	3,330.2938	0.9229		3,349.6751
Total	**1.4788**	**30.5804**	**23.7809**	**0.0347**		**1.2671**	**1.2671**		**1.2671**	**1.2671**	**0.0000**	**3,330.2938**	**3,330.2938**	**0.9229**		**3,349.6751**

3.3 Substation and O&M Buildings - 2018

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0628	0.7425	0.8671	3.3200e-003	0.1050	0.0265	0.1315	0.0294	0.0244	0.0537		322.6187	322.6187	1.3400e-003		322.6468
Worker	3.7280	7.0455	65.6754	0.1402	12.1633	0.0769	12.2402	3.2254	0.0709	3.2963		10,172.0846	10,172.0846	0.6284		10,185.2810
Total	**3.7908**	**7.7880**	**66.5425**	**0.1435**	**12.2683**	**0.1034**	**12.3716**	**3.2548**	**0.0953**	**3.3500**		**10,494.7033**	**10,494.7033**	**0.6297**		**10,507.9278**

3.4 Concrete Foundations - 2017

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	3.6138	20.4695	18.6190	0.0266		1.3176	1.3176		1.2648	1.2648		2,405.9416	2,405.9416	0.6231		2,419.0275
Total	**3.6138**	**20.4695**	**18.6190**	**0.0266**		**1.3176**	**1.3176**		**1.2648**	**1.2648**		**2,405.9416**	**2,405.9416**	**0.6231**		**2,419.0275**

3.4 Concrete Foundations - 2017

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.4175	5.0959	5.6739	0.0200	0.6309	0.1708	0.8016	0.1767	0.1571	0.3338		1,972.7464	1,972.7464	8.4400e-003		1,972.9236
Worker	0.1744	0.3171	2.9733	5.6100e-003	0.4865	3.1800e-003	0.4897	0.1290	2.9200e-003	0.1319		423.1525	423.1525	0.0272		423.7244
Total	**0.5919**	**5.4130**	**8.6472**	**0.0256**	**1.1174**	**0.1739**	**1.2913**	**0.3057**	**0.1600**	**0.4657**		**2,395.8988**	**2,395.8988**	**0.0357**		**2,396.6480**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.9621	20.1054	16.0953	0.0266		0.7737	0.7737		0.7737	0.7737	0.0000	2,405.9416	2,405.9416	0.6231		2,419.0275
Total	**0.9621**	**20.1054**	**16.0953**	**0.0266**		**0.7737**	**0.7737**		**0.7737**	**0.7737**	**0.0000**	**2,405.9416**	**2,405.9416**	**0.6231**		**2,419.0275**

3.4 Concrete Foundations - 2017

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.4175	5.0959	5.6739	0.0200	0.6309	0.1708	0.8016	0.1767	0.1571	0.3338		1,972.7464	1,972.7464	8.4400e-003		1,972.9236
Worker	0.1744	0.3171	2.9733	5.6100e-003	0.4865	3.1800e-003	0.4897	0.1290	2.9200e-003	0.1319		423.1525	423.1525	0.0272		423.7244
Total	**0.5919**	**5.4130**	**8.6472**	**0.0256**	**1.1174**	**0.1739**	**1.2913**	**0.3057**	**0.1600**	**0.4657**		**2,395.8988**	**2,395.8988**	**0.0357**		**2,396.6480**

3.5 Structural Steel Work - 2017

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	3.3964	17.7548	14.8619	0.0229		1.0761	1.0761		1.0483	1.0483		2,010.4485	2,010.4485	0.4823		2,020.5772
Total	**3.3964**	**17.7548**	**14.8619**	**0.0229**		**1.0761**	**1.0761**		**1.0483**	**1.0483**		**2,010.4485**	**2,010.4485**	**0.4823**		**2,020.5772**

3.5 Structural Steel Work - 2017

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	0.0181	0.1774	0.2539	7.1000e-004	0.0175	5.8100e-003	0.0233	4.8100e-003	5.3500e-003	0.0102		70.1999	70.1999	3.6000e-004		70.2074
Vendor	0.2435	2.9726	3.3098	0.0117	0.3680	0.0996	0.4676	0.1031	0.0916	0.1947		1,150.7687	1,150.7687	4.9200e-003		1,150.8721
Worker	0.1744	0.3171	2.9733	5.6100e-003	0.4865	3.1800e-003	0.4897	0.1290	2.9200e-003	0.1319		423.1525	423.1525	0.0272		423.7244
Total	**0.4361**	**3.4671**	**6.5370**	**0.0180**	**0.8721**	**0.1086**	**0.9807**	**0.2369**	**0.0999**	**0.3368**		**1,644.1211**	**1,644.1211**	**0.0325**		**1,644.8039**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.8110	17.2423	13.2352	0.0229		0.6853	0.6853		0.6853	0.6853	0.0000	2,010.4485	2,010.4485	0.4823		2,020.5772
Total	**0.8110**	**17.2423**	**13.2352**	**0.0229**		**0.6853**	**0.6853**		**0.6853**	**0.6853**	**0.0000**	**2,010.4485**	**2,010.4485**	**0.4823**		**2,020.5772**

3.5 Structural Steel Work - 2017

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	0.0181	0.1774	0.2539	7.1000e-004	0.0175	5.8100e-003	0.0233	4.8100e-003	5.3500e-003	0.0102		70.1999	70.1999	3.6000e-004		70.2074
Vendor	0.2435	2.9726	3.3098	0.0117	0.3680	0.0996	0.4676	0.1031	0.0916	0.1947		1,150.7687	1,150.7687	4.9200e-003		1,150.8721
Worker	0.1744	0.3171	2.9733	5.6100e-003	0.4865	3.1800e-003	0.4897	0.1290	2.9200e-003	0.1319		423.1525	423.1525	0.0272		423.7244
Total	**0.4361**	**3.4671**	**6.5370**	**0.0180**	**0.8721**	**0.1086**	**0.9807**	**0.2369**	**0.0999**	**0.3368**		**1,644.1211**	**1,644.1211**	**0.0325**		**1,644.8039**

3.6 Transmission Line Installation - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.1190	10.2471	6.3348	0.0131		0.5568	0.5568		0.5156	0.5156		1,274.9236	1,274.9236	0.3793		1,282.8888
Total	**1.1190**	**10.2471**	**6.3348**	**0.0131**		**0.5568**	**0.5568**		**0.5156**	**0.5156**		**1,274.9236**	**1,274.9236**	**0.3793**		**1,282.8888**

3.6 Transmission Line Installation - 2018

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0943	1.4111	1.3053	6.5800e-003	0.2099	0.0527	0.2626	0.0587	0.0485	0.1072		639.0782	639.0782	2.5200e-003		639.1310
Worker	0.2237	0.4227	3.9405	8.4100e-003	0.7298	4.6100e-003	0.7344	0.1935	4.2500e-003	0.1978		610.3251	610.3251	0.0377		611.1169
Total	**0.3180**	**1.8338**	**5.2458**	**0.0150**	**0.9397**	**0.0573**	**0.9970**	**0.2522**	**0.0528**	**0.3050**		**1,249.4032**	**1,249.4032**	**0.0402**		**1,250.2479**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.3428	9.5239	6.6915	0.0131		0.2611	0.2611		0.2611	0.2611	0.0000	1,274.9236	1,274.9236	0.3793		1,282.8888
Total	**0.3428**	**9.5239**	**6.6915**	**0.0131**		**0.2611**	**0.2611**		**0.2611**	**0.2611**	**0.0000**	**1,274.9236**	**1,274.9236**	**0.3793**		**1,282.8888**

3.6 Transmission Line Installation - 2018

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0943	1.4111	1.3053	6.5800e-003	0.2099	0.0527	0.2626	0.0587	0.0485	0.1072		639.0782	639.0782	2.5200e-003		639.1310
Worker	0.2237	0.4227	3.9405	8.4100e-003	0.7298	4.6100e-003	0.7344	0.1935	4.2500e-003	0.1978		610.3251	610.3251	0.0377		611.1169
Total	**0.3180**	**1.8338**	**5.2458**	**0.0150**	**0.9397**	**0.0573**	**0.9970**	**0.2522**	**0.0528**	**0.3050**		**1,249.4032**	**1,249.4032**	**0.0402**		**1,250.2479**

3.6 Transmission Line Installation - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0201	9.2152	6.1042	0.0131		0.4850	0.4850		0.4494	0.4494		1,255.8165	1,255.8165	0.3789		1,263.7739
Total	**1.0201**	**9.2152**	**6.1042**	**0.0131**		**0.4850**	**0.4850**		**0.4494**	**0.4494**		**1,255.8165**	**1,255.8165**	**0.3789**		**1,263.7739**

3.6 Transmission Line Installation - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0869	1.2562	1.2048	6.5700e-003	0.2096	0.0498	0.2594	0.0586	0.0458	0.1044		627.8616	627.8616	2.4000e-003		627.9119
Worker	0.1941	0.3821	3.5701	8.3900e-003	0.7298	4.5200e-003	0.7343	0.1935	4.1900e-003	0.1977		588.1359	588.1359	0.0357		588.8847
Total	**0.2809**	**1.6383**	**4.7749**	**0.0150**	**0.9394**	**0.0543**	**0.9937**	**0.2521**	**0.0500**	**0.3021**		**1,215.9975**	**1,215.9975**	**0.0381**		**1,216.7965**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.3428	9.5239	6.6915	0.0131		0.2611	0.2611		0.2611	0.2611	0.0000	1,255.8165	1,255.8165	0.3789		1,263.7739
Total	**0.3428**	**9.5239**	**6.6915**	**0.0131**		**0.2611**	**0.2611**		**0.2611**	**0.2611**	**0.0000**	**1,255.8165**	**1,255.8165**	**0.3789**		**1,263.7739**

3.6 Transmission Line Installation - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0869	1.2562	1.2048	6.5700e-003	0.2096	0.0498	0.2594	0.0586	0.0458	0.1044		627.8616	627.8616	2.4000e-003		627.9119
Worker	0.1941	0.3821	3.5701	8.3900e-003	0.7298	4.5200e-003	0.7343	0.1935	4.1900e-003	0.1977		588.1359	588.1359	0.0357		588.8847
Total	**0.2809**	**1.6383**	**4.7749**	**0.0150**	**0.9394**	**0.0543**	**0.9937**	**0.2521**	**0.0500**	**0.3021**		**1,215.9975**	**1,215.9975**	**0.0381**		**1,216.7965**

3.7 Electrical/Instrumentation - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.5469	9.3910	9.5659	0.0154		0.5140	0.5140		0.5026	0.5026		1,349.0317	1,349.0317	0.2777		1,354.8627
Total	**1.5469**	**9.3910**	**9.5659**	**0.0154**		**0.5140**	**0.5140**		**0.5026**	**0.5026**		**1,349.0317**	**1,349.0317**	**0.2777**		**1,354.8627**

3.7 Electrical/Instrumentation - 2018

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1883	2.2275	2.6014	9.9700e-003	0.3149	0.0795	0.3944	0.0881	0.0731	0.1612		967.8560	967.8560	4.0200e-003		967.9405
Worker	0.1491	0.2818	2.6270	5.6100e-003	0.4865	3.0700e-003	0.4896	0.1290	2.8400e-003	0.1319		406.8834	406.8834	0.0251		407.4112
Total	**0.3374**	**2.5094**	**5.2284**	**0.0156**	**0.8014**	**0.0826**	**0.8840**	**0.2171**	**0.0760**	**0.2931**		**1,374.7394**	**1,374.7394**	**0.0292**		**1,375.3518**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.6668	11.7744	9.8962	0.0154		0.6123	0.6123		0.6123	0.6123	0.0000	1,349.0317	1,349.0317	0.2777		1,354.8627
Total	**0.6668**	**11.7744**	**9.8962**	**0.0154**		**0.6123**	**0.6123**		**0.6123**	**0.6123**	**0.0000**	**1,349.0317**	**1,349.0317**	**0.2777**		**1,354.8627**

3.7 Electrical/Instrumentation - 2018

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1883	2.2275	2.6014	9.9700e-003	0.3149	0.0795	0.3944	0.0881	0.0731	0.1612		967.8560	967.8560	4.0200e-003		967.9405
Worker	0.1491	0.2818	2.6270	5.6100e-003	0.4865	3.0700e-003	0.4896	0.1290	2.8400e-003	0.1319		406.8834	406.8834	0.0251		407.4112
Total	**0.3374**	**2.5094**	**5.2284**	**0.0156**	**0.8014**	**0.0826**	**0.8840**	**0.2171**	**0.0760**	**0.2931**		**1,374.7394**	**1,374.7394**	**0.0292**		**1,375.3518**

3.8 Architectural and Landscape - 2018

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					
Archit. Coating	1.3519					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	2.0071	15.4867	14.9191	0.0224		0.9235	0.9235		0.8734	0.8734		2,091.3991	2,091.3991	0.5372		2,102.6811
Total	**3.3590**	**15.4867**	**14.9191**	**0.0224**		**0.9235**	**0.9235**		**0.8734**	**0.8734**		**2,091.3991**	**2,091.3991**	**0.5372**		**2,102.6811**

3.8 Architectural and Landscape - 2018

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1569	1.8563	2.1679	8.3100e-003	0.2624	0.0662	0.3287	0.0734	0.0609	0.1344		806.5467	806.5467	3.3500e-003		806.6171
Worker	0.1491	0.2818	2.6270	5.6100e-003	0.4865	3.0700e-003	0.4896	0.1290	2.8400e-003	0.1319		406.8834	406.8834	0.0251		407.4112
Total	**0.3060**	**2.1381**	**4.7949**	**0.0139**	**0.7489**	**0.0693**	**0.8183**	**0.2025**	**0.0638**	**0.2662**		**1,213.4301**	**1,213.4301**	**0.0285**		**1,214.0283**

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					
Archit. Coating	1.3519					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	1.0064	19.1869	15.5253	0.0224		0.8846	0.8846		0.8846	0.8846	0.0000	2,091.3991	2,091.3991	0.5372		2,102.6811
Total	**2.3582**	**19.1869**	**15.5253**	**0.0224**		**0.8846**	**0.8846**		**0.8846**	**0.8846**	**0.0000**	**2,091.3991**	**2,091.3991**	**0.5372**		**2,102.6811**

3.8 Architectural and Landscape - 2018

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1569	1.8563	2.1679	8.3100e-003	0.2624	0.0662	0.3287	0.0734	0.0609	0.1344		806.5467	806.5467	3.3500e-003		806.6171
Worker	0.1491	0.2818	2.6270	5.6100e-003	0.4865	3.0700e-003	0.4896	0.1290	2.8400e-003	0.1319		406.8834	406.8834	0.0251		407.4112
Total	**0.3060**	**2.1381**	**4.7949**	**0.0139**	**0.7489**	**0.0693**	**0.8183**	**0.2025**	**0.0638**	**0.2662**		**1,213.4301**	**1,213.4301**	**0.0285**		**1,214.0283**

3.8 Architectural and Landscape - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	1.3519					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	1.8056	14.6545	14.7511	0.0224		0.8248	0.8248		0.7797	0.7797		2,068.1530	2,068.1530	0.5254		2,079.1856
Total	**3.1575**	**14.6545**	**14.7511**	**0.0224**		**0.8248**	**0.8248**		**0.7797**	**0.7797**		**2,068.1530**	**2,068.1530**	**0.5254**		**2,079.1856**

3.8 Architectural and Landscape - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1443	1.6588	2.0203	8.3000e-003	0.2621	0.0625	0.3247	0.0733	0.0575	0.1308		792.3946	792.3946	3.2000e-003		792.4618
Worker	0.1294	0.2548	2.3801	5.5900e-003	0.4865	3.0100e-003	0.4896	0.1290	2.7900e-003	0.1318		392.0906	392.0906	0.0238		392.5898
Total	**0.2737**	**1.9136**	**4.4004**	**0.0139**	**0.7487**	**0.0655**	**0.8142**	**0.2023**	**0.0603**	**0.2627**		**1,184.4851**	**1,184.4851**	**0.0270**		**1,185.0516**

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					
Archit. Coating	1.3519					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	1.0064	19.1869	15.5253	0.0224		0.8846	0.8846		0.8846	0.8846	0.0000	2,068.1530	2,068.1530	0.5254		2,079.1856
Total	**2.3582**	**19.1869**	**15.5253**	**0.0224**		**0.8846**	**0.8846**		**0.8846**	**0.8846**	**0.0000**	**2,068.1530**	**2,068.1530**	**0.5254**		**2,079.1856**

3.8 Architectural and Landscape - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1443	1.6588	2.0203	8.3000e-003	0.2621	0.0625	0.3247	0.0733	0.0575	0.1308		792.3946	792.3946	3.2000e-003		792.4618
Worker	0.1294	0.2548	2.3801	5.5900e-003	0.4865	3.0100e-003	0.4896	0.1290	2.7900e-003	0.1318		392.0906	392.0906	0.0238		392.5898
Total	**0.2737**	**1.9136**	**4.4004**	**0.0139**	**0.7487**	**0.0655**	**0.8142**	**0.2023**	**0.0603**	**0.2627**		**1,184.4851**	**1,184.4851**	**0.0270**		**1,185.0516**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0887	0.5477	1.3630	3.8000e-003	0.1936	0.0157	0.2093	0.0520	0.0145	0.0664		324.0050	324.0050	7.9400e-003		324.1717
Unmitigated	0.0887	0.5477	1.3630	3.8000e-003	0.1936	0.0157	0.2093	0.0520	0.0145	0.0664		324.0050	324.0050	7.9400e-003		324.1717

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
User Defined Industrial	12.25	12.25	12.25	89,180	89,180
Total	12.25	12.25	12.25	89,180	89,180

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
User Defined Industrial	20.00	20.00	20.00	59.00	28.00	13.00	100	0	0

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.318186	0.082605	0.124254	0.174131	0.069789	0.006036	0.006424	0.207676	0.002412	0.001423	0.002727	0.000325	0.004011

4.4 Fleet Mix

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	3.1900e-003	0.0290	0.0244	1.7000e-004		2.2100e-003	2.2100e-003		2.2100e-003	2.2100e-003		34.8364	34.8364	6.7000e-004	6.4000e-004	35.0484
NaturalGas Unmitigated	3.1900e-003	0.0290	0.0244	1.7000e-004		2.2100e-003	2.2100e-003		2.2100e-003	2.2100e-003		34.8364	34.8364	6.7000e-004	6.4000e-004	35.0484

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					
User Defined Industrial	296.11	3.1900e-003	0.0290	0.0244	1.7000e-004		2.2100e-003	2.2100e-003		2.2100e-003	2.2100e-003		34.8364	34.8364	6.7000e-004	6.4000e-004	35.0484
Total		**3.1900e-003**	**0.0290**	**0.0244**	**1.7000e-004**		**2.2100e-003**	**2.2100e-003**		**2.2100e-003**	**2.2100e-003**		**34.8364**	**34.8364**	**6.7000e-004**	**6.4000e-004**	**35.0484**

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					
User Defined Industrial	0.29611	3.1900e-003	0.0290	0.0244	1.7000e-004		2.2100e-003	2.2100e-003		2.2100e-003	2.2100e-003		34.8364	34.8364	6.7000e-004	6.4000e-004	35.0484
Total		**3.1900e-003**	**0.0290**	**0.0244**	**1.7000e-004**		**2.2100e-003**	**2.2100e-003**		**2.2100e-003**	**2.2100e-003**		**34.8364**	**34.8364**	**6.7000e-004**	**6.4000e-004**	**35.0484**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.1313	3.3500e-003	0.3608	3.0000e-005		1.3000e-003	1.3000e-003		1.3000e-003	1.3000e-003		0.7660	0.7660	2.0800e-003		0.8096
Unmitigated	0.1313	3.3500e-003	0.3608	3.0000e-005		1.3000e-003	1.3000e-003		1.3000e-003	1.3000e-003		0.7660	0.7660	2.0800e-003		0.8096

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0222					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0749					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	0.0342	3.3500e-003	0.3608	3.0000e-005		1.3000e-003	1.3000e-003		1.3000e-003	1.3000e-003		0.7660	0.7660	2.0800e-003		0.8096
Total	**0.1313**	**3.3500e-003**	**0.3608**	**3.0000e-005**		**1.3000e-003**	**1.3000e-003**		**1.3000e-003**	**1.3000e-003**		**0.7660**	**0.7660**	**2.0800e-003**		**0.8096**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0222					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0749					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	0.0342	3.3500e-003	0.3608	3.0000e-005		1.3000e-003	1.3000e-003		1.3000e-003	1.3000e-003		0.7660	0.7660	2.0800e-003		0.8096
Total	**0.1313**	**3.3500e-003**	**0.3608**	**3.0000e-005**		**1.3000e-003**	**1.3000e-003**		**1.3000e-003**	**1.3000e-003**		**0.7660**	**0.7660**	**2.0800e-003**		**0.8096**

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
Forklifts	2	8.00	25	99	0.20	Diesel
Off-Highway Trucks	2	8.00	10	250	0.38	Diesel
Tractors/Loaders/Backhoes	2	8.00	25	85	0.37	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	lb/day										lb/day					
Forklifts	0.3558	3.1776	2.6567	3.4000e-003		0.2462	0.2462		0.2265	0.2265		336.6454	336.6454	0.1065		338.8821
Off-Highway Trucks	1.0288	10.0022	4.8952	0.0163		0.3987	0.3987		0.3668	0.3668		1,609.0633	1,609.0633	0.5091		1,619.7542
Tractors/Loaders/Backhoes	0.4080	4.0964	4.0356	5.4400e-003		0.2735	0.2735		0.2516	0.2516		538.9909	538.9909	0.1705		542.5720
Total	**1.7926**	**17.2762**	**11.5875**	**0.0251**		**0.9183**	**0.9183**		**0.8449**	**0.8449**		**2,484.6996**	**2,484.6996**	**0.7861**		**2,501.2083**

10.0 Vegetation

Palo Verde - Construction and Operations

Riverside-Mojave Desert MDAQMD County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	3,500.00	User Defined Unit	3,420.00	3,500.00	0

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	2.6	**Precipitation Freq (Days)**	28
Climate Zone	10			**Operational Year**	2019
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	630.89	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Input the O&M Building (3,500 sf) on the 3,420 acre project site

Construction Phase - Overall duration of 3-years based on Project Description, with general phase overlap based on SRA AQ Report

Off-road Equipment - Equipment list incorporated from SRA's AQ Report

Off-road Equipment - Equipment list incorporated from SRA's AQ Report

Off-road Equipment - Equipment list incorporated from SRA's AQ Report

Off-road Equipment - Equipment list incorporated from SRA's AQ Report

Off-road Equipment - Equipment list incorporated from SRA's AQ Report

Off-road Equipment - Equipment list incorporated from SRA's AQ Report

Off-road Equipment - Equipment list incorporated from SRA's AQ Report

Trips and VMT - Workers and material delivery trucks based on SRA AQ Report

Grading - Matched potential daily area graded of 157 acres (site + access roads) and material loading/unloading of 1,425,600 CY (balanced on-site)

Vehicle Trips - 12 full time employees assumed per Project Description

Energy Use - Updated Title 24 electricity and natural gas energy intensity for Gen Light Industrial to match 2013 Title 24 standards (25% reduction versus 2008 standards)

Water And Wastewater - Indoor water use based on CalEEMod General Light Industrial, adjusted for the O&M Building size

Solid Waste - Solid Waste assumes 1.24 tons/year per 1,000 sf of Gen Light Industrial building

Construction Off-road Equipment Mitigation - Mitigation: Tier 2 engines for all equipment, water exposed area 2x per day, limit vehicle speed to 15 mph

Operational Off-Road Equipment - Added 2 water trucks (8 hrs/day for 10 days/yr) and 2 forklifts and 2 Loaders (each 8 hrs/day for 25 days/yr) to estimate potential operations for O&M

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tblConstructionPhase	PhaseEndDate	8/23/2019	11/23/2018
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2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2016	15.1297	90.7486	162.3036	0.2354	20.4789	4.6972	25.1761	6.3523	4.3507	10.7029	0.0000	20,407.8005	20,407.8005	2.8040	0.0000	20,466.6837
2017	13.7105	68.0929	143.0838	0.2338	13.3858	3.7287	17.1145	3.5605	3.5096	7.0702	0.0000	19,308.2719	19,308.2719	2.2769	0.0000	19,356.0859
2018	11.6044	62.0387	131.3312	0.2406	14.0093	3.1390	17.1483	3.7241	2.9448	6.6690	0.0000	19,301.3866	19,301.3866	2.2789	0.0000	19,349.2436
2019	4.8123	27.3283	31.2493	0.0646	1.6881	1.4295	3.1176	0.4545	1.3392	1.7937	0.0000	5,745.7270	5,745.7270	0.9692	0.0000	5,766.0811
Total	**45.2569**	**248.2084**	**467.9679**	**0.7743**	**49.5622**	**12.9943**	**62.5565**	**14.0914**	**12.1443**	**26.2358**	**0.0000**	**64,763.1859**	**64,763.1859**	**8.3290**	**0.0000**	**64,938.0942**

2.1 Overall Construction (Maximum Daily Emission)

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					
2016	9.8362	74.8406	160.6706	0.2354	16.4664	2.4075	18.8739	4.7855	2.3864	7.1719	0.0000	20,407.8005	20,407.8005	2.8040	0.0000	20,466.6837
2017	8.5808	64.9306	140.6417	0.2338	13.3858	2.3222	15.7081	3.5605	2.2996	5.8602	0.0000	19,308.2719	19,308.2719	2.2769	0.0000	19,356.0859
2018	7.9504	64.1247	132.6889	0.2406	14.0093	2.3834	16.3928	3.7241	2.3642	6.0883	0.0000	19,301.3866	19,301.3866	2.2789	0.0000	19,349.2436
2019	3.3357	32.1694	32.6107	0.0646	1.6881	1.2654	2.9535	0.4545	1.2558	1.7103	0.0000	5,745.7270	5,745.7270	0.9692	0.0000	5,766.0811
Total	**29.7031**	**236.0653**	**466.6119**	**0.7743**	**45.5497**	**8.3785**	**53.9282**	**12.5247**	**8.3060**	**20.8307**	**0.0000**	**64,763.1859**	**64,763.1859**	**8.3290**	**0.0000**	**64,938.0942**

	ROG	NOx	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	**34.37**	**4.89**	**0.29**	**0.00**	**8.10**	**35.52**	**13.79**	**11.12**	**31.61**	**20.60**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.1313	3.3500e-003	0.3608	3.0000e-005		1.3000e-003	1.3000e-003		1.3000e-003	1.3000e-003		0.7660	0.7660	2.0800e-003		0.8096
Energy	3.1900e-003	0.0290	0.0244	1.7000e-004		2.2100e-003	2.2100e-003		2.2100e-003	2.2100e-003		34.8364	34.8364	6.7000e-004	6.4000e-004	35.0484
Mobile	0.0973	0.5325	1.4938	3.8300e-003	0.1936	0.0157	0.2093	0.0520	0.0144	0.0664		326.7693	326.7693	7.9200e-003		326.9356
Offroad	1.7926	17.2762	11.5875	0.0251		0.9183	0.9183		0.8448	0.8448		2,484.6996	2,484.6996	0.7861		2,501.2083
Total	**2.0244**	**17.8411**	**13.4666**	**0.0291**	**0.1936**	**0.9375**	**1.1311**	**0.0520**	**0.8628**	**0.9148**		**2,847.0713**	**2,847.0713**	**0.7968**	**6.4000e-004**	**2,864.0020**

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	0.1313	3.3500e-003	0.3608	3.0000e-005		1.3000e-003	1.3000e-003		1.3000e-003	1.3000e-003		0.7660	0.7660	2.0800e-003		0.8096
Energy	3.1900e-003	0.0290	0.0244	1.7000e-004		2.2100e-003	2.2100e-003		2.2100e-003	2.2100e-003		34.8364	34.8364	6.7000e-004	6.4000e-004	35.0484
Mobile	0.0973	0.5325	1.4938	3.8300e-003	0.1936	0.0157	0.2093	0.0520	0.0144	0.0664		326.7693	326.7693	7.9200e-003		326.9356
Offroad	1.7926	17.2762	11.5875	0.0251		0.9183	0.9183		0.8448	0.8448		2,484.6996	2,484.6996	0.7861		2,501.2083
Total	**2.0244**	**17.8411**	**13.4666**	**0.0291**	**0.1936**	**0.9375**	**1.1311**	**0.0520**	**0.8628**	**0.9148**		**2,847.0713**	**2,847.0713**	**0.7968**	**6.4000e-004**	**2,864.0020**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**88.55**	**96.83**	**86.05**	**86.16**	**0.00**	**97.95**	**81.19**	**0.00**	**97.92**	**92.36**	**0.00**	**87.27**	**87.27**	**98.66**	**0.00**	**87.33**

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 Prep/Grading/Earthwork	Grading	6/1/2016	12/1/2016	5	132	
2	Substation and O&M Buildings	Trenching	10/5/2016	10/12/2018	5	528	
3	Concrete Foundations	Trenching	1/1/2017	5/5/2017	5	90	
4	Structural Steel Work	Trenching	5/6/2017	10/20/2017	5	120	
5	Transmission Line Installation	Trenching	5/29/2018	5/31/2019	5	264	
6	Electrical/Instrumentation	Trenching	9/1/2018	11/23/2018	5	60	
7	Architectural and Landscape	Architectural Coating	11/1/2018	1/23/2019	5	60	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 5,250; Non-Residential Outdoor: 1,750 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Prep/Grading/Earthwork	Excavators	1	8.00	85	0.38
Site Prep/Grading/Earthwork	Graders	1	6.00	185	0.41
Site Prep/Grading/Earthwork	Other Construction Equipment	1	4.00	100	0.42
Site Prep/Grading/Earthwork	Rollers	1	6.00	100	0.38
Site Prep/Grading/Earthwork	Rough Terrain Forklifts	2	4.00	99	0.40
Site Prep/Grading/Earthwork	Rubber Tired Dozers	1	6.00	185	0.40
Site Prep/Grading/Earthwork	Rubber Tired Loaders	1	8.00	78	0.36
Site Prep/Grading/Earthwork	Scrapers	1	6.00	365	0.48
Site Prep/Grading/Earthwork	Tractors/Loaders/Backhoes	0	0.00	97	0.37
Substation and O&M Buildings	Aerial Lifts	2	8.00	75	0.31
Substation and O&M Buildings	Excavators	1	6.00	85	0.38

Substation and O&M Buildings	Generator Sets	3	8.00	30	0.74
Substation and O&M Buildings	Off-Highway Trucks	1	6.00	99	0.38
Substation and O&M Buildings	Other Construction Equipment	1	8.00	100	0.42
Substation and O&M Buildings	Plate Compactors	1	2.00	80	0.43
Substation and O&M Buildings	Rollers	1	6.00	100	0.38
Substation and O&M Buildings	Rough Terrain Forklifts	1	4.00	99	0.40
Substation and O&M Buildings	Rubber Tired Dozers	1	6.00	185	0.40
Substation and O&M Buildings	Skid Steer Loaders	1	6.00	78	0.37
Substation and O&M Buildings	Tractors/Loaders/Backhoes	1	8.00	85	0.37
Substation and O&M Buildings	Trenchers	1	8.00	75	0.50
Concrete Foundations	Cement and Mortar Mixers	4	4.00	10	0.56
Concrete Foundations	Other Construction Equipment	1	6.00	100	0.42
Concrete Foundations	Pavers	1	6.00	173	0.42
Concrete Foundations	Plate Compactors	1	6.00	250	0.43
Concrete Foundations	Rough Terrain Forklifts	2	6.00	99	0.40
Concrete Foundations	Welders	6	6.00	50	0.45
Structural Steel Work	Air Compressors	2	8.00	25	0.48
Structural Steel Work	Cranes	1	4.00	250	0.29
Structural Steel Work	Off-Highway Trucks	1	5.00	99	0.38
Structural Steel Work	Rough Terrain Forklifts	2	5.00	99	0.40
Structural Steel Work	Welders	6	6.00	50	0.45
Transmission Line Installation	Graders	1	2.00	350	0.41
Transmission Line Installation	Other General Industrial Equipment	1	4.00	85	0.34
Transmission Line Installation	Other General Industrial Equipment	4	4.00	10	0.34
Transmission Line Installation	Other General Industrial Equipment	1	4.00	85	0.34
Transmission Line Installation	Other General Industrial Equipment	1	3.00	250	0.34
Transmission Line Installation	Other General Industrial Equipment	1	2.00	250	0.34
Transmission Line Installation	Pumps	2	5.00	10	0.74

Transmission Line Installation	Tractors/Loaders/Backhoes	1	2.00	120	0.37
Electrical/Instrumentation	Generator Sets	3	10.00	30	0.74
Electrical/Instrumentation	Off-Highway Trucks	1	4.00	99	0.38
Electrical/Instrumentation	Other Construction Equipment	2	4.00	180	0.42
Electrical/Instrumentation	Rough Terrain Forklifts	2	6.00	99	0.40
Architectural and Landscape	Aerial Lifts	2	8.00	75	0.31
Architectural and Landscape	Air Compressors	0	0.00	78	0.48
Architectural and Landscape	Generator Sets	3	8.00	30	0.74
Architectural and Landscape	Off-Highway Trucks	1	8.00	99	0.38
Architectural and Landscape	Plate Compactors	1	2.00	80	0.43
Architectural and Landscape	Rough Terrain Forklifts	1	4.00	99	0.40
Architectural and Landscape	Skid Steer Loaders	1	8.00	78	0.37
Architectural and Landscape	Tractors/Loaders/Backhoes	1	8.00	85	0.37
Architectural and Landscape	Trenchers	1	8.00	75	0.50

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 Prep/Grading/Earthwo	9	32.00	14.00	450.00	20.00	30.00	20.00	LD_Mix	HDT_Mix	HHDT
Substation and O&M Buildings	15	800.00	4.00	0.00	20.00	30.00	20.00	LD_Mix	HDT_Mix	HHDT
Concrete Foundations	15	32.00	24.00	0.00	20.00	30.00	20.00	LD_Mix	HDT_Mix	HHDT
Structural Steel Work	12	32.00	14.00	120.00	20.00	30.00	20.00	LD_Mix	HDT_Mix	HHDT
Transmission Line Installation	12	48.00	4.00	0.00	20.00	60.00	20.00	LD_Mix	HDT_Mix	HHDT
Electrical/Instrumentation	8	32.00	12.00	0.00	20.00	30.00	20.00	LD_Mix	HDT_Mix	HHDT
Architectural and Landscape	11	32.00	10.00	0.00	20.00	30.00	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Site Prep/Grading/Earthwork - 2016

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					7.2955	0.0000	7.2955	2.8487	0.0000	2.8487			0.0000			0.0000
Off-Road	3.6234	40.7360	22.3342	0.0338		2.1325	2.1325		1.9619	1.9619		3,515.1248	3,515.1248	1.0603		3,537.3909
Total	**3.6234**	**40.7360**	**22.3342**	**0.0338**	**7.2955**	**2.1325**	**9.4281**	**2.8487**	**1.9619**	**4.8106**		**3,515.1248**	**3,515.1248**	**1.0603**		**3,537.3909**

3.2 Site Prep/Grading/Earthwork - 2016

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	0.0675	0.6715	0.9068	2.4300e-003	0.0598	0.0223	0.0820	0.0164	0.0205	0.0369		244.2263	244.2263	1.2600e-003		244.2528
Vendor	0.2761	3.3058	3.7600	0.0117	0.3685	0.1136	0.4821	0.1033	0.1045	0.2077		1,175.0267	1,175.0267	5.3300e-003		1,175.1386
Worker	0.2620	0.3772	4.2390	5.7400e-003	0.4865	3.3700e-003	0.4899	0.1290	3.0800e-003	0.1321		450.8178	450.8178	0.0302		451.4522
Total	**0.6056**	**4.3545**	**8.9059**	**0.0199**	**0.9148**	**0.1392**	**1.0540**	**0.2487**	**0.1280**	**0.3767**		**1,870.0708**	**1,870.0708**	**0.0368**		**1,870.8436**

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					3.2830	0.0000	3.2830	1.2819	0.0000	1.2819			0.0000			0.0000
Off-Road	1.1223	29.5321	20.9338	0.0338		0.8846	0.8846		0.8846	0.8846	0.0000	3,515.1248	3,515.1248	1.0603		3,537.3909
Total	**1.1223**	**29.5321**	**20.9338**	**0.0338**	**3.2830**	**0.8846**	**4.1676**	**1.2819**	**0.8846**	**2.1665**	**0.0000**	**3,515.1248**	**3,515.1248**	**1.0603**		**3,537.3909**

3.2 Site Prep/Grading/Earthwork - 2016

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	0.0675	0.6715	0.9068	2.4300e-003	0.0598	0.0223	0.0820	0.0164	0.0205	0.0369		244.2263	244.2263	1.2600e-003		244.2528
Vendor	0.2761	3.3058	3.7600	0.0117	0.3685	0.1136	0.4821	0.1033	0.1045	0.2077		1,175.0267	1,175.0267	5.3300e-003		1,175.1386
Worker	0.2620	0.3772	4.2390	5.7400e-003	0.4865	3.3700e-003	0.4899	0.1290	3.0800e-003	0.1321		450.8178	450.8178	0.0302		451.4522
Total	**0.6056**	**4.3545**	**8.9059**	**0.0199**	**0.9148**	**0.1392**	**1.0540**	**0.2487**	**0.1280**	**0.3767**		**1,870.0708**	**1,870.0708**	**0.0368**		**1,870.8436**

3.3 Substation and O&M Buildings - 2016

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	4.2712	35.2846	24.0135	0.0347		2.3088	2.3088		2.1539	2.1539		3,416.4374	3,416.4374	0.9502		3,436.3906
Total	**4.2712**	**35.2846**	**24.0135**	**0.0347**		**2.3088**	**2.3088**		**2.1539**	**2.1539**		**3,416.4374**	**3,416.4374**	**0.9502**		**3,436.3906**

3.3 Substation and O&M Buildings - 2016

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0789	0.9445	1.0743	3.3500e-003	0.1053	0.0324	0.1377	0.0295	0.0298	0.0594		335.7219	335.7219	1.5200e-003		335.7539
Worker	6.5506	9.4290	105.9758	0.1436	12.1633	0.0842	12.2475	3.2254	0.0769	3.3023		11,270.4456	11,270.4456	0.7552		11,286.3047
Total	**6.6295**	**10.3735**	**107.0500**	**0.1470**	**12.2686**	**0.1167**	**12.3853**	**3.2549**	**0.1068**	**3.3617**		**11,606.1675**	**11,606.1675**	**0.7567**		**11,622.0586**

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	lb/day										lb/day					
Off-Road	1.4788	30.5804	23.7809	0.0347		1.2671	1.2671		1.2671	1.2671	0.0000	3,416.4374	3,416.4374	0.9502		3,436.3906
Total	**1.4788**	**30.5804**	**23.7809**	**0.0347**		**1.2671**	**1.2671**		**1.2671**	**1.2671**	**0.0000**	**3,416.4374**	**3,416.4374**	**0.9502**		**3,436.3906**

3.3 Substation and O&M Buildings - 2016

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0789	0.9445	1.0743	3.3500e-003	0.1053	0.0324	0.1377	0.0295	0.0298	0.0594		335.7219	335.7219	1.5200e-003		335.7539
Worker	6.5506	9.4290	105.9758	0.1436	12.1633	0.0842	12.2475	3.2254	0.0769	3.3023		11,270.4456	11,270.4456	0.7552		11,286.3047
Total	**6.6295**	**10.3735**	**107.0500**	**0.1470**	**12.2686**	**0.1167**	**12.3853**	**3.2549**	**0.1068**	**3.3617**		**11,606.1675**	**11,606.1675**	**0.7567**		**11,622.0586**

3.3 Substation and O&M Buildings - 2017

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	3.9567	33.3785	23.6993	0.0347		2.1296	2.1296		1.9861	1.9861		3,373.2877	3,373.2877	0.9359		3,392.9422
Total	**3.9567**	**33.3785**	**23.6993**	**0.0347**		**2.1296**	**2.1296**		**1.9861**	**1.9861**		**3,373.2877**	**3,373.2877**	**0.9359**		**3,392.9422**

3.3 Substation and O&M Buildings - 2017

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0696	0.8151	0.9607	3.3400e-003	0.1051	0.0284	0.1336	0.0295	0.0261	0.0556		329.5115	329.5115	1.3900e-003		329.5406
Worker	5.4351	8.2105	90.4237	0.1434	12.1633	0.0794	12.2427	3.2254	0.0730	3.2984		10,790.8291	10,790.8291	0.6809		10,805.1270
Total	**5.5047**	**9.0256**	**91.3844**	**0.1467**	**12.2684**	**0.1078**	**12.3763**	**3.2548**	**0.0991**	**3.3540**		**11,120.3406**	**11,120.3406**	**0.6822**		**11,134.6676**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.4788	30.5804	23.7809	0.0347		1.2671	1.2671		1.2671	1.2671	0.0000	3,373.2877	3,373.2877	0.9359		3,392.9422
Total	**1.4788**	**30.5804**	**23.7809**	**0.0347**		**1.2671**	**1.2671**		**1.2671**	**1.2671**	**0.0000**	**3,373.2877**	**3,373.2877**	**0.9359**		**3,392.9422**

3.3 Substation and O&M Buildings - 2017

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0696	0.8151	0.9607	3.3400e-003	0.1051	0.0284	0.1336	0.0295	0.0261	0.0556		329.5115	329.5115	1.3900e-003		329.5406
Worker	5.4351	8.2105	90.4237	0.1434	12.1633	0.0794	12.2427	3.2254	0.0730	3.2984		10,790.8291	10,790.8291	0.6809		10,805.1270
Total	**5.5047**	**9.0256**	**91.3844**	**0.1467**	**12.2684**	**0.1078**	**12.3763**	**3.2548**	**0.0991**	**3.3540**		**11,120.3406**	**11,120.3406**	**0.6822**		**11,134.6676**

3.3 Substation and O&M Buildings - 2018

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	3.4765	30.1545	23.1102	0.0347		1.8252	1.8252		1.7029	1.7029		3,330.2938	3,330.2938	0.9229		3,349.6752
Total	**3.4765**	**30.1545**	**23.1102**	**0.0347**		**1.8252**	**1.8252**		**1.7029**	**1.7029**		**3,330.2938**	**3,330.2938**	**0.9229**		**3,349.6752**

3.3 Substation and O&M Buildings - 2018

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0627	0.7131	0.8729	3.3300e-003	0.1050	0.0265	0.1314	0.0294	0.0243	0.0537		323.3285	323.3285	1.3200e-003		323.3563
Worker	4.6517	7.3131	79.5490	0.1432	12.1633	0.0769	12.2402	3.2254	0.0709	3.2963		10,376.3957	10,376.3957	0.6284		10,389.5921
Total	**4.7144**	**8.0262**	**80.4219**	**0.1465**	**12.2683**	**0.1033**	**12.3716**	**3.2548**	**0.0952**	**3.3500**		**10,699.7243**	**10,699.7243**	**0.6297**		**10,712.9484**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.4788	30.5804	23.7809	0.0347		1.2671	1.2671		1.2671	1.2671	0.0000	3,330.2938	3,330.2938	0.9229		3,349.6751
Total	**1.4788**	**30.5804**	**23.7809**	**0.0347**		**1.2671**	**1.2671**		**1.2671**	**1.2671**	**0.0000**	**3,330.2938**	**3,330.2938**	**0.9229**		**3,349.6751**

3.3 Substation and O&M Buildings - 2018

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0627	0.7131	0.8729	3.3300e-003	0.1050	0.0265	0.1314	0.0294	0.0243	0.0537		323.3285	323.3285	1.3200e-003		323.3563
Worker	4.6517	7.3131	79.5490	0.1432	12.1633	0.0769	12.2402	3.2254	0.0709	3.2963		10,376.3957	10,376.3957	0.6284		10,389.5921
Total	**4.7144**	**8.0262**	**80.4219**	**0.1465**	**12.2683**	**0.1033**	**12.3716**	**3.2548**	**0.0952**	**3.3500**		**10,699.7243**	**10,699.7243**	**0.6297**		**10,712.9484**

3.4 Concrete Foundations - 2017

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	3.6138	20.4695	18.6190	0.0266		1.3176	1.3176		1.2648	1.2648		2,405.9416	2,405.9416	0.6231		2,419.0275
Total	**3.6138**	**20.4695**	**18.6190**	**0.0266**		**1.3176**	**1.3176**		**1.2648**	**1.2648**		**2,405.9416**	**2,405.9416**	**0.6231**		**2,419.0275**

3.4 Concrete Foundations - 2017

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.4178	4.8908	5.7642	0.0201	0.6309	0.1704	0.8013	0.1767	0.1568	0.3335		1,977.0688	1,977.0688	8.3200e-003		1,977.2436
Worker	0.2174	0.3284	3.6170	5.7400e-003	0.4865	3.1800e-003	0.4897	0.1290	2.9200e-003	0.1319		431.6332	431.6332	0.0272		432.2051
Total	**0.6352**	**5.2192**	**9.3812**	**0.0258**	**1.1174**	**0.1736**	**1.2910**	**0.3057**	**0.1597**	**0.4654**		**2,408.7020**	**2,408.7020**	**0.0356**		**2,409.4487**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.9621	20.1054	16.0953	0.0266		0.7737	0.7737		0.7737	0.7737	0.0000	2,405.9416	2,405.9416	0.6231		2,419.0275
Total	**0.9621**	**20.1054**	**16.0953**	**0.0266**		**0.7737**	**0.7737**		**0.7737**	**0.7737**	**0.0000**	**2,405.9416**	**2,405.9416**	**0.6231**		**2,419.0275**

3.4 Concrete Foundations - 2017

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.4178	4.8908	5.7642	0.0201	0.6309	0.1704	0.8013	0.1767	0.1568	0.3335		1,977.0688	1,977.0688	8.3200e-003		1,977.2436
Worker	0.2174	0.3284	3.6170	5.7400e-003	0.4865	3.1800e-003	0.4897	0.1290	2.9200e-003	0.1319		431.6332	431.6332	0.0272		432.2051
Total	**0.6352**	**5.2192**	**9.3812**	**0.0258**	**1.1174**	**0.1736**	**1.2910**	**0.3057**	**0.1597**	**0.4654**		**2,408.7020**	**2,408.7020**	**0.0356**		**2,409.4487**

3.5 Structural Steel Work - 2017

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	3.3964	17.7548	14.8619	0.0229		1.0761	1.0761		1.0483	1.0483		2,010.4485	2,010.4485	0.4823		2,020.5772
Total	**3.3964**	**17.7548**	**14.8619**	**0.0229**		**1.0761**	**1.0761**		**1.0483**	**1.0483**		**2,010.4485**	**2,010.4485**	**0.4823**		**2,020.5772**

3.5 Structural Steel Work - 2017

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	0.0181	0.1709	0.2543	7.1000e-004	0.0175	5.8000e-003	0.0233	4.8100e-003	5.3400e-003	0.0102		70.3739	70.3739	3.5000e-004		70.3812
Vendor	0.2437	2.8530	3.3625	0.0117	0.3680	0.0994	0.4674	0.1031	0.0915	0.1945		1,153.2902	1,153.2902	4.8500e-003		1,153.3921
Worker	0.2174	0.3284	3.6170	5.7400e-003	0.4865	3.1800e-003	0.4897	0.1290	2.9200e-003	0.1319		431.6332	431.6332	0.0272		432.2051
Total	**0.4792**	**3.3523**	**7.2337**	**0.0182**	**0.8721**	**0.1084**	**0.9805**	**0.2369**	**0.0997**	**0.3366**		**1,655.2972**	**1,655.2972**	**0.0324**		**1,655.9784**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.8110	17.2423	13.2352	0.0229		0.6853	0.6853		0.6853	0.6853	0.0000	2,010.4485	2,010.4485	0.4823		2,020.5772
Total	**0.8110**	**17.2423**	**13.2352**	**0.0229**		**0.6853**	**0.6853**		**0.6853**	**0.6853**	**0.0000**	**2,010.4485**	**2,010.4485**	**0.4823**		**2,020.5772**

3.5 Structural Steel Work - 2017

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	0.0181	0.1709	0.2543	7.1000e-004	0.0175	5.8000e-003	0.0233	4.8100e-003	5.3400e-003	0.0102		70.3739	70.3739	3.5000e-004		70.3812
Vendor	0.2437	2.8530	3.3625	0.0117	0.3680	0.0994	0.4674	0.1031	0.0915	0.1945		1,153.2902	1,153.2902	4.8500e-003		1,153.3921
Worker	0.2174	0.3284	3.6170	5.7400e-003	0.4865	3.1800e-003	0.4897	0.1290	2.9200e-003	0.1319		431.6332	431.6332	0.0272		432.2051
Total	**0.4792**	**3.3523**	**7.2337**	**0.0182**	**0.8721**	**0.1084**	**0.9805**	**0.2369**	**0.0997**	**0.3366**		**1,655.2972**	**1,655.2972**	**0.0324**		**1,655.9784**

3.6 Transmission Line Installation - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.1190	10.2471	6.3348	0.0131		0.5568	0.5568		0.5156	0.5156		1,274.9236	1,274.9236	0.3793		1,282.8888
Total	**1.1190**	**10.2471**	**6.3348**	**0.0131**		**0.5568**	**0.5568**		**0.5156**	**0.5156**		**1,274.9236**	**1,274.9236**	**0.3793**		**1,282.8888**

3.6 Transmission Line Installation - 2018

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0944	1.3492	1.3248	6.5900e-003	0.2099	0.0527	0.2625	0.0587	0.0485	0.1072		639.7880	639.7880	2.5000e-003		639.8405
Worker	0.2791	0.4388	4.7729	8.5900e-003	0.7298	4.6100e-003	0.7344	0.1935	4.2500e-003	0.1978		622.5837	622.5837	0.0377		623.3755
Total	**0.3735**	**1.7880**	**6.0978**	**0.0152**	**0.9397**	**0.0573**	**0.9969**	**0.2522**	**0.0527**	**0.3050**		**1,262.3718**	**1,262.3718**	**0.0402**		**1,263.2160**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.3428	9.5239	6.6915	0.0131		0.2611	0.2611		0.2611	0.2611	0.0000	1,274.9236	1,274.9236	0.3793		1,282.8888
Total	**0.3428**	**9.5239**	**6.6915**	**0.0131**		**0.2611**	**0.2611**		**0.2611**	**0.2611**	**0.0000**	**1,274.9236**	**1,274.9236**	**0.3793**		**1,282.8888**

3.6 Transmission Line Installation - 2018

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0944	1.3492	1.3248	6.5900e-003	0.2099	0.0527	0.2625	0.0587	0.0485	0.1072		639.7880	639.7880	2.5000e-003		639.8405
Worker	0.2791	0.4388	4.7729	8.5900e-003	0.7298	4.6100e-003	0.7344	0.1935	4.2500e-003	0.1978		622.5837	622.5837	0.0377		623.3755
Total	**0.3735**	**1.7880**	**6.0978**	**0.0152**	**0.9397**	**0.0573**	**0.9969**	**0.2522**	**0.0527**	**0.3050**		**1,262.3718**	**1,262.3718**	**0.0402**		**1,263.2160**

3.6 Transmission Line Installation - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0201	9.2152	6.1042	0.0131		0.4850	0.4850		0.4494	0.4494		1,255.8165	1,255.8165	0.3789		1,263.7739
Total	**1.0201**	**9.2152**	**6.1042**	**0.0131**		**0.4850**	**0.4850**		**0.4494**	**0.4494**		**1,255.8165**	**1,255.8165**	**0.3789**		**1,263.7739**

3.6 Transmission Line Installation - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0869	1.2016	1.2127	6.5800e-003	0.2096	0.0497	0.2594	0.0586	0.0458	0.1044		628.5609	628.5609	2.3700e-003		628.6107
Worker	0.2423	0.3977	4.2982	8.5600e-003	0.7298	4.5200e-003	0.7343	0.1935	4.1900e-003	0.1977		599.4323	599.4323	0.0357		600.1811
Total	**0.3292**	**1.5993**	**5.5108**	**0.0151**	**0.9394**	**0.0543**	**0.9937**	**0.2521**	**0.0499**	**0.3021**		**1,227.9932**	**1,227.9932**	**0.0380**		**1,228.7918**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.3428	9.5239	6.6915	0.0131		0.2611	0.2611		0.2611	0.2611	0.0000	1,255.8165	1,255.8165	0.3789		1,263.7739
Total	**0.3428**	**9.5239**	**6.6915**	**0.0131**		**0.2611**	**0.2611**		**0.2611**	**0.2611**	**0.0000**	**1,255.8165**	**1,255.8165**	**0.3789**		**1,263.7739**

3.6 Transmission Line Installation - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0869	1.2016	1.2127	6.5800e-003	0.2096	0.0497	0.2594	0.0586	0.0458	0.1044		628.5609	628.5609	2.3700e-003		628.6107
Worker	0.2423	0.3977	4.2982	8.5600e-003	0.7298	4.5200e-003	0.7343	0.1935	4.1900e-003	0.1977		599.4323	599.4323	0.0357		600.1811
Total	**0.3292**	**1.5993**	**5.5108**	**0.0151**	**0.9394**	**0.0543**	**0.9937**	**0.2521**	**0.0499**	**0.3021**		**1,227.9932**	**1,227.9932**	**0.0380**		**1,228.7918**

3.7 Electrical/Instrumentation - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.5469	9.3910	9.5659	0.0154		0.5140	0.5140		0.5026	0.5026		1,349.0317	1,349.0317	0.2777		1,354.8627
Total	**1.5469**	**9.3910**	**9.5659**	**0.0154**		**0.5140**	**0.5140**		**0.5026**	**0.5026**		**1,349.0317**	**1,349.0317**	**0.2777**		**1,354.8627**

3.7 Electrical/Instrumentation - 2018

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1881	2.1393	2.6187	0.0100	0.3149	0.0793	0.3942	0.0881	0.0730	0.1611		969.9856	969.9856	3.9600e-003		970.0689
Worker	0.1861	0.2925	3.1820	5.7300e-003	0.4865	3.0700e-003	0.4896	0.1290	2.8400e-003	0.1319		415.0558	415.0558	0.0251		415.5837
Total	**0.3742**	**2.4319**	**5.8007**	**0.0157**	**0.8014**	**0.0824**	**0.8838**	**0.2171**	**0.0758**	**0.2930**		**1,385.0415**	**1,385.0415**	**0.0291**		**1,385.6525**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.6668	11.7744	9.8962	0.0154		0.6123	0.6123		0.6123	0.6123	0.0000	1,349.0317	1,349.0317	0.2777		1,354.8627
Total	**0.6668**	**11.7744**	**9.8962**	**0.0154**		**0.6123**	**0.6123**		**0.6123**	**0.6123**	**0.0000**	**1,349.0317**	**1,349.0317**	**0.2777**		**1,354.8627**

3.7 Electrical/Instrumentation - 2018

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1881	2.1393	2.6187	0.0100	0.3149	0.0793	0.3942	0.0881	0.0730	0.1611		969.9856	969.9856	3.9600e-003		970.0689
Worker	0.1861	0.2925	3.1820	5.7300e-003	0.4865	3.0700e-003	0.4896	0.1290	2.8400e-003	0.1319		415.0558	415.0558	0.0251		415.5837
Total	**0.3742**	**2.4319**	**5.8007**	**0.0157**	**0.8014**	**0.0824**	**0.8838**	**0.2171**	**0.0758**	**0.2930**		**1,385.0415**	**1,385.0415**	**0.0291**		**1,385.6525**

3.8 Architectural and Landscape - 2018

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					
Archit. Coating	1.3519					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	2.0071	15.4867	14.9191	0.0224		0.9235	0.9235		0.8734	0.8734		2,091.3991	2,091.3991	0.5372		2,102.6811
Total	**3.3590**	**15.4867**	**14.9191**	**0.0224**		**0.9235**	**0.9235**		**0.8734**	**0.8734**		**2,091.3991**	**2,091.3991**	**0.5372**		**2,102.6811**

3.8 Architectural and Landscape - 2018

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1567	1.7828	2.1822	8.3300e-003	0.2624	0.0661	0.3285	0.0734	0.0608	0.1343		808.3214	808.3214	3.3000e-003		808.3907
Worker	0.1861	0.2925	3.1820	5.7300e-003	0.4865	3.0700e-003	0.4896	0.1290	2.8400e-003	0.1319		415.0558	415.0558	0.0251		415.5837
Total	**0.3428**	**2.0753**	**5.3642**	**0.0141**	**0.7489**	**0.0692**	**0.8181**	**0.2025**	**0.0637**	**0.2661**		**1,223.3772**	**1,223.3772**	**0.0284**		**1,223.9744**

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					
Archit. Coating	1.3519					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	1.0064	19.1869	15.5253	0.0224		0.8846	0.8846		0.8846	0.8846	0.0000	2,091.3991	2,091.3991	0.5372		2,102.6811
Total	**2.3582**	**19.1869**	**15.5253**	**0.0224**		**0.8846**	**0.8846**		**0.8846**	**0.8846**	**0.0000**	**2,091.3991**	**2,091.3991**	**0.5372**		**2,102.6811**

3.8 Architectural and Landscape - 2018

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1567	1.7828	2.1822	8.3300e-003	0.2624	0.0661	0.3285	0.0734	0.0608	0.1343		808.3214	808.3214	3.3000e-003		808.3907
Worker	0.1861	0.2925	3.1820	5.7300e-003	0.4865	3.0700e-003	0.4896	0.1290	2.8400e-003	0.1319		415.0558	415.0558	0.0251		415.5837
Total	**0.3428**	**2.0753**	**5.3642**	**0.0141**	**0.7489**	**0.0692**	**0.8181**	**0.2025**	**0.0637**	**0.2661**		**1,223.3772**	**1,223.3772**	**0.0284**		**1,223.9744**

3.8 Architectural and Landscape - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	1.3519					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	1.8056	14.6545	14.7511	0.0224		0.8248	0.8248		0.7797	0.7797		2,068.1530	2,068.1530	0.5254		2,079.1856
Total	**3.1575**	**14.6545**	**14.7511**	**0.0224**		**0.8248**	**0.8248**		**0.7797**	**0.7797**		**2,068.1530**	**2,068.1530**	**0.5254**		**2,079.1856**

3.8 Architectural and Landscape - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1440	1.5942	2.0177	8.3200e-003	0.2621	0.0624	0.3246	0.0733	0.0574	0.1307		794.1428	794.1428	3.1500e-003		794.2090
Worker	0.1616	0.2651	2.8654	5.7100e-003	0.4865	3.0100e-003	0.4896	0.1290	2.7900e-003	0.1318		399.6215	399.6215	0.0238		400.1207
Total	**0.3055**	**1.8593**	**4.8831**	**0.0140**	**0.7487**	**0.0654**	**0.8141**	**0.2023**	**0.0602**	**0.2626**		**1,193.7644**	**1,193.7644**	**0.0269**		**1,194.3297**

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					
Archit. Coating	1.3519					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	1.0064	19.1869	15.5253	0.0224		0.8846	0.8846		0.8846	0.8846	0.0000	2,068.1530	2,068.1530	0.5254		2,079.1856
Total	**2.3582**	**19.1869**	**15.5253**	**0.0224**		**0.8846**	**0.8846**		**0.8846**	**0.8846**	**0.0000**	**2,068.1530**	**2,068.1530**	**0.5254**		**2,079.1856**

3.8 Architectural and Landscape - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1440	1.5942	2.0177	8.3200e-003	0.2621	0.0624	0.3246	0.0733	0.0574	0.1307		794.1428	794.1428	3.1500e-003		794.2090
Worker	0.1616	0.2651	2.8654	5.7100e-003	0.4865	3.0100e-003	0.4896	0.1290	2.7900e-003	0.1318		399.6215	399.6215	0.0238		400.1207
Total	**0.3055**	**1.8593**	**4.8831**	**0.0140**	**0.7487**	**0.0654**	**0.8141**	**0.2023**	**0.0602**	**0.2626**		**1,193.7644**	**1,193.7644**	**0.0269**		**1,194.3297**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0973	0.5325	1.4938	3.8300e-003	0.1936	0.0157	0.2093	0.0520	0.0144	0.0664		326.7693	326.7693	7.9200e-003		326.9356
Unmitigated	0.0973	0.5325	1.4938	3.8300e-003	0.1936	0.0157	0.2093	0.0520	0.0144	0.0664		326.7693	326.7693	7.9200e-003		326.9356

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
User Defined Industrial	12.25	12.25	12.25	89,180	89,180
Total	12.25	12.25	12.25	89,180	89,180

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
User Defined Industrial	20.00	20.00	20.00	59.00	28.00	13.00	100	0	0

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.318186	0.082605	0.124254	0.174131	0.069789	0.006036	0.006424	0.207676	0.002412	0.001423	0.002727	0.000325	0.004011

4.4 Fleet Mix

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	3.1900e-003	0.0290	0.0244	1.7000e-004		2.2100e-003	2.2100e-003		2.2100e-003	2.2100e-003		34.8364	34.8364	6.7000e-004	6.4000e-004	35.0484
NaturalGas Unmitigated	3.1900e-003	0.0290	0.0244	1.7000e-004		2.2100e-003	2.2100e-003		2.2100e-003	2.2100e-003		34.8364	34.8364	6.7000e-004	6.4000e-004	35.0484

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					
User Defined Industrial	296.11	3.1900e-003	0.0290	0.0244	1.7000e-004		2.2100e-003	2.2100e-003		2.2100e-003	2.2100e-003		34.8364	34.8364	6.7000e-004	6.4000e-004	35.0484
Total		**3.1900e-003**	**0.0290**	**0.0244**	**1.7000e-004**		**2.2100e-003**	**2.2100e-003**		**2.2100e-003**	**2.2100e-003**		**34.8364**	**34.8364**	**6.7000e-004**	**6.4000e-004**	**35.0484**

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					
User Defined Industrial	0.29611	3.1900e-003	0.0290	0.0244	1.7000e-004		2.2100e-003	2.2100e-003		2.2100e-003	2.2100e-003		34.8364	34.8364	6.7000e-004	6.4000e-004	35.0484
Total		**3.1900e-003**	**0.0290**	**0.0244**	**1.7000e-004**		**2.2100e-003**	**2.2100e-003**		**2.2100e-003**	**2.2100e-003**		**34.8364**	**34.8364**	**6.7000e-004**	**6.4000e-004**	**35.0484**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.1313	3.3500e-003	0.3608	3.0000e-005		1.3000e-003	1.3000e-003		1.3000e-003	1.3000e-003		0.7660	0.7660	2.0800e-003		0.8096
Unmitigated	0.1313	3.3500e-003	0.3608	3.0000e-005		1.3000e-003	1.3000e-003		1.3000e-003	1.3000e-003		0.7660	0.7660	2.0800e-003		0.8096

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0222					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0749					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	0.0342	3.3500e-003	0.3608	3.0000e-005		1.3000e-003	1.3000e-003		1.3000e-003	1.3000e-003		0.7660	0.7660	2.0800e-003		0.8096
Total	**0.1313**	**3.3500e-003**	**0.3608**	**3.0000e-005**		**1.3000e-003**	**1.3000e-003**		**1.3000e-003**	**1.3000e-003**		**0.7660**	**0.7660**	**2.0800e-003**		**0.8096**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0222					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0749					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	0.0342	3.3500e-003	0.3608	3.0000e-005		1.3000e-003	1.3000e-003		1.3000e-003	1.3000e-003		0.7660	0.7660	2.0800e-003		0.8096
Total	**0.1313**	**3.3500e-003**	**0.3608**	**3.0000e-005**		**1.3000e-003**	**1.3000e-003**		**1.3000e-003**	**1.3000e-003**		**0.7660**	**0.7660**	**2.0800e-003**		**0.8096**

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
Forklifts	2	8.00	25	99	0.20	Diesel
Off-Highway Trucks	2	8.00	10	250	0.38	Diesel
Tractors/Loaders/Backhoes	2	8.00	25	85	0.37	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	lb/day										lb/day					
Forklifts	0.3558	3.1776	2.6567	3.4000e-003		0.2462	0.2462		0.2265	0.2265		336.6454	336.6454	0.1065		338.8821
Off-Highway Trucks	1.0288	10.0022	4.8952	0.0163		0.3987	0.3987		0.3668	0.3668		1,609.0633	1,609.0633	0.5091		1,619.7542
Tractors/Loaders/Backhoes	0.4080	4.0964	4.0356	5.4400e-003		0.2735	0.2735		0.2516	0.2516		538.9909	538.9909	0.1705		542.5720
Total	**1.7926**	**17.2762**	**11.5875**	**0.0251**		**0.9183**	**0.9183**		**0.8449**	**0.8449**		**2,484.6996**	**2,484.6996**	**0.7861**		**2,501.2083**

10.0 Vegetation

Palo Verde - Construction and Operations

Riverside-Mojave Desert MDAQMD County, Mitigation Report

Construction Mitigation Summary

Phase	ROG	NOx	CO	SO2	Exhaust PM10	Exhaust PM2.5	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction												
Architectural and Landscape	0.26	-0.23	-0.03	0.00	0.01	-0.04	0.00	0.00	0.00	0.00	0.00	0.00
Concrete Foundations	0.63	0.01	0.09	0.00	0.36	0.34	0.00	0.00	0.00	0.00	0.00	0.00
Electrical/Instrumentation	0.47	-0.20	-0.02	0.00	-0.16	-0.19	0.00	0.00	0.00	0.00	0.00	0.00
Site Prep/Grading/Earthwork	0.60	0.25	0.05	0.00	0.55	0.52	0.00	0.00	0.00	0.00	0.00	0.00
Structural Steel Work	0.67	0.02	0.07	0.00	0.33	0.32	0.00	0.00	0.00	0.00	0.00	0.00
Substation and O&M Buildings	0.29	0.04	0.00	0.00	0.36	0.32	0.00	0.00	0.00	0.00	0.00	0.00
Transmission Line Installation	0.53	0.03	-0.04	0.00	0.46	0.42	0.00	0.00	0.00	0.00	0.00	0.00

OFFROAD Equipment Mitigation

Equipment Type	Fuel Type	Tier	Number Mitigated	Total Number of Equipment	DPF	Oxidation Catalyst
Aerial Lifts	Diesel	Tier 2	4	4	No Change	0.00
Air Compressors	Diesel	Tier 2	2	2	No Change	0.00
Cement and Mortar Mixers	Diesel	Tier 2	4	4	No Change	0.00
Cranes	Diesel	Tier 2	1	1	No Change	0.00
Excavators	Diesel	Tier 2	2	2	No Change	0.00
Generator Sets	Diesel	Tier 2	9	9	No Change	0.00
Graders	Diesel	Tier 2	2	2	No Change	0.00
Off-Highway Trucks	Diesel	Tier 2	4	4	No Change	0.00
Other Construction Equipment	Diesel	Tier 2	5	5	No Change	0.00
Other General Industrial Equipment	Diesel	Tier 2	8	8	No Change	0.00
Pavers	Diesel	Tier 2	1	1	No Change	0.00
Plate Compactors	Diesel	Tier 2	3	3	No Change	0.00
Pumps	Diesel	Tier 2	2	2	No Change	0.00
Rollers	Diesel	Tier 2	2	2	No Change	0.00
Rough Terrain Forklifts	Diesel	Tier 2	10	10	No Change	0.00
Rubber Tired Dozers	Diesel	Tier 2	2	2	No Change	0.00
Rubber Tired Loaders	Diesel	Tier 2	1	1	No Change	0.00
Scrapers	Diesel	Tier 2	1	1	No Change	0.00
Skid Steer Loaders	Diesel	Tier 2	2	2	No Change	0.00
Tractors/Loaders/Backhoes	Diesel	Tier 2	3	3	No Change	0.00
Trenchers	Diesel	Tier 2	2	2	No Change	0.00
Welders	Diesel	Tier 2	12	12	No Change	0.00

Equipment Type	ROG	NOx	CO	SO2	Exhaust PM10	Exhaust PM2.5	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	Unmitigated tons/yr						Unmitigated mt/yr					
Aerial Lifts	3.27100E-002	5.45970E-001	7.66360E-001	1.18000E-003	1.79300E-002	1.64900E-002	0.00000E+000	1.08364E+002	1.08364E+002	3.34000E-002	0.00000E+000	1.09066E+002
Air Compressors	2.10800E-002	1.20100E-001	6.51200E-002	1.80000E-004	6.17000E-003	6.17000E-003	0.00000E+000	1.30936E+001	1.30936E+001	1.70000E-003	0.00000E+000	1.31294E+001
Cement and Mortar Mixers	5.88000E-003	3.68500E-002	3.08400E-002	7.00000E-005	1.47000E-003	1.47000E-003	0.00000E+000	4.58276E+000	4.58276E+000	4.80000E-004	0.00000E+000	4.59275E+000
Cranes	2.15000E-002	2.55300E-001	9.14700E-002	1.90000E-004	1.13800E-002	1.04700E-002	0.00000E+000	1.73782E+001	1.73782E+001	5.32000E-003	0.00000E+000	1.74900E+001
Excavators	6.48400E-002	6.48460E-001	5.45050E-001	7.30000E-004	4.57700E-002	4.21100E-002	0.00000E+000	6.73763E+001	6.73763E+001	2.06300E-002	0.00000E+000	6.78095E+001
Generator Sets	3.75260E-001	1.73418E+000	1.65259E+000	2.73000E-003	1.05500E-001	1.05500E-001	0.00000E+000	2.00750E+002	2.00750E+002	3.04600E-002	0.00000E+000	2.01389E+002
Graders	5.34000E-002	6.49960E-001	2.26040E-001	7.30000E-004	2.28200E-002	2.10000E-002	0.00000E+000	6.76593E+001	6.76593E+001	2.08400E-002	0.00000E+000	6.80970E+001
Other Construction Equipment	1.60980E-001	1.45158E+000	9.46480E-001	1.19000E-003	1.12920E-001	1.03890E-001	0.00000E+000	1.10388E+002	1.10388E+002	3.38800E-002	0.00000E+000	1.11100E+002
Other General Industrial Equipment	8.86500E-002	8.17450E-001	5.22450E-001	1.02000E-003	4.64700E-002	4.27600E-002	0.00000E+000	9.21992E+001	9.21992E+001	2.88900E-002	0.00000E+000	9.28060E+001
Pavers	1.68200E-002	1.88280E-001	1.32470E-001	2.10000E-004	9.26000E-003	8.52000E-003	0.00000E+000	1.95777E+001	1.95777E+001	6.00000E-003	0.00000E+000	1.97036E+001
Pumps	1.63400E-002	1.01530E-001	7.69300E-002	1.70000E-004	5.38000E-003	5.38000E-003	0.00000E+000	1.11023E+001	1.11023E+001	1.33000E-003	0.00000E+000	1.11303E+001
Rollers	9.34600E-002	8.77740E-001	6.12670E-001	8.10000E-004	6.30600E-002	5.80100E-002	0.00000E+000	7.52495E+001	7.52495E+001	2.30600E-002	0.00000E+000	7.57338E+001
Rough Terrain Forklifts	7.37000E-002	9.34930E-001	9.25650E-001	1.37000E-003	4.90000E-002	4.50800E-002	0.00000E+000	1.26494E+002	1.26494E+002	3.88100E-002	0.00000E+000	1.27309E+002
Rubber Tired Dozers	2.27270E-001	2.46233E+000	8.50350E-001	1.58000E-003	1.20660E-001	1.11010E-001	0.00000E+000	1.46938E+002	1.46938E+002	4.50300E-002	0.00000E+000	1.47884E+002
Rubber Tired Loaders	2.62300E-002	2.15180E-001	1.37690E-001	1.60000E-004	1.84700E-002	1.69900E-002	0.00000E+000	1.48142E+001	1.48142E+001	4.47000E-003	0.00000E+000	1.49080E+001
Scrapers	6.91900E-002	8.80640E-001	5.51610E-001	7.50000E-004	3.55000E-002	3.26600E-002	0.00000E+000	7.02604E+001	7.02604E+001	2.11900E-002	0.00000E+000	7.07054E+001
Skid Steer Loaders	2.76200E-002	3.60290E-001	3.83230E-001	5.70000E-004	1.86600E-002	1.71700E-002	0.00000E+000	5.21148E+001	5.21148E+001	1.60700E-002	0.00000E+000	5.24523E+001
Tractors/Loaders/ Backhoes	8.64400E-002	8.42180E-001	7.05180E-001	9.30000E-004	6.15000E-002	5.65800E-002	0.00000E+000	8.54097E+001	8.54097E+001	2.63800E-002	0.00000E+000	8.59638E+001
Trenchers	1.39410E-001	1.23518E+000	7.62000E-001	9.50000E-004	9.55800E-002	8.79400E-002	0.00000E+000	8.80003E+001	8.80003E+001	2.71200E-002	0.00000E+000	8.85698E+001
Welders	2.57250E-001	8.94020E-001	9.82330E-001	1.31000E-003	6.56300E-002	6.56300E-002	0.00000E+000	9.66677E+001	9.66677E+001	2.09200E-002	0.00000E+000	9.71070E+001

Equipment Type	ROG	NOx	CO	SO2	Exhaust PM10	Exhaust PM2.5	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	Mitigated tons/yr						Mitigated mt/yr					
Aerial Lifts	5.54600E-002	1.14530E+000	8.92130E-001	1.18000E-003	4.62900E-002	4.62900E-002	0.00000E+000	1.08364E+002	1.08364E+002	3.34000E-002	0.00000E+000	1.09066E+002
Air Compressors	7.37000E-003	1.17590E-001	1.04130E-001	1.80000E-004	7.11000E-003	7.11000E-003	0.00000E+000	1.30936E+001	1.30936E+001	1.70000E-003	0.00000E+000	1.31294E+001
Cement and Mortar Mixers	0.00000E+000	0.00000E+000	0.00000E+000	7.00000E-005	0.00000E+000	0.00000E+000	0.00000E+000	4.58276E+000	4.58276E+000	4.80000E-004	0.00000E+000	4.59275E+000
Cranes	4.60000E-003	1.59200E-001	9.97400E-002	1.90000E-004	3.38000E-003	3.38000E-003	0.00000E+000	1.73781E+001	1.73781E+001	5.32000E-003	0.00000E+000	1.74899E+001
Excavators	3.45900E-002	7.14370E-001	5.56460E-001	7.30000E-004	2.88800E-002	2.88800E-002	0.00000E+000	6.73762E+001	6.73762E+001	2.06300E-002	0.00000E+000	6.78094E+001
Generator Sets	1.12920E-001	1.80286E+000	1.59649E+000	2.73000E-003	1.09030E-001	1.09030E-001	0.00000E+000	2.00749E+002	2.00749E+002	3.04600E-002	0.00000E+000	2.01389E+002
Graders	1.79700E-002	5.91350E-001	3.89320E-001	7.30000E-004	1.31800E-002	1.31800E-002	0.00000E+000	6.76592E+001	6.76592E+001	2.08400E-002	0.00000E+000	6.80969E+001
Other Construction Equipment	5.63500E-002	1.16377E+000	9.06510E-001	1.19000E-003	4.70400E-002	4.70400E-002	0.00000E+000	1.10388E+002	1.10388E+002	3.38800E-002	0.00000E+000	1.11100E+002
Other General Industrial Equipment	3.03200E-002	8.32860E-001	5.70510E-001	1.02000E-003	2.38000E-002	2.38000E-002	0.00000E+000	9.21991E+001	9.21991E+001	2.88900E-002	0.00000E+000	9.28059E+001
Pavers	8.22000E-003	1.80360E-001	1.60030E-001	2.10000E-004	5.54000E-003	5.54000E-003	0.00000E+000	1.95776E+001	1.95776E+001	6.00000E-003	0.00000E+000	1.97036E+001
Pumps	0.00000E+000	0.00000E+000	0.00000E+000	1.70000E-004	0.00000E+000	0.00000E+000	0.00000E+000	1.11023E+001	1.11023E+001	1.33000E-003	0.00000E+000	1.11303E+001
Rollers	3.81500E-002	7.87910E-001	6.13740E-001	8.10000E-004	3.18500E-002	3.18500E-002	0.00000E+000	7.52494E+001	7.52494E+001	2.30600E-002	0.00000E+000	7.57337E+001
Rough Terrain Forklifts	6.43400E-002	1.32866E+000	1.03496E+000	1.37000E-003	5.37100E-002	5.37100E-002	0.00000E+000	1.26494E+002	1.26494E+002	3.88100E-002	0.00000E+000	1.27309E+002
Rubber Tired Dozers	3.87600E-002	1.34054E+000	8.39850E-001	1.58000E-003	2.84300E-002	2.84300E-002	0.00000E+000	1.46938E+002	1.46938E+002	4.50300E-002	0.00000E+000	1.47884E+002
Rubber Tired Loaders	7.52000E-003	1.55260E-001	1.20940E-001	1.60000E-004	6.28000E-003	6.28000E-003	0.00000E+000	1.48142E+001	1.48142E+001	4.47000E-003	0.00000E+000	1.49080E+001
Scrapers	1.83500E-002	5.79700E-001	3.97680E-001	7.50000E-004	1.34600E-002	1.34600E-002	0.00000E+000	7.02603E+001	7.02603E+001	2.11900E-002	0.00000E+000	7.07053E+001
Skid Steer Loaders	2.66900E-002	5.51250E-001	4.29390E-001	5.70000E-004	2.22800E-002	2.22800E-002	0.00000E+000	5.21147E+001	5.21147E+001	1.60700E-002	0.00000E+000	5.24522E+001
Tractors/Loaders/Backhoes	4.24200E-002	8.82370E-001	6.99000E-001	9.30000E-004	3.46200E-002	3.46200E-002	0.00000E+000	8.54096E+001	8.54096E+001	2.63800E-002	0.00000E+000	8.59637E+001
Trenchers	4.47200E-002	9.23630E-001	7.19460E-001	9.50000E-004	3.73300E-002	3.73300E-002	0.00000E+000	8.80002E+001	8.80002E+001	2.71200E-002	0.00000E+000	8.85697E+001
Welders	4.31300E-002	8.90640E-001	6.93760E-001	1.31000E-003	3.60000E-002	3.60000E-002	0.00000E+000	9.66675E+001	9.66675E+001	2.09200E-002	0.00000E+000	9.71069E+001

Equipment Type	ROG	NOx	CO	SO2	Exhaust PM10	Exhaust PM2.5	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction												
Aerial Lifts	-6.95506E-001	-1.09773E+000	-1.64113E-001	0.00000E+000	-1.58171E+000	-1.80716E+000	0.00000E+000	1.19966E-006	1.19966E-006	0.00000E+000	0.00000E+000	1.19194E-006
Air Compressors	6.50380E-001	2.08993E-002	-5.99048E-001	0.00000E+000	-1.52350E-001	-1.52350E-001	0.00000E+000	1.52746E-006	1.52746E-006	0.00000E+000	0.00000E+000	7.61649E-007
Cement and Mortar Mixers	1.00000E+000	1.00000E+000	1.00000E+000	0.00000E+000	1.00000E+000	1.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000
Cranes	7.86047E-001	3.76420E-001	-9.04122E-002	0.00000E+000	7.02988E-001	6.77173E-001	0.00000E+000	1.15087E-006	1.15087E-006	0.00000E+000	0.00000E+000	1.14351E-006
Excavators	4.66533E-001	-1.01641E-001	-2.09339E-002	0.00000E+000	3.69019E-001	3.14177E-001	0.00000E+000	1.18736E-006	1.18736E-006	0.00000E+000	0.00000E+000	1.32725E-006
Generator Sets	6.99089E-001	-3.96037E-002	3.39467E-002	0.00000E+000	-3.34597E-002	-3.34597E-002	0.00000E+000	1.19552E-006	1.19552E-006	0.00000E+000	0.00000E+000	1.19172E-006
Graders	6.63483E-001	9.01748E-002	-7.22350E-001	0.00000E+000	4.22436E-001	3.72381E-001	0.00000E+000	1.18240E-006	1.18240E-006	0.00000E+000	0.00000E+000	1.17480E-006
Other Construction Equipment	6.49957E-001	1.98274E-001	4.22302E-002	0.00000E+000	5.83422E-001	5.47213E-001	0.00000E+000	1.17766E-006	1.17766E-006	0.00000E+000	0.00000E+000	1.17012E-006
Other General Industrial Equipment	6.57981E-001	-1.88513E-002	-9.19897E-002	0.00000E+000	4.87842E-001	4.43405E-001	0.00000E+000	1.19307E-006	1.19307E-006	0.00000E+000	0.00000E+000	1.18527E-006
Pavers	5.11296E-001	4.20650E-002	-2.08047E-001	0.00000E+000	4.01728E-001	3.49765E-001	0.00000E+000	1.53236E-006	1.53236E-006	0.00000E+000	0.00000E+000	1.52256E-006
Pumps	1.00000E+000	1.00000E+000	1.00000E+000	0.00000E+000	1.00000E+000	1.00000E+000	0.00000E+000	1.80143E-006	1.80143E-006	0.00000E+000	0.00000E+000	1.79690E-006
Rollers	5.91804E-001	1.02342E-001	-1.74645E-003	0.00000E+000	4.94925E-001	4.50957E-001	0.00000E+000	1.19602E-006	1.19602E-006	0.00000E+000	0.00000E+000	1.18837E-006
Rough Terrain Forklifts	1.27001E-001	-4.21133E-001	-1.18090E-001	0.00000E+000	-9.61224E-002	-1.91437E-001	0.00000E+000	1.18582E-006	1.18582E-006	0.00000E+000	0.00000E+000	1.25678E-006
Rubber Tired Dozers	8.29454E-001	4.55581E-001	1.23479E-002	0.00000E+000	7.64379E-001	7.43897E-001	0.00000E+000	1.15695E-006	1.15695E-006	0.00000E+000	0.00000E+000	1.14955E-006
Rubber Tired Loaders	7.13305E-001	2.78465E-001	1.21650E-001	0.00000E+000	6.59989E-001	6.30371E-001	0.00000E+000	1.35006E-006	1.35006E-006	0.00000E+000	0.00000E+000	6.70780E-007
Scrapers	7.34788E-001	3.41729E-001	2.79056E-001	0.00000E+000	6.20845E-001	5.87875E-001	0.00000E+000	1.13862E-006	1.13862E-006	0.00000E+000	0.00000E+000	1.13146E-006
Skid Steer Loaders	3.36713E-002	-5.30017E-001	-1.20450E-001	0.00000E+000	-1.93998E-001	-2.97612E-001	0.00000E+000	1.15130E-006	1.15130E-006	0.00000E+000	0.00000E+000	1.33455E-006
Tractors/Loaders/Backhoes	5.09255E-001	-4.77214E-002	8.76372E-003	0.00000E+000	4.37073E-001	3.88123E-001	0.00000E+000	1.17083E-006	1.17083E-006	0.00000E+000	0.00000E+000	1.16328E-006
Trenchers	6.79220E-001	2.52230E-001	5.58268E-002	0.00000E+000	6.09437E-001	5.75506E-001	0.00000E+000	1.25000E-006	1.25000E-006	0.00000E+000	0.00000E+000	1.12905E-006
Welders	8.32342E-001	3.78068E-003	2.93761E-001	0.00000E+000	4.51470E-001	4.51470E-001	0.00000E+000	1.24137E-006	1.24137E-006	0.00000E+000	0.00000E+000	1.23575E-006

Fugitive Dust Mitigation

Yes/No	Mitigation Measure	Mitigation Input		Mitigation Input		Mitigation Input	
No	Soil Stabilizer for unpaved Roads	PM10 Reduction	0.00	PM2.5 Reduction	0.00		
No	Replace Ground Cover of Area Disturbed	PM10 Reduction	0.00	PM2.5 Reduction	0.00		
Yes	Water Exposed Area	PM10 Reduction	55.00	PM2.5 Reduction	55.00	Frequency (per day)	2.00
No	Unpaved Road Mitigation	Moisture Content %	0.00	Vehicle Speed (mph)	15.00		
No	Clean Paved Road	% PM Reduction	0.00				

		Unmitigated		Mitigated		Percent Reduction	
Phase	Source	PM10	PM2.5	PM10	PM2.5	PM10	PM2.5
Architectural and Landscape	Fugitive Dust	0.00	0.00	0.00	0.00	0.00	0.00
Architectural and Landscape	Roads	0.02	0.01	0.02	0.01	0.00	0.00
Concrete Foundations	Fugitive Dust	0.00	0.00	0.00	0.00	0.00	0.00
Concrete Foundations	Roads	0.05	0.01	0.05	0.01	0.00	0.00
Electrical/Instrumentation	Fugitive Dust	0.00	0.00	0.00	0.00	0.00	0.00
Electrical/Instrumentation	Roads	0.02	0.01	0.02	0.01	0.00	0.00
Site Prep/Grading/Earthwork	Fugitive Dust	0.48	0.19	0.22	0.08	0.55	0.55
Site Prep/Grading/Earthwork	Roads	0.06	0.02	0.06	0.02	0.00	0.00
Structural Steel Work	Fugitive Dust	0.00	0.00	0.00	0.00	0.00	0.00
Structural Steel Work	Roads	0.05	0.01	0.05	0.01	0.00	0.00
Substation and O&M Buildings	Fugitive Dust	0.00	0.00	0.00	0.00	0.00	0.00
Substation and O&M Buildings	Roads	3.18	0.85	3.18	0.85	0.00	0.00
Transmission Line Installation	Fugitive Dust	0.00	0.00	0.00	0.00	0.00	0.00
Transmission Line Installation	Roads	0.12	0.03	0.12	0.03	0.00	0.00

Operational Percent Reduction Summary

Category	ROG	NOx	CO	SO2	Exhaust PM10	Exhaust PM2.5	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction												
Architectural Coating	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumer Products	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Electricity	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hearth	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Landscaping	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mobile	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Natural Gas	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Water Indoor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
Water Outdoor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Operational Mobile Mitigation

Project Setting:

Mitigation	Category	Measure	% Reduction	Input Value 1	Input Value 2	Input Value
No	Land Use	Increase Density	0.00			
No	Land Use	Increase Diversity	-0.01	0.13		
No	Land Use	Improve Walkability Design	0.00			
No	Land Use	Improve Destination Accessibility	0.00			
No	Land Use	Increase Transit Accessibility	0.25			
No	Land Use	Integrate Below Market Rate Housing	0.00			
	Land Use	Land Use SubTotal	0.00			

No	Neighborhood Enhancements	Improve Pedestrian Network				
No	Neighborhood Enhancements	Provide Traffic Calming Measures				
No	Neighborhood Enhancements	Implement NEV Network	0.00			
	Neighborhood Enhancements	Neighborhood Enhancements Subtotal	0.00			
No	Parking Policy Pricing	Limit Parking Supply	0.00			
No	Parking Policy Pricing	Unbundle Parking Costs	0.00			
No	Parking Policy Pricing	On-street Market Pricing	0.00			
	Parking Policy Pricing	Parking Policy Pricing Subtotal	0.00			
No	Transit Improvements	Provide BRT System	0.00			
No	Transit Improvements	Expand Transit Network	0.00			
No	Transit Improvements	Increase Transit Frequency	0.00			
	Transit Improvements	Transit Improvements Subtotal	0.00			
		Land Use and Site Enhancement Subtotal	0.00			
No	Commute	Implement Trip Reduction Program				
No	Commute	Transit Subsidy				
No	Commute	Implement Employee Parking "Cash Out"				
No	Commute	Workplace Parking Charge				
No	Commute	Encourage Telecommuting and Alternative Work Schedules	0.00			
No	Commute	Market Commute Trip Reduction Option	0.00			
No	Commute	Employee Vanpool/Shuttle	0.00		2.00	
No	Commute	Provide Ride Sharing Program				
	Commute	Commute Subtotal	0.00			

No	School Trip	Implement School Bus Program	0.00			
		Total VMT Reduction	0.00			

Area Mitigation

Measure Implemented	Mitigation Measure	Input Value
No	Only Natural Gas Hearth	
No	No Hearth	
No	Use Low VOC Cleaning Supplies	
No	Use Low VOC Paint (Residential Interior)	250.00
No	Use Low VOC Paint (Residential Exterior)	250.00
No	Use Low VOC Paint (Non-residential Interior)	250.00
No	Use Low VOC Paint (Non-residential Exterior)	250.00
No	% Electric Lawnmower	
No	% Electric Leafblower	
No	% Electric Chainsaw	

Energy Mitigation Measures

Measure Implemented	Mitigation Measure	Input Value 1	Input Value 2
No	Exceed Title 24		
No	Install High Efficiency Lighting		
No	On-site Renewable		

Appliance Type	Land Use Subtype	% Improvement
ClothWasher		30.00

DishWasher		15.00
Fan		50.00
Refrigerator		15.00

Water Mitigation Measures

Measure Implemented	Mitigation Measure	Input Value 1	Input Value 2
No	Apply Water Conservation on Strategy		
No	Use Reclaimed Water		
No	Use Grey Water		
No	Install low-flow bathroom faucet	32.00	
No	Install low-flow Kitchen faucet	18.00	
No	Install low-flow Toilet	20.00	
No	Install low-flow Shower	20.00	
No	Turf Reduction		
No	Use Water Efficient Irrigation Systems	6.10	
No	Water Efficient Landscape		

Solid Waste Mitigation

Mitigation Measures	Input Value
Institute Recycling and Composting Services Percent Reduction in Waste Disposed	