



# **BANDUCCI SUBSTATION PROJECT AIR QUALITY REPORT**

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**Prepared for**

**SOUTHERN CALIFORNIA EDISON**

**Prepared by**

**TERRY A. HAYES ASSOCIATES INC.**

**June 4, 2014**

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## **1.0 SUMMARY OF FINDINGS**

Terry A. Hayes Associates Inc. has completed an air quality analysis for the Banducci Substation Project (Proposed Project). Key findings are listed below.

- Regional construction emissions would result in a less-than-significant impact for nitrogen oxides (NO<sub>x</sub>), inhalable particulate matter (PM<sub>10</sub>), sulfur oxides (SO<sub>x</sub>), and no mitigation is required.
- Construction toxic air contaminant (TAC) emissions would result in a less-than-significant impact and no mitigation is required.
- Construction odors would result in a less-than-significant impact and no mitigation measure is required.
- Regional operational emissions would result in a less-than-significant impact and no mitigation is required.
- The Proposed Project would be consistent with the Eastern Kern County Air Quality Management Plan and no mitigation is required.
- Cumulative construction air quality emissions would not result in a regionally significant impact and no mitigation is required.
- The Proposed Project would not exceed 10,000 metric tons of carbon dioxide equivalent (CO<sub>2</sub>e) per year and would result in a less-than-significant global climate change impact.

## **2.0 INTRODUCTION**

### **2.1 PURPOSE**

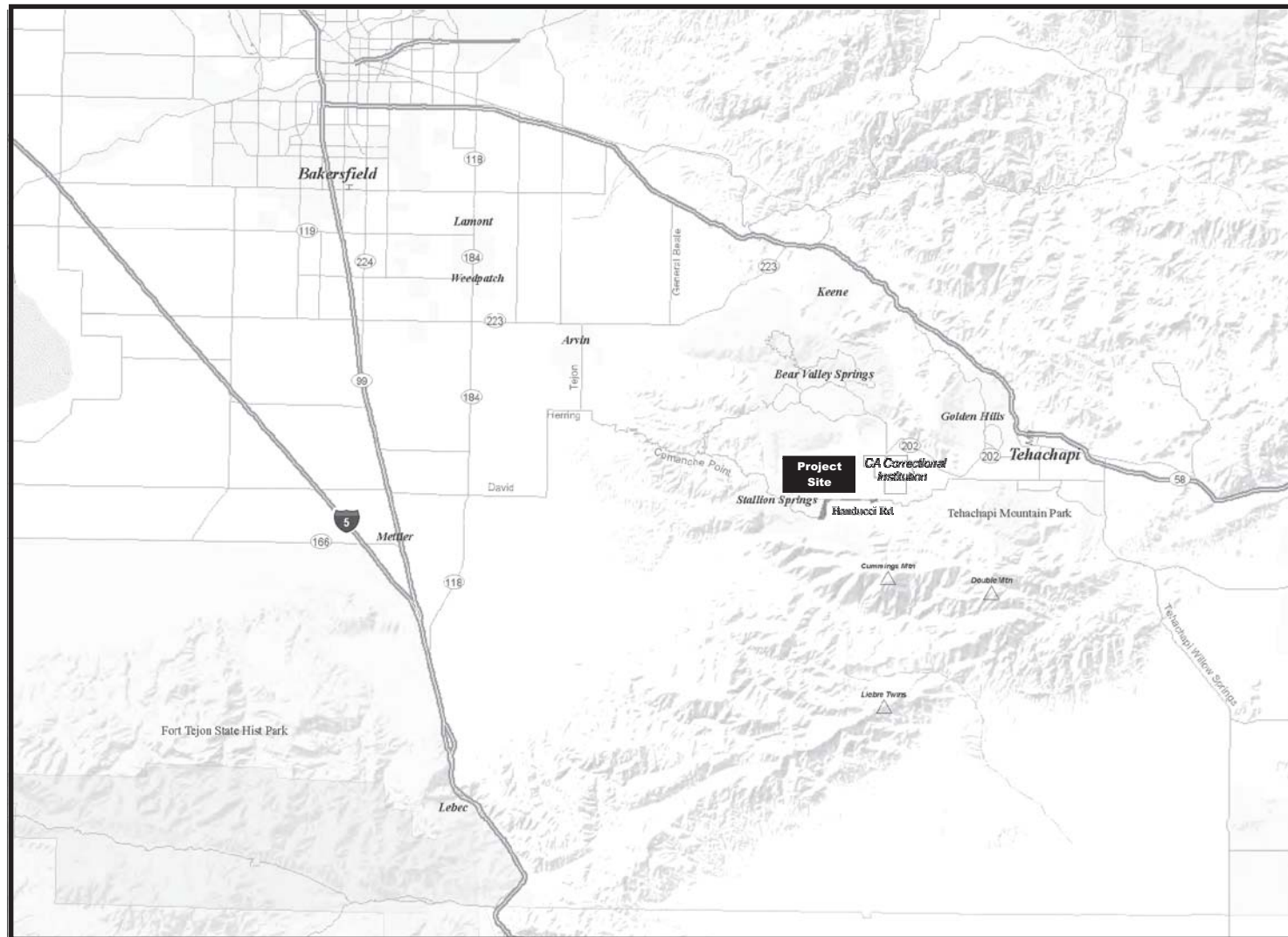
The purpose of this report is to evaluate the potential for air quality impacts of the Banducci Substation Project. Potential air quality emissions are analyzed for construction and operation of the Proposed Project. Mitigation measures for potentially significant impacts are recommended when appropriate to reduce air quality emissions levels.

### **2.2 PROJECT DESCRIPTION**

The Banducci Substation Project is proposed by the Southern California Edison (SCE) Company because the existing Cummings Substation cannot accommodate anticipated electrical demands beginning in the year 2016. The Proposed Project includes construction of a new Banducci 66/12 kilovolt (kV) Substation, two new 66 kV subtransmission line segments that would loop the existing Correction-Cummings-Kern River 1 66 kV Subtransmission Line, three new underground 12 kV distribution getaways, and telecommunication facilities to connect the Proposed Project to SCE's existing telecommunications system (**Figures 2-1 and 2-2**).

The Proposed Project would allow SCE to meet the forecasted increase in electrical demand within the Electrical Needs Area by delivering an increased capacity of 56.0 megavolt-amperes (MVA). The Electrical Needs Area is located within the Antelope-Bailey 66 kV System and is bounded by Woodford-Tehachapi Road to the east, El Camino Road to the north, Pacific Gas & Electric service territory to the west, and High Gun Drive to the south. Customers from the Electrical Needs Area are currently provided by the three existing 12 kV distribution circuits from the Cummings Substation. Having an additional substation in this area allows for greater operational flexibility instead of having only one substation. The new Banducci Substation is proposed to be located at the southeast corner of Pelliser Road and unimproved Dale Road (Property). This location would shorten the 12 kV distribution circuit lengths from the existing 20-mile circuit emanating from the Cumming Substation to approximately 14 to 17 miles. A shorter circuit would reduce the probability of circuit outages on that circuit, improve circuit reliability, and allow one of the existing 12 kV circuits to transfer a load below its planned loading limit. In addition, the Proposed Project will be adjacent to the existing 66 kV right-of-way (ROW), thereby, minimizing the need to construct a new 66 kV subtransmission line segment. The Proposed Project is planned to be operational by June 2016.

Upon construction completion of the proposed Banducci Substation, the new substation would be unstaffed, and electrical equipment within the substation would be remotely monitored and controlled by an automated system from SCE's Vincent Substation. SCE personnel would typically visit for electrical switching and routine maintenance purposes. Maintenance would occur as needed and would include activities such as repairing conductors, replacing insulators, replacing poles, and access road maintenance.



LEGEND:

Project Site

SOURCE: Southern California Edison, 2011.

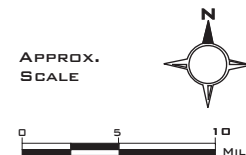
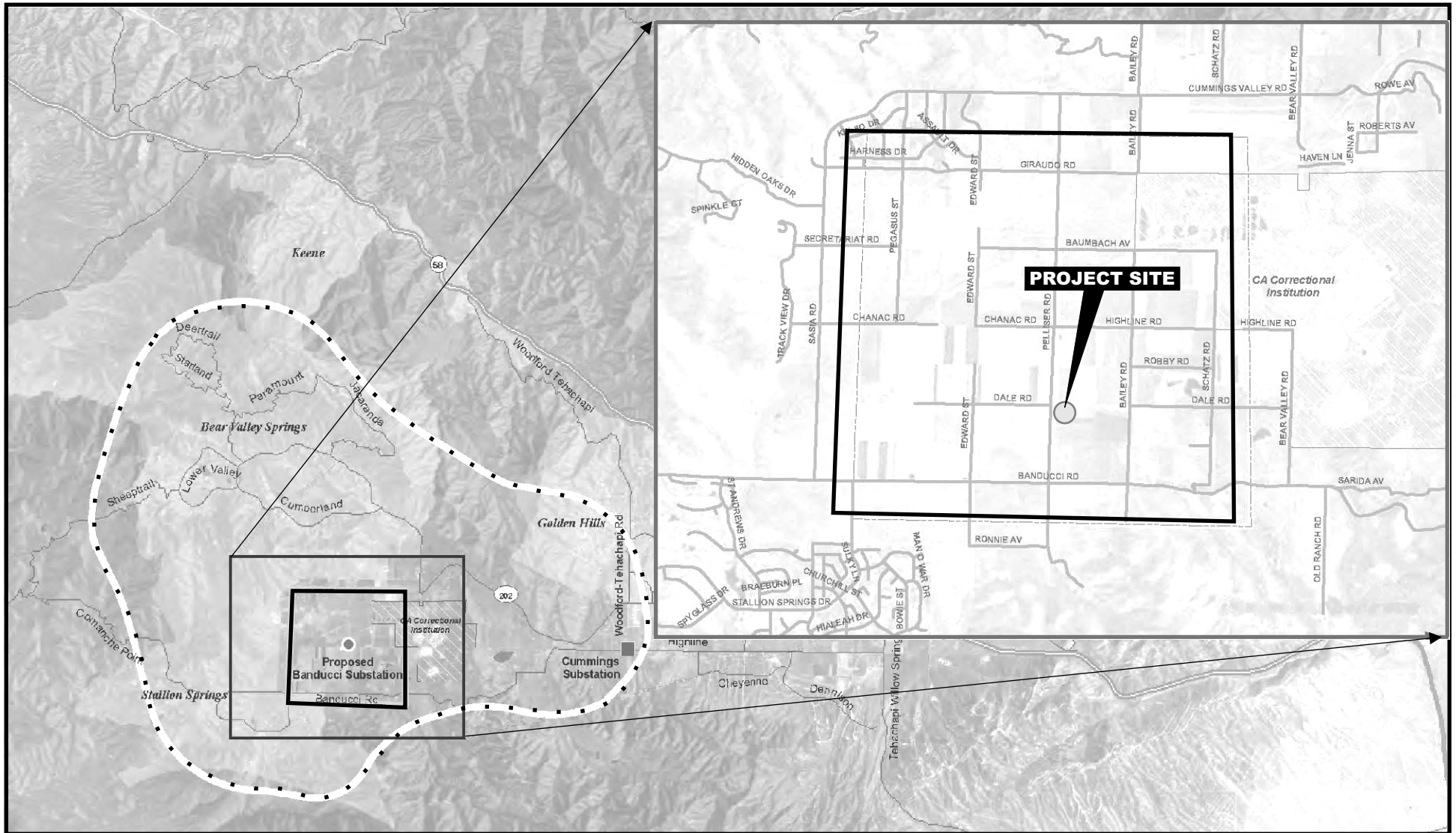


FIGURE 2-1

REGIONAL PROJECT LOCATION



LEGEND:

- Project Site
- - - Banducci Electrical Needs Area

SOURCE: Southern California Edison, 2011.

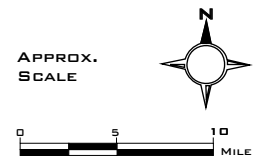


FIGURE 2-2

LOCAL PROJECT LOCATION

### 3.0 AIR QUALITY

This section examines the degree to which the proposed project may cause significant adverse changes to air quality. Short-term construction emissions occurring from activities such as site grading and haul truck trips are discussed in this section. This analysis focuses on air pollution from two perspectives: daily emissions and pollutant concentrations. "Emissions" refer to the quantity of pollutants released into the air, measured in pounds per day (ppd). "Concentrations" refer to the amount of pollutant material per volumetric unit of air, measured in parts per million (ppm) or micrograms per cubic meter ( $\mu\text{g}/\text{m}^3$ ).

#### 3.1 POLLUTANTS & EFFECTS

Criteria air pollutants are defined as pollutants for which the Federal and State governments have established ambient air quality standards for outdoor concentrations to protect public health. The Federal and State standards have been set at levels above which concentrations could be harmful to human health and welfare. These standards are designed to protect the most sensitive persons from illness or discomfort. Pollutants of concern include carbon monoxide (CO), ozone ( $\text{O}_3$ ), nitrogen dioxide ( $\text{NO}_2$ ), sulfur dioxide ( $\text{SO}_2$ ), particulate matter 2.5 microns or less in diameter ( $\text{PM}_{2.5}$ ), particulate matter ten microns or less in diameter ( $\text{PM}_{10}$ ), and lead (Pb). These pollutants are discussed below.

**Carbon Monoxide.** CO is a colorless and odorless gas formed by the incomplete combustion of fossil fuels. CO is emitted almost exclusively from motor vehicles, power plants, refineries, industrial boilers, ships, aircraft, and trains. In urban areas such as the project location, automobile exhaust accounts for the majority of CO emissions. CO is a non-reactive air pollutant that dissipates relatively quickly, so ambient CO concentrations generally follow the spatial and temporal distributions of vehicular traffic. CO concentrations are influenced by local meteorological conditions, primarily wind speed, topography, and atmospheric stability. CO from motor vehicle exhaust can become locally concentrated when surface-based temperature inversions are combined with calm atmospheric conditions, a typical situation at dusk in urban areas between November and February.<sup>1</sup> The highest levels of CO typically occur during the colder months of the year when inversion conditions are more frequent. In terms of health, CO competes with oxygen, often replacing it in the blood, thus reducing the blood's ability to transport oxygen to vital organs. The results of excess CO exposure can be dizziness, fatigue, and impairment of central nervous system functions.

**Ozone.**  $\text{O}_3$  is a colorless gas that is formed in the atmosphere when reactive organic gases (ROG), which includes volatile organic compounds (VOC), and nitrogen oxides ( $\text{NO}_x$ ) react in the presence of ultraviolet sunlight.  $\text{O}_3$  is not a primary pollutant; it is a secondary pollutant formed by complex interactions of two pollutants directly emitted into the atmosphere. The primary sources of ROG and  $\text{NO}_x$ , the components of  $\text{O}_3$ , are automobile exhaust and industrial sources. Meteorology and terrain play major roles in  $\text{O}_3$  formation. Ideal conditions for the creation of  $\text{O}_3$  occur during summer and early autumn, on days with low wind speeds or stagnant air, warm temperatures, and cloudless skies. The greatest source of smog-producing gases is the automobile. Short-term exposure (lasting for a few hours) to  $\text{O}_3$  at levels typically observed in Southern California can result in breathing pattern changes, reduction of breathing capacity, increased susceptibility to infections, inflammation of the lung tissue, and some immunological changes.

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<sup>1</sup>Inversion is an atmospheric condition in which a layer of warm air traps cooler air near the surface of the earth, preventing the normal rising of surface air.



**Nitrogen Dioxide.** NO<sub>2</sub>, like O<sub>3</sub>, is not directly emitted into the atmosphere but is formed by an atmospheric chemical reaction between nitric oxide (NO) and atmospheric oxygen. NO and NO<sub>2</sub> are collectively referred to as NO<sub>x</sub> and are major contributors to O<sub>3</sub> formation. NO<sub>2</sub> also contributes to the formation of PM<sub>10</sub>. High concentrations of NO<sub>2</sub> can cause breathing difficulties and result in a brownish-red cast to the atmosphere with reduced visibility. There is some indication of a relationship between NO<sub>2</sub> and chronic pulmonary fibrosis. Some increase of bronchitis in children (two and three years old) has also been observed at concentrations below 0.3 ppm.

**Sulfur Dioxide.** SO<sub>2</sub> is a colorless, pungent gas formed primarily by the combustion of sulfur-containing fossil fuels. Main sources of SO<sub>2</sub> are coal and oil used in power plants and industries. Generally, the highest levels of SO<sub>2</sub> are found near large industrial complexes. In recent years, SO<sub>2</sub> concentrations have been reduced by the increasingly stringent controls placed on stationary source emissions of SO<sub>2</sub> and limits on the sulfur content of fuels. SO<sub>2</sub> is an irritant gas that attacks the throat and lungs. It can cause acute respiratory symptoms and diminished ventilator function in children. SO<sub>2</sub> can also yellow plant leaves and erode iron and steel.

**Particulate Matter.** Particulate matter pollution consists of very small liquid and solid particles floating in the air, which can include smoke, soot, dust, salts, acids, and metals. Particulate matter also forms when gases emitted from industries and motor vehicles undergo chemical reactions in the atmosphere. PM<sub>2.5</sub> and PM<sub>10</sub> represent fractions of particulate matter. Fine particulate matter, or PM<sub>2.5</sub>, is roughly 1/28 the diameter of a human hair. PM<sub>2.5</sub> results from fuel combustion (e.g., motor vehicles, power generation, and industrial facilities), residential fireplaces, and wood stoves. In addition, PM<sub>2.5</sub> can be formed in the atmosphere from gases such as SO<sub>2</sub>, NO<sub>x</sub>, and VOC. Inhalable particulate matter, or PM<sub>10</sub>, is about 1/7 the thickness of a human hair. Major sources of PM<sub>10</sub> include crushing or grinding operations; dust stirred up by vehicles traveling on roads; wood burning stoves and fireplaces; dust from construction, landfills, and agriculture; wildfires and brush/waste burning; industrial sources; windblown dust from open lands; and atmospheric chemical and photochemical reactions.

PM<sub>2.5</sub> and PM<sub>10</sub> pose a greater health risk than larger-size particles. When inhaled, these tiny particles can penetrate the human respiratory system's natural defenses and damage the respiratory tract. PM<sub>2.5</sub> and PM<sub>10</sub> can increase the number and severity of asthma attacks, cause or aggravate bronchitis and other lung diseases, and reduce the body's ability to fight infections. Very small particles of substances such as lead, sulfates, and nitrates can cause lung damage directly. These substances can be absorbed into the blood stream and cause damage elsewhere in the body. These substances can transport absorbed gases, such as chlorides or ammonium, into the lungs and cause injury. Whereas PM<sub>10</sub> tends to collect in the upper portion of the respiratory system, PM<sub>2.5</sub> is so tiny that it can penetrate deeper into the lungs and damage lung tissues. Suspended particulates also damage and discolor surfaces on which they settle, as well as produce haze and reduce regional visibility.

**Lead.** Pb in the atmosphere occurs as particulate matter. Sources of lead include leaded gasoline; the manufacturing of batteries, paint, ink, ceramics, and ammunition; and secondary lead smelters. Prior to 1978, mobile emissions were the primary source of atmospheric lead. Between 1978 and 1987, the phase-out of leaded gasoline reduced the overall inventory of airborne lead by nearly 95 percent. With the phase-out of leaded gasoline, secondary lead smelters, battery recycling, and manufacturing facilities have become lead-emission sources of greater concern.

Prolonged exposure to atmospheric lead poses a serious threat to human health. Health effects associated with exposure to lead include gastrointestinal disturbances, anemia, kidney disease, and in severe cases, neuromuscular and neurological dysfunction. Of particular concern are low-level lead exposures during infancy and childhood. Such exposures are associated with decrements in neurobehavioral performance, including intelligence quotient performance, psychomotor performance, reaction time, and growth.

**Toxic Air Contaminants.** A substance is considered toxic if it has the potential to cause adverse health effects in humans. A toxic substance released into the air is considered a toxic air contaminant (TAC). TACs are identified by State and Federal agencies based on a review of available scientific evidence. In the State of California, TACs are identified through a two-step process that was established in 1983 under the Toxic Air Contaminant Identification and Control Act. This two-step process of risk identification and risk management was designed to protect residents from the health effects of toxic substances in the air.

**Greenhouse Gases.** Greenhouse gas (GHG) emissions refer to a group of emissions that are generally believed to affect global climate conditions. The greenhouse effect compares the Earth and the atmosphere surrounding it to a greenhouse with glass panes. The glass panes in a greenhouse let heat from sunlight in and reduce the amount of heat that escapes. GHGs, such as carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), and nitrous oxide (N<sub>2</sub>O), keep the average surface temperature of the Earth close to 60 degrees Fahrenheit (°F). Without the greenhouse effect, the Earth would be a frozen globe with an average surface temperature of about 5°F.

In addition to CO<sub>2</sub>, CH<sub>4</sub>, and N<sub>2</sub>O, GHGs include hydrofluorocarbons, perfluorocarbons, sulfur hexafluoride (SF<sub>6</sub>), and water vapor. SF<sub>6</sub> is commonly used in the utility industry for insulation and current interruption in electric transmission and distribution equipment. Of all the GHGs, CO<sub>2</sub> is the most abundant pollutant that contributes to climate change through fossil fuel combustion. CO<sub>2</sub> comprised 83.3 percent of the total GHG emissions in California in 2002.<sup>2</sup> The other GHGs are less abundant but have higher global warming potential than CO<sub>2</sub>. For example, SF<sub>6</sub> is a very potent GHG with 23,900 times the global warming potential of CO<sub>2</sub>. According to the United States Environmental Protection Act (USEPA), one pound of SF<sub>6</sub> has the same global warming impacts of 11 tons of CO<sub>2</sub>. To account for this higher potential, emissions of other GHGs are frequently expressed in the equivalent mass of CO<sub>2</sub>, denoted as CO<sub>2</sub>e. The CO<sub>2</sub>e of CH<sub>4</sub> and N<sub>2</sub>O represented 6.4 and 6.8 percent, respectively, of the 2002 California GHG emissions. Other high global warming potential gases represented 3.5 percent of these emissions.<sup>3</sup> In addition, there are a number of human-made pollutants, such as CO, NO<sub>x</sub>, non-methane VOC, and SO<sub>2</sub>, that have indirect effects on terrestrial or solar radiation absorption by influencing the formation or destruction of other climate change emissions.

## 3.2 REGULATORY SETTING

### Federal

**United States Environmental Protection Agency.** The Federal Clean Air Act (CAA) governs air quality in the United States. The United States Environmental Protection Agency (USEPA) is responsible for enforcing the CAA. The USEPA is also responsible for establishing the National Ambient Air Quality Standards (NAAQS). NAAQS are required under the 1977 CAA and

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<sup>2</sup>California Environmental Protection Agency, Climate Action Team Report to Governor Schwarzenegger and the Legislature, March 2006, p. 11.

<sup>3</sup>*Ibid.*

subsequent amendments. The USEPA regulates emission sources that are under the exclusive authority of the Federal government, such as aircraft, ships, and certain types of locomotives. The USEPA has jurisdiction over emission sources outside State waters (e.g., beyond the outer continental shelf) and establishes various emission standards, including those for vehicles sold in States other than California. Automobiles sold in California must meet stricter emission standards established by the California Air Resources Board (CARB).

As required by the CAA, NAAQS have been established for seven major air pollutants: CO, NO<sub>2</sub>, O<sub>3</sub>, PM<sub>2.5</sub>, PM<sub>10</sub>, SO<sub>2</sub>, and Pb. The CAA requires the USEPA to designate areas as attainment, nonattainment, or maintenance (previously nonattainment and currently attainment) for each criteria pollutant based on whether the NAAQS have been achieved. These Federal standards are summarized in **Table 3-1**. The USEPA has classified the Mojave Desert Air Basin as nonattainment for 8-hour O<sub>3</sub> and 24-hour PM<sub>10</sub>. The remaining pollutants are unclassified.

## State

**California Air Resources Board.** In addition to being subject to the requirements of CAA, air quality in California is also governed by more stringent regulations under the California Clean Air Act (CCAA). In California, the CCAA is administered by the CARB at the State level and by the air quality management districts and air pollution control districts at the regional and local levels. The CARB, which became part of the California Environmental Protection Agency in 1991, is responsible for meeting the State requirements of the CAA, administering the CCAA, and establishing the California Ambient Air Quality Standards (CAAQS). The CCAA, as amended in 1992, requires all air districts in the State to endeavor to achieve and maintain the CAAQS. These CAAQS are generally more stringent than the corresponding Federal standards and incorporate additional standards for sulfates, hydrogen sulfide, vinyl chloride, and visibility-reducing particles. CARB regulates mobile air pollution sources such as motor vehicles. The CARB is responsible for setting emission standards for vehicles sold in California and for other emission sources, such as consumer products and certain off-road equipment. CARB established passenger vehicle fuel specifications, which became effective in March 1996. The CARB oversees the functions of local air pollution control districts and air quality management districts, which, in turn, administer air quality activities at the regional and county levels. The State standards are summarized in **Table 3-1**.

The CCAA requires the CARB to designate areas within California as either attainment or nonattainment for each criteria pollutant based on whether the CAAQS have been achieved. Under the CCAA, areas are designated as nonattainment for a pollutant if air quality data show that a State standard for the pollutant was violated at least once during the previous three calendar years. Exceedances that are affected by highly irregular or infrequent events are not considered violations of a State standard and are not used as a basis for designating areas as nonattainment. Under the CCAA, the Kern County portion of the Basin is designated as a nonattainment area for O<sub>3</sub>, PM<sub>2.5</sub>, and PM<sub>10</sub>. The remaining pollutants are designated as attainment.

**TABLE 3-1: STATE AND NATIONAL AMBIENT AIR QUALITY STANDARDS AND ATTAINMENT STATUS FOR THE EASTERN KERN AIR POLLUTION CONTROL DISTRICT**

Pollutant	Averaging Period	California		Federal	
		Standards	Attainment Status	Standards	Attainment Status
Ozone (O <sub>3</sub> )	1-hour	0.09 ppm (180 µg/m <sup>3</sup> )	Nonattainment	—	—
	8-hour	0.070 ppm (137 µg/m <sup>3</sup> )	Nonattainment	0.075 ppm (147 µg/m <sup>3</sup> )	Nonattainment
Respirable Particulate Matter (PM <sub>10</sub> )	24-hour	50 µg/m <sup>3</sup>	Nonattainment	150 µg/m <sup>3</sup>	Nonattainment
	Annual Arithmetic Mean	20 µg/m <sup>3</sup>	Nonattainment	—	—
Fine Particulate Matter (PM <sub>2.5</sub> )	24-hour	—	—	35 µg/m <sup>3</sup>	Attainment
	Annual Arithmetic Mean	12 µg/m <sup>3</sup>	Attainment	12.0 µg/m <sup>3</sup>	Attainment
Carbon Monoxide (CO)	8-hour	9.0 ppm (10 mg/m <sup>3</sup> )	Attainment	9 ppm (10 mg/m <sup>3</sup> )	Unclassified
	1-hour	20 ppm (23 mg/m <sup>3</sup> )	Attainment	35 ppm (40 mg/m <sup>3</sup> )	Unclassified
Nitrogen Dioxide (NO <sub>2</sub> )	Annual Arithmetic Mean	0.030 ppm (57 µg/m <sup>3</sup> )	Attainment	53 ppb (100 µg/m <sup>3</sup> )	Unclassified
	1-hour	0.18 ppm (338 µg/m <sup>3</sup> )	Attainment	100 ppb (188 µg/m <sup>3</sup> )	—
Sulfur Dioxide (SO <sub>2</sub> )	24-hour	0.04 ppm (105 µg/m <sup>3</sup> )	Attainment	0.14 ppm (365 µg/m <sup>3</sup> )	Unclassified
	1-hour	0.25 ppm (655 µg/m <sup>3</sup> )	Attainment	75 ppb (196 µg/m <sup>3</sup> )	Unclassified
Lead (Pb)	30-day average	1.5 µg/m <sup>3</sup>	Attainment	—	—
	Calendar Quarter	—	—	0.15 µg/m <sup>3</sup>	—

"—" = not available  
**SOURCE:** CARB, *Ambient Air Quality Standards, and area designations maps/State and National*, June 4, 2013.  
 USEPA, *The Green Book Nonattainment Areas for Criteria Pollutants*, March 6, 2014.

## Local

**Eastern Kern Air Pollution Control District (EKAPCD).** The EKAPCD has the primary responsibility for regulating stationary sources of air pollution situated within its jurisdictional boundaries. The EKAPCD implements air quality programs required by State and Federal mandates, enforces rules and regulations based on air pollution laws, and educates businesses and residents about their role in protecting air quality. Rules and regulations to control construction and operational emissions are established in Rules 401 and 402. These include:

- **Rule 401.** Rule 401 states that a person shall not discharge into the atmosphere, from any single source of emission, 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 United States 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.
- **Rule 402.** The purpose of Rule 402 is to reduce the amount of PM<sub>10</sub> from significant man-made fugitive dust sources from large operations and in an amount sufficient to maintain National Ambient Air Quality Standards. A large operation is defined as "any active operation, including vehicle movement on unpaved roadways, on property involving in excess of 100 contiguous acres of disturbed surface area, or any earth-moving activity exceeding a daily volume of 7,700 cubic meters (10,000 cubic yards) three (3) times during the most recent 365-day period." This Rule shall apply to specified bulk storage, earthmoving, construction and demolition, and man-made conditions resulting in wind erosion. The following requirements of Rule 402 are provided below.
    - a) A person shall not cause or allow emissions of fugitive dust from any active operation to remain visible in the atmosphere beyond the property line of the emission source. This Subsection shall not apply to unpaved roadways.
    - b) A person shall utilize one (1) or more Reasonably Available Control Measures to minimize fugitive dust emissions from each fugitive dust source type which is part of any active operation subject to this Rule, including unpaved roadways.
    - c) For any large operation, except those satisfying Subsection V.D.3. (implementation of RACM's), a person shall not cause or allow downwind PM<sub>10</sub> ambient concentrations to increase more than 50 micrograms per cubic meter above upwind concentrations as determined by simultaneous upwind and downwind sampling. High-volume particulate matter samplers, or other EPA-approved equivalent method(s) for PM<sub>10</sub> monitoring shall be used.
    - d) No person shall conduct or authorize conducting a large operation subject to requirements of this Rule without either: (1) conducting on-site PM<sub>10</sub> air quality monitoring and associated recordkeeping, or (2) filing for and obtaining an approved fugitive dust emissions control plan pursuant to Subsection V.D.3.

**Kern County General Plan (KCGP).** The purpose of the KCGP is to ensure that Kern County Air Pollution Control District is upholding its responsibility for managing and permitting existing, new, and modified sources or air emissions to conform with Federal, State, and local standards for air quality. The policies in the KCGP that are applicable to air quality as related to the Proposed Project are provided below.

- **Policy 18.** The air quality implications of new discretionary land use proposals shall be considered in approval of major developments. Special emphasis will be placed on minimizing air quality degradation in the desert to enable effective military operations and in the valley region to meet attainment goals.
- **Policy 19.** In considering discretionary projects for which an EIR must be prepared pursuant to the CEQA, the appropriate decision making body, as part of its deliberations, will ensure that:
  - a) All feasible mitigation to reduce significant adverse air quality impacts have been adopted; and
  - b) The benefits of the proposed project outweigh any unavoidable significant adverse effects on air quality found to exist after inclusion of all feasible mitigation. This finding shall be made in a statement of overriding considerations and shall be supported by factual evidence to the extent that such a statement is required pursuant to the CEQA.

- **Policy 20.** The County shall include fugitive dust control measures as a requirement for discretionary projects and as required by the adopted rules and regulations of the San Joaquin Valley Unified Air Pollution Control District and the Kern County Air Pollution Control District on ministerial permits.
- **Policy 21.** The County shall support air districts' efforts to reduce PM<sub>10</sub> and PM<sub>2.5</sub> emissions.
- **Policy 22.** Kern County shall continue to work with the San Joaquin Valley Unified Air Pollution Control District and the Kern County Air Pollution Control District toward air quality attainment with Federal, State, and local standards.
- **Policy 23.** The County shall continue to implement the local government control measures in coordination with the Kern Council of Governments and the San Joaquin Valley Unified Air Pollution Control District.

### Global Climate Change

In response to growing scientific and political concern with global climate change, California has recently adopted a series of laws to reduce emissions of GHGs into the atmosphere. In September 2002, Assembly Bill (AB) 1493 was enacted, requiring the development and adoption of regulations to achieve "the maximum feasible reduction of greenhouse gases" emitted by noncommercial passenger vehicles, light-duty trucks, and other vehicles used primarily for personal transportation in the State. California Governor Arnold Schwarzenegger announced, on June 1, 2005, through Executive Order S-3-05, the following GHG emission reduction targets: by 2010, reduce GHG emissions to 2000 levels; by 2020, reduce GHG emissions to 1990 levels; and by 2050, reduce GHG emissions to 80 percent below 1990 levels.

In response to the Executive Order, the Secretary of the California Environmental Protection Agency created the Climate Action Team (CAT), which, in March 2006, published the *Climate Action Team Report to Governor Schwarzenegger and the Legislature* (2006 CAT Report). The 2006 CAT Report identifies a recommended list of strategies that the State could pursue to reduce climate change GHG emissions. These are strategies that could be implemented by various State agencies to ensure that the Governor's targets are met and can be met with existing authority of the State agencies.

**Assembly Bill 32.** In September 2006, Governor Arnold Schwarzenegger signed the California Global Warming Solutions Act of 2006, also known as AB 32, into law. AB 32 focuses on reducing GHG emissions in California and requires the CARB to adopt rules and regulations that would achieve greenhouse gas emissions equivalent to statewide levels in 1990 by 2020. To achieve this goal, AB 32 mandates that the CARB establish a quantified emissions cap, institute a schedule to meet the cap, implement regulations to reduce statewide GHG emissions from stationary sources, and develop tracking, reporting, and enforcement mechanisms to ensure that reductions are achieved. Because the intent of AB 32 is to limit 2020 emissions to the equivalent of 1990, it is expected that the regulations would affect many existing sources of GHG emissions and not just new general development projects. Senate Bill (SB) 1368, a companion bill to AB 32, requires the California Public Utilities Commission and the California Energy Commission to establish GHG emission performance standards for the generation of electricity. These standards will also apply to power that is generated outside of California and imported into the State.

AB 32 charges the CARB with the responsibility to monitor and regulate sources of GHG emissions in order to reduce those emissions. On June 1, 2007, the CARB adopted three discrete early action measures to reduce GHG emissions. These measures involved complying with a low carbon fuel standard, reducing refrigerant loss from motor vehicle air conditioning maintenance, and increasing methane capture from landfills.<sup>4</sup> On October 25, 2007, the CARB tripled the set of previously approved early action measures. The approved measures include improving truck efficiency (i.e., reducing aerodynamic drag), electrifying port equipment, reducing perfluorocarbons from the semiconductor industry, reducing propellants in consumer products, promoting proper tire inflation in vehicles, and reducing sulfur hexafluoride emission from the non-electricity sector. The CARB has determined that the total statewide aggregated greenhouse gas 1990 emissions level and 2020 emissions limit is 427 million metric tons of CO<sub>2</sub>e. The 2020 target reductions are currently estimated to be 174 million metric tons of CO<sub>2</sub>e.

The CARB Assembly Bill 32 Scoping Plan (Scoping Plan) contains the main strategies to achieve the 2020 emissions cap. The Scoping Plan was developed by the CARB with input from the CAT and proposes a comprehensive set of actions designed to reduce overall carbon emissions in California, improve the environment, reduce oil dependency, diversify energy sources, and enhance public health while creating new jobs and improving the State economy. The GHG reduction strategies contained in the Scoping Plan include direct regulations, alternative compliance mechanisms, monetary and non-monetary incentives, voluntary actions, and market-based mechanisms such as a cap-and-trade system. Key approaches for reducing GHG emissions to 1990 levels by 2020 include:

- Expanding and strengthening existing energy efficiency programs as well as building and appliance standards;
- Achieving a Statewide renewable electricity standard of 33 percent;
- Developing a California cap-and-trade program that links with other Western Climate Initiative partner programs to create a regional market system;
- Establishing targets for transportation-related GHG emissions for regions throughout the State, and pursuing policies and incentives to achieve those targets; and
- Adopting and implementing measures to reduce transportation sector emissions.

CARB recently released the Proposed First Update to the Climate Change Scoping Plan.<sup>5</sup> This Update identifies the next steps for California's leadership on climate change. The first Update to the initial Assembly Bill 32 Scoping Plan describes progress made to meet the near-term objectives of Assembly Bill 32 and defines California's climate change priorities and activities for the next several years. It also frames activities and issues facing the State as it develops an integrated framework for achieving both air quality and climate goals in California beyond 2020. Specifically, the Update covers a range of topics:

- An update of the latest scientific findings related to climate change and its impacts, including short-lived climate pollutants.
- A review of progress-to-date, including an update of Scoping Plan measures and other State, federal, and local efforts to reduce GHG emissions in California.
- Potential technologically feasible and cost-effective actions to further reduce GHG emissions by 2020.

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<sup>4</sup>California Air Resources Board, Proposed Early Action Measures to Mitigate Climate Change in California, April 20, 2007.

<sup>5</sup>CARB, *Proposed First Update to the Climate Change Scoping Plan*, February 10, 2014.

- Recommendations for establishing a mid-term emissions limit that aligns with the State's long-term goal of an emissions limit 80 percent below 1990 levels by 2050.
- Sector-specific discussions covering issues, technologies, needs, and ongoing State activities to significantly reduce emissions throughout California's economy through 2050.

As discussed above, in December 2007, CARB approved a total statewide GHG 1990 emissions level and 2020 emissions limit of 427 million metric tons of CO<sub>2</sub>e. As part of the Update, CARB is proposing to revise the 2020 Statewide limit to 431 million metric tons of CO<sub>2</sub>e, an approximately one percent increase from the original estimate. The 2020 business-as-usual (BAU) forecast in the Update is 509 million metric tons of CO<sub>2</sub>e. The State would need to reduce those emissions by 15 percent to meet the 431 million metric tons of CO<sub>2</sub>e 2020 limit.

The CARB has also developed the greenhouse gas mandatory reporting regulation, which required reporting beginning on January 1, 2008 pursuant to requirements of AB 32. The regulations require reporting for certain types of facilities that make up the bulk of the stationary source emissions in California. The regulation language identifies major facilities as those that generate more than 25,000 metric tons of CO<sub>2</sub> per year. Cement plants, oil refineries, electric generating facilities/providers, co-generation facilities, and hydrogen plants and other stationary combustion sources that emit more than 25,000 metric tons of CO<sub>2</sub> per year, make up 94 percent of the point source CO<sub>2</sub> emissions in California.

**CEQA Guideline Amendments.** California Senate Bill (SB) 97 required the Governor's Office of Planning and Research (OPR) to develop CEQA guidelines "for the mitigation of greenhouse gas emissions or the effects of greenhouse gas emissions." The CEQA Guideline amendments provide guidance to public agencies regarding the analysis and mitigation of the effects of GHG emissions in CEQA documents. Noteworthy revisions to the CEQA Guidelines include:

- Lead agencies should quantify all relevant GHG emissions and consider the full range of project features that may increase or decrease GHG emissions as compared to the existing setting;
- Consistency with the CARB Scoping Plan is not a sufficient basis to determine that a project's GHG emissions would not be cumulatively considerable;
- A lead agency may appropriately look to thresholds developed by other public agencies, including the CARB's recommended CEQA thresholds;
- To qualify as mitigation, specific measures from an existing plan must be identified and incorporated into the project. General compliance with a plan, by itself, is not mitigation;
- The effects of GHG emissions are cumulative and should be analyzed in the context of CEQA's requirements for cumulative impact analysis; and
- Given that impacts resulting from GHG emissions are cumulative, significant advantages may result from analyzing such impacts on a programmatic level. If analyzed properly, later projects may tier, incorporate by reference, or otherwise rely on the programmatic analysis.

**Senate Bill 375.** California Senate Bill (SB) 375, passed September 30, 2008, provides a means for achieving AB 32 goals through regulation of cars and light trucks. SB 375 aligns three critical policy areas of importance to local government: (1) regional long-range transportation plans and investments; (2) regional allocation of the obligation for cities and counties to zone for housing; and (3) a process to achieve greenhouse gas emissions reductions targets for the transportation sector. SB 375 establishes a process for CARB to develop the GHG emissions reductions targets for each region (as opposed to individual local



governments or households). CARB must take certain factors into account before setting the targets, such as considering the likely reductions that will result from actions to improve the fuel efficiency of the Statewide fleet and regulations related to the carbon content of fuels (low carbon fuels). CARB must also convene a Regional Targets Advisory Committee, which includes representation from the League of California Cities, California State Association of Counties, metropolitan planning organizations, developers, planning organizations and other stakeholder groups. Furthermore, before setting the targets for each region, CARB is required to exchange technical information with the Metropolitan Planning Organizations (MPOs) for that region and with the affected air district. SB 375 provides that the MPOs may recommend a target for its region.

SB 375 relies upon regional planning processes already underway in the 17 MPOs in the State to accomplish its objectives. The provisions related to GHG emissions only apply to the MPOs in the State, which includes 37 of the 58 counties. Most notably, the measure requires the MPO to prepare a Sustainable Communities Strategy (SCS) within the Regional Transportation Plan (RTP), which sets forth a vision for growth for the region taking into account the transportation, housing, environmental, and economic needs of the region. The SCS is the blueprint by which the region will meet its GHG emissions reductions target if there is a feasible way to do so.

SB 375 indirectly addresses another longstanding issue: single purpose State agencies. The new law will require the cooperation of CARB, the California Transportation Commission (CTC), the California Department of Transportation (Caltrans) and the State Department of Housing and Community Development (HCD). For example, SB 375 takes a first step to counter this problem by connecting the Regional Housing Needs Allocation (RHNA) to the transportation planning process. While these State agencies will be involved in setting the targets and adopting new guidelines, local governments and the MPOs will not only provide input into setting the targets, but will serve as the lead on implementation. Member cities and counties working through their MPOs are tasked with development of the new integrated regional planning and transportation strategies designed to meet the GHG targets.

SB 375 also includes a provision that applies to all regional transportation planning agencies in the State that recognizes the rural contribution towards reducing GHGs. More specifically, the bill requires regional transportation agencies to consider financial incentives for cities and counties that have rural areas or farmland, for the purposes of, for example, transportation investments for the preservation and safety of the city street or county road system, farm to market, and interconnectivity transportation needs. An MPO or county transportation agency shall also consider financial assistance for counties to address countywide service responsibilities in counties that contribute towards the GHG emissions reductions targets by implementing policies for growth to occur within their cities.

SB 375 uses California Environmental Quality Act (CEQA) streamlining as an incentive to encourage residential projects, which help achieve AB 32 goals to reduce GHG emissions. Cities and counties that find the CEQA streamlining provisions attractive have the opportunity (but not the obligation) to align their planning decisions with the decisions of the region.

SB 375 provides more certainty for local governments and developers by framing how AB 32's reduction goal from transportation for cars and light trucks will be established. It should be noted, however, that SB 375 does not prevent CARB from adopting additional regulations under

its AB 32 authority. However, based on the degree of consensus around SB 375 and early indications from CARB, such actions are not anticipated in the foreseeable future.<sup>6</sup>

**CARB Guidance.** The CARB has published draft guidance for setting interim GHG significance thresholds (October 24, 2008). The guidance is the first step toward developing the recommended Statewide interim thresholds of significance for GHG emissions that may be adopted by local agencies for their own use. The guidance does not attempt to address every type of project that may be subject to CEQA, but instead focuses on common project types that are responsible for substantial GHG emissions (i.e., industrial, residential, and commercial projects). The CARB believes that thresholds in these important sectors will advance climate objectives, streamline project review, and encourage consistency and uniformity in the CEQA analysis of GHG emissions throughout the State.

### 3.3 EXISTING AIR QUALITY

#### 3.3.1 Air Pollution Climatology

The project site is located within the Mojave Desert portion of the Basin. The Basin is comprised of four air districts: the Kern County APCD, the Antelope Valley Air Quality Management District (AQMD), the Mojave Desert AQMD, and the eastern portion of the South Coast AQMD. The Kern County APCD consists of the eastern portion of Kern County, Antelope Valley consists of the northeastern portion of Los Angeles County, the Mojave Desert AQMD includes San Bernardino County and the most eastern portion of Riverside County, and the portion of the South Coast AQMD includes the eastern part of Riverside County (**Figure 3-1**).

The Basin covers more than 20,000 square miles and encompasses the majority of California's high desert with typical hot, dry summers and cold winters with little precipitation. It is bounded by the San Gabriel and San Bernardino mountains to the south, which serves as the boundary separating the Mojave Desert Air Basin and the South Coast Air Basin. The Tehachapi Mountains serve as the northwest boundary separating the Mojave Desert Air Basin from the San Joaquin Air Basin. The majority of the population resides in the southeast area of the Mojave Desert Air Basin. Most of the Mojave Desert Air Basin is sparsely populated and, as a result, there is less industrial growth and fewer automobiles to generate pollution than other areas in California. During high wind conditions, air quality in the Mojave Desert Air Basin is also heavily influenced by airborne pollutants transported into the region from the San Joaquin Valley and South Coast Air Basins.

#### 3.3.2 Local Climate

The mountains and hills within the Basin contribute to the variation of rainfall, temperature, and winds throughout the region. Within the project site and its vicinity, the average wind speed, as recorded at the Oak Knolls Monitoring Station, is approximately 5.8 miles per hour. Wind in the vicinity of the project site predominately blows from the southwest.


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<sup>6</sup>American Planning Association, California Chapter, *Analysis of SB 375*, <http://www.calapa.org/-en/cms/?2841>, accessed September 26, 2011.



**LEGEND:**

 Mojave Desert Air Basin

 State of California



APPROX. SCALE  
0 250 500 FEET

SOURCE: California Air Resources Board, State and Local Air Monitoring Network Plan, October 1998

The annual average temperature in the project area is 68°F.<sup>7</sup> The project area experiences an average winter temperature of approximately 53°F and an average summer temperature of approximately 84°F. Total precipitation in the project area averages approximately 11 inches annually. Precipitation occurs mostly during the winter and relatively infrequently during the summer. Precipitation averages approximately five inches during the winter, approximately three inches during the spring, approximately two inches during the fall, and less than one inch during the summer.<sup>8</sup>

### 3.3.3 Air Monitoring Data

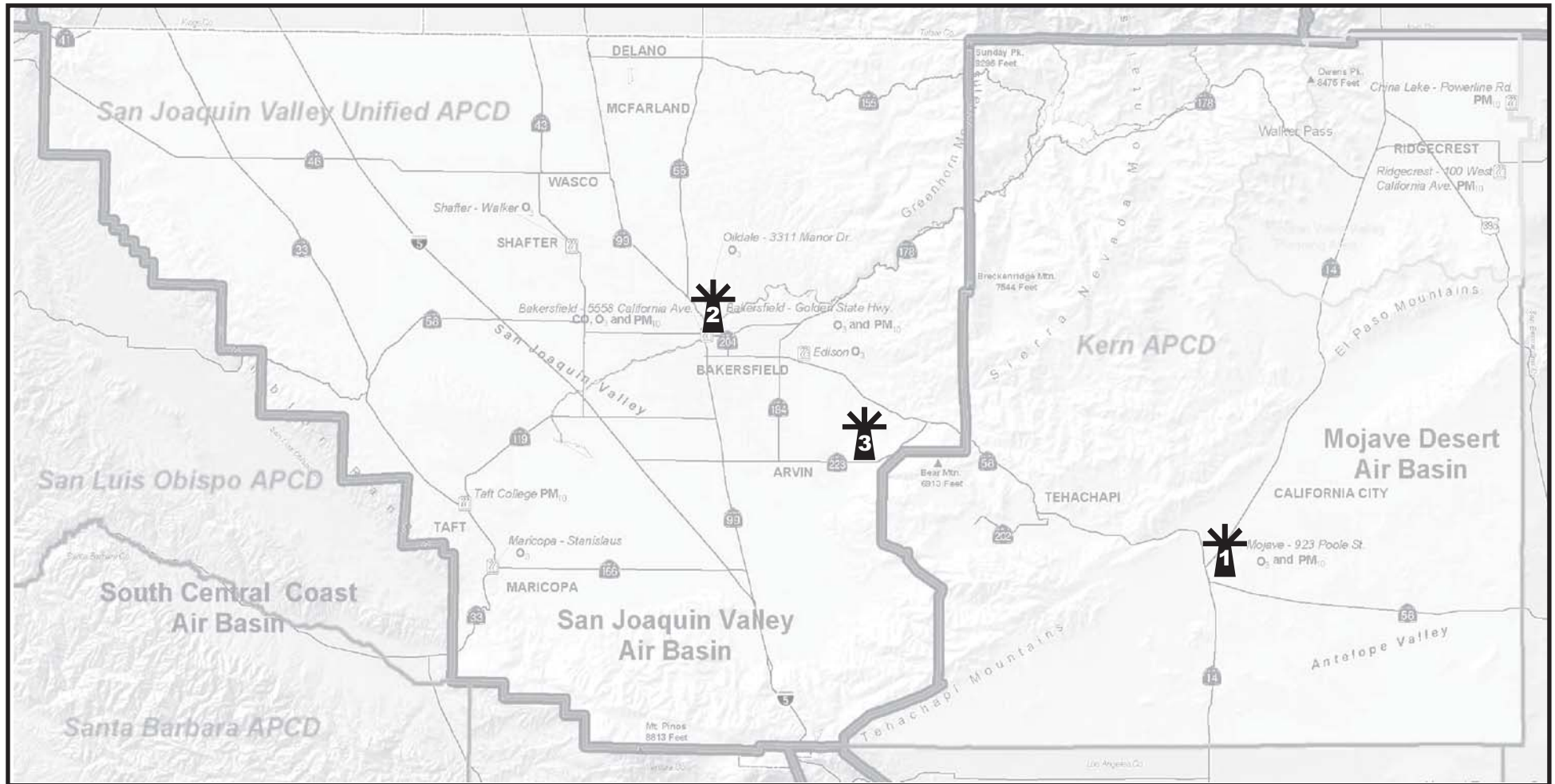
The EKAPCD currently has three permanent air quality monitoring stations. The nearest monitoring station to the project site is the Mojave – 923 Poole Street Monitoring Station, which is located approximately 35 miles southeast of the project (**Figure 3-2**). Historical data from the Mojave – 923 Poole Street Monitoring Station were used to characterize existing conditions in the vicinity of the project area. The Mojave – 923 Poole Street Monitoring Station was used to obtain O<sub>3</sub>, PM<sub>2.5</sub> and PM<sub>10</sub>. However, the Mojave – 923 Poole Street Monitoring Station does not monitor CO or NO<sub>2</sub>. NO<sub>2</sub> data was obtained from the Edison Monitoring Station, located 22 miles northwest of the project site. CO is not currently monitored in Kern County and no data has been presented.

**Table 3-2** shows pollutant levels, the State and Federal standards, and the number of exceedances. The summary table indicates that one-hour O<sub>3</sub> concentrations, eight-hour O<sub>3</sub> concentrations 24-hour PM<sub>10</sub> concentrations, 24-hour PM<sub>2.5</sub> concentrations exceeded standards between 2011 and 2013.


<b>TABLE 3-2: 2011-2013 AMBIENT AIR QUALITY DATA IN PROJECT VICINITY</b>				
<b>Pollutant</b>	<b>Pollutant Concentration &amp; Standards</b>	<b>Mojave – 923 Poole Street and Edison Air Monitoring Stations /a/</b>		
		<b>Number of Days Above State Standard</b>		
		<b>2011</b>	<b>2012</b>	<b>2013</b>
Ozone	Maximum 1-hr Concentration (ppm)	0.101	0.096	0.094
	Days > 0.09 ppm (State 1-hr standard)	2	1	0
	Days > 0.12 ppm (Federal 1-hr standard)	0	0	0
Ozone	Maximum 8-hr Concentration (ppm)	0.092	0.087	0.086
	Days > 0.07 ppm (State 8-hr standard)	43	55	22
	Days > 0.075 ppm (Federal 8-hr standard)	20	29	8
Nitrogen Dioxide	Maximum 1-hr Concentration (ppm)	0.042	0.047	0.047
	Days > 0.18 ppm (State 1-hr standard)	0	0	0
PM <sub>10</sub>	Maximum 24-hr Concentration (µg/m <sup>3</sup> )	79.4	96.6	113.4
	Days > 50 µg/m <sup>3</sup> (State 24-hr standard)	18	18	22
PM <sub>2.5</sub>	Maximum 24-hr Concentration ( µg/m <sup>3</sup> )	28.0	67.7	76.2
	Days > 35 µg/m <sup>3</sup> (National 24-hr standard)	0	2	5
	Annual Arithmetic Mean (µg/m <sup>3</sup> )	6.2	6.5	8.6
	Exceed State Standard (12 µg/m <sup>3</sup> )	No	No	No
	Exceed Federal Standard (15 µg/m <sup>3</sup> )	No	No	No
/a/ Data provided by CARB Air Quality Data Statistics. Mojave – 923 Poole Street air monitoring station data was used for O <sub>3</sub> , PM <sub>10</sub> , and PM <sub>2.5</sub> and Edison air monitoring station was used for NO <sub>2</sub> . Available at <a href="http://www.arb.ca.gov/adam/index.html">http://www.arb.ca.gov/adam/index.html</a> , accessed May 28, 2014.				
<b>SOURCE:</b> CARB, Top 4 Summary, available at <a href="http://www.arb.ca.gov/adam/topfour/topfour1.php">http://www.arb.ca.gov/adam/topfour/topfour1.php</a> , accessed May 28, 2014.				

<sup>7</sup>Western Regional Climate Center, Historical Climate Information, available at <http://www.wrcc.dri.edu>, accessed June 4, 2014.

<sup>8</sup>*ibid.*



LEGEND:

-  Monitoring Stations
- 1.** Mojave - 923 Poole Street
- 2.** Arvin-Bear Mountain
- 3.** Bakersfield-Golden State Highway

SOURCE: Kern County, 2011.

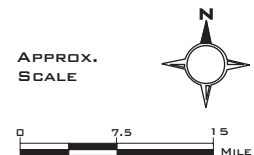


FIGURE 3-2

### 3.3.4 Sensitive Receptors

Some land uses are considered more sensitive to changes in air quality than others, depending on the population groups and the activities involved. The CARB has identified the following as being the groups most likely to be affected by air pollution: children under 14, the elderly over 65 years of age, athletes, and people with cardiovascular and chronic respiratory diseases. Sensitive receptors include residences, schools, playgrounds, child care centers, athletic facilities, long-term health care facilities, rehabilitation centers, convalescent centers, and retirement homes.

The proposed Banducci Substation site would be located on approximately 5 to 8 acres situated on the northwesterly portion of an 80-acre parcel. This privately owned parcel is located at the southeast corner of Pelliser Road and the unimproved Dale Road (Property) in unincorporated Kern County.

SCE has also considered an alternative to the Banducci Substation location, Site Alternative B. Site Alternative B would be located on approximately 5 to 8 acres situated on the southerly portion of a 20-acre parcel. This privately owned parcel is located on the northeast corner of Pelliser Road and the unimproved Highline Road in unincorporated Kern County.

Sensitive receptors near the proposed Banducci Substation location and Site Alternative B include scattered rural residences, a California Correctional Institute located to the east, and the Cummings Valley School located northeast of these locations.

There are also two proposed fiber optic telecommunications cables as part of the Proposed Project. One would connect the proposed Banducci Substation to the existing Cummings Substation and then continue on to the existing Monolith Substation. A second fiber optic telecommunications cable would connect the proposed Banducci Substation to the existing Monolith Substation. Sensitive receptors located near each telecommunications route include the California Correctional Institute, residences and various schools.

## 3.4 METHODOLOGY AND SIGNIFICANCE CRITERIA

### 3.4.1 Methodology

#### Construction

Regional criteria pollutant and GHG construction emissions were estimated using a spreadsheet methodology (see Appendix C, *Construction Regional Emission Calculations*). Construction emission factors used to estimate exhaust emissions were taken from a combination of CARB OFFROAD2011 and EMFAC2011 models. Fugitive dust associated with grading and bulldozing activities and processes such as truck dumping on a pile or loading out from the pile to a truck were also considered. The fugitive dust emissions were estimated using the methodology described in the USEPA AP-42 (Compilation of Air Pollutant Emission Factors). Sources of fugitive dust emissions include site preparation activity, earthmoving (dozing, grading, scraper, and material handling), road dust, and disturbed area windblown emissions.

The windblown dust emissions were calculated according to the recommendations in Section 13.2.5 of the USEPA AP-42. The amount of windblown dust emissions is controlled by the amount of surface material available for entrainment. Based on wind speed data for City of Tehachapi, an average peak wind speed of 38 miles per hour was used in the analysis. Due to

lack of information regarding surface structure of the soil, the friction velocity was assumed to be the lowest possible threshold at which windblown dust emissions are initiated at ground level. Therefore, the fugitive emissions results associated with windblown dust are very conservative. It was assumed that a maximum wind event could occur every five days.

Construction calculations were made based upon the Proposed Project description. The components of the Proposed Project are described below. An anticipated construction schedule and equipment mix can be found in the appendix to this Study. Regional emissions were assessed based on CEQA significance criteria to determine project impact significance.

**Banducci Substation Construction.** The Banducci Substation would be a new 66/12 kV unstaffed, automated, 56.0 MVA low-profile substation. Components to be included in the proposed substation are: 66 kV low-profile steel switchrack, 66/12 kV transformers, 12 kV low-profile steel switchrack, capacitor banks, mechanical and electrical room (MEER), and restroom facilities. In addition, the proposed substation would be enclosed on all sides by an 8-foot high perimeter wall and landscaping would be designed to filter views for the surrounding community. Approximately 6.3 acres of the Proposed Project site would be graded during construction of the Banducci Substation.

**Distribution Getaway Installation.** The Proposed Project would include the construction of three new underground distribution getaways. The getaways would consist of cable, conduits and vaults. Each vault would be located outside the substation wall on proposed SCE property. For the construction of the vaults, excavation activities would generally be done using a backhoe. The anticipated dimensions for the trench would be approximately 24 inches wide by approximately 51 inches deep, and approximately a length of 125 or 375 feet. The conduits would then be installed using spacers to create a ductbank consisting of two columns of three stacked 5-inch conduits apiece. The conduits would be encased in concrete with a minimum encasement of 3 inches on all sides. Once the encasements hardened, the trench would be backfilled with 1.5 sacks and sand slurry, which is a mix of sand and water with 1.5 bags of cement added with no aggregate. After the completion of installing the ductbank, vaults, and vent pipes, SCE's cable crews would install three single conductors 1,000 kcmil jacketed aluminum cross-linked polyethylene (CLP) cables per circuit run in one of the 5-inch conduits in the ductbank.

**Subtransmission Line Segment Installation.** The proposed 66 kV subtransmission line route would entail opening the existing Corrections-Cummings-Kern River 1 66kV line on Pelliser Road south of Dale Road. Specifically, two independent source line segments would be created by looping in the existing Correction-Cummings-Kern River 1 66 kV Subtransmission Line, creating the new Banducci-Kern River 1 66 kV Subtransmission Line and the new Banducci-Correction-Cummings 66 kV Subtransmission Line.

To create the new Banducci-Corrections-Cummings 66kV subtransmission line, SCE would install two new wood poles in the existing right-of-way (ROW) on the east side of Pelliser Road north of the proposed Banducci Substation north block wall. The northernmost new wood pole would be installed approximately 30 feet north of the existing pole it is replacing to adjust and even out the span lengths. The first wood pole north of the new Banducci Substation would be installed approximately 75 feet north of the existing wood pole it is replacing to adjust and even out the span lengths. A TSP self-supporting guy stub pole will be installed on the west side of Pelliser Road and west of this wood pole in franchise to support an approximate 15 degree angle on the wood pole. A steel stranded cable (span guy) would connect the TSP guy stub to the wood pole to support the side strain on the wood pole. The new wood poles will be installed

to reconfigure the existing subtransmission and distribution conductors to accommodate a distribution riser. A new TSP would be installed on SCE property but outside of the fence line of the new Banducci Substation. It would be installed in the northwest corner of the SCE parcel. This TSP would accommodate an approximately 105 degree turn in the line from the existing alignment and start the loop to the rear of the new Banducci Substation. Approximately 200 feet east of the TSP, SCE would install a LWS pole, the proposed line would continue east for approximately 200 feet to the north east corner of the proposed Banducci Substation where another TSP would be installed to accommodate a 90 degree turn and would continue south for approximately 115 feet to another TSP where the line would make another 90 degree turn and continue west to the substation switch rack. In order to create the proposed Banducci-Kern River 1 66 kV Subtransmission Line, SCE would install two new wood poles in the existing ROW on the east side of Pelliser Road south of the proposed Banducci Substation south block wall. The two new wood replacement poles would be installed approximately 3 feet from the existing wood poles. A TSP self-supporting guy stub pole would be installed on the west side of Pelliser Road and west of the first wood pole south of the new Banducci Substation in franchise to support an approximate 15 degree angle on the wood pole. A steel span guy would connect the TSP guy stub to the wood pole to support the side strain on the wood pole. The new wood poles would be installed to reconfigure the existing subtransmission and distribution conductors to accommodate a distribution riser. SCE would then install one TSP at the south west corner of the proposed Banducci Substation in order to accommodate an approximate 105 degree turn in the line from the existing alignment and start the loop to the rear of the new Banducci Substation. Approximately 200 feet east of the TSP, SCE would install a LWS pole, the proposed line would continue east for approximately 200 feet to the south east corner of the proposed Banducci Substation where another TSP would be installed to accommodate a 90 degree turn and continue north approximately 200 feet north to another TSP where the line would make another 90 degree turn and continue west to the substation switchrack.

Energizing the new source lines is the final step in completing the 66 kV subtransmission construction. The Correction-Kern River 1 section of the existing Correction-Cummings-Kern River 1 66 kV Subtransmission Line would be de-energized in order to connect the new 66 kV subtransmission line segments to the existing system. To reduce the need for electrical service interruptions, de-energizing and re-energizing the existing subtransmission lines may occur at night when electrical demand is low. Therefore, no customers are expected to experience outages due to this action.

**Telecommunication Construction.** Electrical equipment at the proposed Banducci Substation would be monitored through SCE's existing telecommunications system. Telecommunication infrastructure would be added to connect the proposed Banducci Substation to SCE's existing telecommunications system. The new telecommunication equipment would be installed within the MEER at the proposed Banducci Substation and within the existing MEER at the Monolith Substation. There are two proposed fiber optic telecommunications cable routes. One potential route would connect the proposed Banducci Substation to the existing Cummings Substation and then continue on to the existing Monolith Substation. The length of this route would be approximately 14.5 miles. The second route option would directly connect the fiber optic telecommunications cable from the proposed Banducci Substation to the existing Monolith Substation. The length of this route would be approximately 17.5 miles. Approximately 34 of the 751 existing wood poles on the proposed telecommunication routes would be replaced to support the Proposed Project.



## Operation

Operational mobile source emissions were calculated using a spreadsheet method (see Appendix D, *Operational Emissions Calculations*). EMFAC2011, which was the latest model at the time this report was prepared, emissions rates were used to calculate vehicle emissions. This model reflects the CARB's current understanding of how vehicles travel and how much they pollute. Assumptions used in the operational mobile source analysis include:

- Number of on-site vehicles: 2
- Number of days per year for subtransmission line inspection: 1
- Number of days per year for substation site visit: 156
- Distance travelled per subtransmission line inspection: 72 miles
- Distance travelled per substation site visit: 60 miles

### 3.4.2 Significance Criteria

In accordance with Appendix G of the State CEQA Guidelines, the proposed project would have a significant impact related to air quality if it would:

- Conflict with or obstruct implementation of the applicable air quality plan;
- Violate any air quality standard or contribute substantially to an existing or projected air quality violation;
- Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or State ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors);
- Expose sensitive receptors to substantial pollutant concentrations; and/or
- Create objectionable odors affecting a substantial number of people.

The EKAPCD has developed specific CEQA significance thresholds to assess construction and operational air quality impacts. The Proposed Project would have a significant impact related to air quality if:

- Annual regional construction emissions were to exceed EKAPCD Rule 210.1 construction emissions threshold for VOC (25 tons per year), NO<sub>x</sub> (25 tons per year), SO<sub>x</sub> (27 tons per year), or PM<sub>10</sub> (15 tons per year);
- Daily operational emissions were to exceed EKAPCD Rule 210.1 operational emissions threshold for VOC and NO<sub>x</sub> (137 pounds per day);
- The Proposed Project would generate significant emissions of TACs to nearby sensitive receptors; and/or
- The Proposed Project would create an odor nuisance affecting a substantial number of people.

### Greenhouse Gas Significance Criteria

In accordance with Appendix G of the State CEQA Guidelines, the Proposed Project would have a significant impact related to greenhouse gases if it would:

- Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment; and/or

- Conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases.

The EKAPCD has not formally adopted recommendations or official guidance to evaluate the significance of GHG emissions for projects within the Mojave Desert Air Basin in which the EKAPCD is not the lead agency. The EKAPCD has adopted an addendum to their EKAPCD CEQA Guidelines, *Addressing GHG Emission Impacts for Stationary Source Projects When Serving as the Lead CEQA Agency*. The recommended threshold for GHG emissions is 25,000 tons per year of CO<sub>2</sub>e.

In addition, the South Coast Air Quality Management District (SCAQMD) has adopted a more conservative interim operational significance threshold of 10,000 metric tons of CO<sub>2</sub>e per year for projects in which they are the lead agency. Given the Proposed Project site's proximity to the SCAQMD, and to implement the most conservative approach, this analysis applies the SCAQMD's significance threshold. A project's contribution to cumulative impacts to global climate change is considered cumulatively considerable if the project would generate 10,000 metric tons CO<sub>2</sub>e per year.

### 3.5 ENVIRONMENTAL IMPACTS

#### 3.5.1 Construction Phase

##### Regional Impacts

Construction of the Proposed Project has the potential to create air quality impacts through the use of heavy-duty construction equipment and through vehicle trips generated by construction workers traveling to and from the project site. Fugitive dust emissions would primarily result from site preparation (e.g., excavation) activity. NO<sub>x</sub> emissions would primarily result from the use of construction equipment. The assessment of construction air quality impacts considers each of these potential sources. Construction emissions can vary substantially from day to day, depending on the level of activity, the specific type of operation and, for dust, the prevailing weather conditions.

It is mandatory for all construction projects in the Basin to comply with EKAPCD Rule 402 for Fugitive Dust. The purpose of this Rule is to reduce the amount of PM<sub>10</sub> emitted from significant man-made fugitive dust sources. Rule 402 applies to specified bulk storage, earthmoving, construction and demolition, and man-made conditions resulting in wind erosion. Rule 402 control measures for each source category are identified below.

- **Unpaved Road.** Reasonable available control measures for unpaved roads include, but are not limited to, improving road surface, controlling vehicular traffic speed, and/or applying dust suppressants.
- **Construction/Demolition Activity.** Reasonable available control measures for construction or demolition activity include, but are not limited to, using wind breaks and/or apply dust suppressants.
- **Earth-moving or Open Storage Pile.** Reasonable available control measures for this source include, but are not limited to, wind screens, enclosure around storage piles, and/or apply dust suppressant.

- **Disturbed Surface Area.** Reasonable available control measures for disturbed surface area include, but are not limited to, fences or barriers, vegetate, apply dust suppressants, cover the disturbed surface area with gravel, and/or compact the disturbed surface area.

**Table 3-3** shows estimated annual emissions associated with each construction phase. Annual emissions of VOC (0.27), NO<sub>x</sub> (2.8), and PM<sub>10</sub> (6.1) would be less than the thresholds of significance established by EKAPCD (see Appendix C, *Construction Regional Emission Calculations*).<sup>9</sup> Therefore, the Proposed Project would result in a less-than-significant impact related to regional construction emissions.

<b>TABLE 3-3: ESTIMATED CONSTRUCTION EMISSIONS</b>			
	<b>Total Tons</b>		
	<b>VOC</b>	<b>NO<sub>x</sub></b>	<b>PM<sub>10</sub></b>
<b>Construction Phase</b>			
Banducci Substation Construction	0.33	4.43	8.22
Distribution Getaway Installation	0.01	0.14	0.20
Subtransmission Line Segment Installation	0.19	1.14	2.9
Telecommunication Construction	0.05	0.60	2.9
<b>Construction Emissions (Tons per Year) /a/</b>	<b>0.27</b>	<b>2.8</b>	<b>6.1</b>
<b>Regional Significance Threshold</b>	<b>25</b>	<b>25</b>	<b>15</b>
Exceed Threshold?	No	No	No
/a/ Total tons averaged over 2.34 years. <b>SOURCE:</b> TAHA, 2014; Appendix C, <i>Construction Regional Emission Calculations</i> .			

### Toxic Air Contaminant Impacts

The greatest potential for TAC emissions during construction would be diesel particulate emissions associated with heavy equipment operations. Health effects from carcinogenic air toxics are usually described in terms of individual cancer risk. “Individual Cancer Risk” is the likelihood that a person continuously exposed to concentrations of TACs over a 70-year lifetime will develop cancer based on the use of standard risk assessment methodology. Given the short-term construction schedule of approximately one year, it is not anticipated that the Proposed Project would result in a long-term (i.e., 70-year) source of TAC emissions. In addition, construction-related health risk assessments are typically completed for large, stationary construction projects that generate high emissions in one location near sensitive land uses and often include high volumes of truck trips. The potential for continuous TAC exposure is low given the low-density rural area and the transient nature of subtransmission line construction activity. Therefore, the Proposed Project would result in a less-than-significant impact related to construction TAC emissions.

### Odor Impacts

Potential sources that may emit odors during construction activities include equipment exhaust and architectural coatings. Odors from these sources would be localized and generally confined to the immediate area surrounding the project site. The Proposed Project would utilize typical

<sup>9</sup>After implementing the measures included in Rule 402, PM<sub>10</sub> emissions associated with construction activities would be further reduced by approximately 61 percent so that they would total only approximately 2.57 tons per year, which is even further below the 15 tons per year standard set by EKAPCD.

construction techniques, and the odors would be typical of most construction sites and temporary in nature. Construction would not cause an odor nuisance since there are no sensitive receptors near the project site. Construction odors would result in a less-than-significant impact.

### **Consistency with the Air Quality Attainment Plan**

The EKAPCD developed an ozone redesignation request and maintenance plan for the Federal one-hour ozone standard on January 9, 2003. The eastern portion of Kern County ozone nonattainment has experienced less than an average exceedance per year for the one-hour Federal Ozone National Ambient Air Quality Standard (NAAQS) over the last three years. The Ozone, Attainment Demonstration, Maintenance Plan, and Redesignation Request document concludes that an attainment of the one-hour ozone standard has been approved by the USEPA, and deemed a maintenance area. As of February 2008, the District has filed an Ozone Early Progress Plan to reclassify the eight-hour ozone standard, and USEPA is reconsidering the level of the Federal eight-hour ozone standard. The initial 8-hour ozone standard attainment plan is not yet due to the U.S. EPA. The one-hour ozone maintenance plan requires no new control measures for maintaining attainment of the one-hour standard.

The EKAPCD California Clean Air Act Ozone Air Quality Attainment Plan (AQAP) was approved by the California Air Resources Board (CARB) on February 18, 1993. EKAPCD's most recent Annual Implementation Progress Report for this attainment plan was completed in December 15, 2005. The implementation progress report notes that KCAPCD is recognized by CARB staff as a nonurbanized, moderate ozone nonattainment District overwhelmingly impacted by upwind transport.

The majority of the ambient ozone pollution in the area are pollutants that have been transported by the wind from the San Joaquin Valley and South Coast Air Basins. The implementation progress report indicates that no additional control measures are required for attainment of the ozone California Ambient Air Quality Standards (CAAQS), attainment will occur by reducing the pollution in these adjacent air basins.

As explained above, the Proposed Project would not result in significant regional construction emissions and, thus, would not interfere with the attainment of air quality standards. Construction activity would not conflict or obstruct implementation of the AQAP and would result in a less-than-significant impact.

### **Construction Phase Mitigation Measures**

Impacts related to air quality emissions would be less than significant. No mitigation measures are required.

### **Impacts After Mitigation**

Impacts related to construction-related regional air quality were determined to be less than significant without mitigation.

### 3.5.2 Operational Phase

#### Regional Impacts

Once construction is completed, operational emissions would result from vehicles travelling to the proposed Banducci Substation site for periodic inspection, maintenance, and repair. The assumptions used in this analysis along with the calculation methodology are shown in Appendix D, *Operational Emissions Calculations*. **Table 3-4** shows estimated operational emissions associated with motor vehicles. As shown in **Table 3-4**, operational emissions would be less than the EKPACD thresholds. No stationary emissions sources would be associated with the Proposed Project. Therefore, the Proposed Project would result in a less-than-significant impact related to operational emissions.

<b>TABLE 3-4: ESTIMATED ANNUAL OPERATIONAL EMISSIONS</b>				
	<b>Pounds per Day</b>			
	<b>VOC</b>	<b>NO<sub>x</sub></b>	<b>SO<sub>x</sub></b>	<b>PM<sub>10</sub></b>
Subtransmission Line Inspection	0.006	0.02	<1	0.007
Substation Site Visit	0.005	0.02	<1	0.006
<b>Total Proposed Project Operation Emissions</b>	0.011	0.04	<1	0.014
<b>Operational Significance Thresholds</b>	<b>137</b>	<b>137</b>	—	—
Exceed Threshold?	No	No	No	No
"—" = No threshold has been identified.				
SOURCE: TAHA, 2014, Appendix D, <i>Operational Emission Calculations</i> .				

#### Toxic Air Contaminant Impacts

TAC emissions associated with long-term operation of the Proposed Project can potentially affect nearby sensitive land uses. The primary sources air toxics associated with the Proposed Project would be diesel-powered trucks associated with maintenance activities. The EKAPCD has not published guidance for completing mobile-source health risk assessments. However, the SCAQMD has published guidance titled *Health Risk Assessment Guidance for Analyzing Cancer Risks from Mobile Source Diesel Idling Emissions for CEQA Air Quality Analysis* (August 2003). The document is designed for the assessment of truck idling and movement (such as, but not limited to, truck stops, warehouse/distribution centers or transit centers). According to the CARB, a distribution center of health concern would include over 100 truck trips per day and be located within 1,000 feet of a sensitive land use.<sup>10</sup> The Proposed Project would generate less than 100 truck trips per day. Based on the limited activity of TAC sources, the Proposed Project would not warrant the need for a health risk assessment associated with on-site activities. Therefore, the Proposed Project would result in a less-than-significant impact related to TAC.

#### Odor Impacts

According to the *CEQA Air Quality Handbook*, land uses and industrial operations that are associated with odor complaints include agricultural uses, wastewater treatment plants, food processing plants, chemical plants, composting, refineries, landfills, dairies and fiberglass molding. The Proposed Project would not include any of these potential sources and would not

<sup>10</sup> CARB, Air Quality and Land Use Handbook: A Community Health Perspective, April 2005.

have a high potential to generate odor impacts. Therefore, the Proposed Project would result in a less-than-significant impact related to operation odors.

### **Consistency with the Air Quality Attainment Plan**

A significant impact would occur if the Proposed Project conflict with or obstruct implementation of the applicable air quality plan. The determination of AQAP consistency is primarily concerned with the long-term influence of the Proposed Project on regional air quality. As mentioned above, the Proposed Project would not have a significant long-term impact on the region's ability to meet the State and federal air quality standards. As such, the Proposed Project would not jeopardize the attainment standard. Operational activity would not conflict or obstruct implementation of the AQAP and would result in a less-than-significant impact.

### **Operational Phase Mitigation Measures**

Impacts related to operational air quality emissions would be less than significant. No mitigation measures are required.

### **Impacts After Mitigation**

Impacts related to operational air quality were determined to be less than significant without mitigation.

## **3.6 CUMULATIVE IMPACTS**

By its very nature, air pollution is largely a cumulative impact. No single project is sufficient in size to, by itself, result in nonattainment of ambient air quality standards. Instead, a project's individual emissions contribute to existing cumulatively significant adverse air quality impacts. If a project exceeds the identified significance thresholds, its emissions may be cumulatively considerable, potentially resulting in significant adverse air quality impacts to the region's existing air quality conditions. In that case, additional analysis to assess cumulative impacts would be necessary.

The cumulative condition includes the Deteriorated Pole Program (DPP). DPP involves the removal and replacement of 79 poles in areas near the Project site. However, it is anticipated that the DPP work will be complete before construction begins for the Proposed Project.

The Proposed Project would not result in a significant VOC, NO<sub>x</sub>, or PM<sub>10</sub> impacts during construction or operation. Emissions from the Proposed Project are less than significant on a project basis and are not cumulatively considerable. The Proposed Project would not contribute to a cumulative impact.

### **3.6.2 Global Climate Change**

Greenhouse gas emissions associated with construction activities, SF<sub>6</sub> leakage during project operations and on-road mobile vehicle operations were calculated. Greenhouse gas construction emissions were estimated in a similar manner and using the same assumptions as described above for regional construction emissions. As shown in **Table 3-5**, the Proposed Project would generate a total 840metric tons of CO<sub>2</sub>e during construction activity. The SCAQMD has developed guidance for the determination of significance of GHG construction emissions, and recommends that total emissions from construction be amortized over 30 years.

The amortized construction emissions would result in a total annual emission of 30 metric tons CO<sub>2</sub>e.

Operational emissions would result from on-road mobile vehicle operations and SF<sub>6</sub> leakage. Mobile source operational emissions were estimated in a similar manner and using the same assumptions as described above for regional operational emissions. The two 66kV subtransmission line positions and the two 66kV transformer bank positions would each be equipped with a circuit breaker and three group-operated horizontal mount disconnect switches. Surge arresters and 66kV potential transformers (PTs) would be installed on the line positions only. The 66 kV bus tie position would be equipped with a circuit breaker and two group-operated horizontal mount disconnect switches. Three 66kV bus PTs would be connected to the operating bus through a three-phase group-operated disconnected switch.

Although the Proposed Project would use the latest technology that limits leakage, some leakage would be anticipated over time as equipment ages or is accidentally broken. GHG emissions associated with SF<sub>6</sub> leakage were calculated using the following equation:

$$E = L/100 \times M_{SF_6} \times 23,200 \times 4.536 \times 10^{-4}$$

where:

E = GHG emissions from SF<sub>6</sub> leakage (metric tons CO<sub>2</sub> equivalent per year)

L = SF<sub>6</sub> leakage rate = 0.5 percent per year

M<sub>SF<sub>6</sub></sub> = Total "weight" of SF<sub>6</sub> in new circuit breakers = 155 pounds

SF<sub>6</sub> global warming potential = 23,200

Conversion factor for metric tons per pound = 4.536 x 10<sup>-4</sup>

As shown in **Table 3-6**, the estimated annual GHG emissions from the operational activities is eight (8) metric tons CO<sub>2</sub>e. These emissions would primarily be from SF<sub>6</sub> leakage.

The combined GHG emissions from construction activities (30 CO<sub>2</sub>e) and operational 11 CO<sub>2</sub>e would result in a total amortized emissions calculation of 41 CO<sub>2</sub>e of GHG (see Appendix E, *Greenhouse Gas Emission Calculations*). This amount would be considerably less than the 10,000 metric tons per year of CO<sub>2</sub>e significance threshold. In addition, SCE has made a significant investment in not only improving its SF<sub>6</sub> gas management practices, but also in purchasing state-of-the-art gas handling equipment that minimizes SF<sub>6</sub> leakage. The new equipment has improved sealing designs that virtually eliminate possible sources of leakage. SCE has also addressed SF<sub>6</sub> leakage on older equipment by performing repairs and replacing antiquated equipment through its infrastructure replacement program. It is expected that the Proposed Project would have a minimal amount of SF<sub>6</sub> leakage as a result of the installation of state-of-the-art equipment and SCE's SF<sub>6</sub> gas management practices. Pursuant to its existing practices, SCE would reduce potential GHG impacts resulting from the Proposed Project to the greatest extent practicable. Therefore, the Proposed Project would result in a less-than-significant impact related to GHG emissions.

<b>TABLE 3-5: ESTIMATED GREENHOUSE GAS EMISSIONS</b>	
<b>Phase</b>	<b>Carbon Dioxide Equivalent (Metric Tons)</b>
<b>Construction</b>	
Banducci Substation Construction	464
Distribution Getaway Installation	16
Subtransmission Line Segment Installation	114
Telecommunication Construction	74
<b>Off-site Emissions</b>	<b>237</b>
<b>Total Construction Emissions</b>	<b>905</b>
<b>Construction Emissions Amortized /a/</b>	<b>30</b>
<b>Operations</b>	
SF6 Leakage	8
Mobile Sources	3
<b>Total Operational Emissions</b>	<b>11</b>
<b>Total Annual GHG Emissions</b>	<b>41</b>
<b>Significance Threshold</b>	<b>10,000</b>
Exceed Threshold?	No
/a/ The South Coast Air Quality Management District recommends annualizing construction emissions over 30 years in the GHG analysis. <b>SOURCE:</b> TAHA, 2014, Appendix E, <i>Greenhouse Gas Emission Calculations</i> .	



Appendix A  
Climate Information

# TEHACHAPI, CALIFORNIA

## Period of Record General Climate Summary - Precipitation

Station:(048826) TEHACHAPI														
From Year=1948 To Year=1997														
	Precipitation										Total Snowfall			
	Mean	High	Year	Low	Year	1 Day Max.	>= 0.01 in.	>= 0.10 in.	>= 0.50 in.	>= 1.00 in.	Mean	High	Year	
	in.	in.	-	in.	-	in.	dd/yyyy or yyyymmdd	# Days	# Days	# Days	# Days	in.	in.	-
January	2.01	9.09	1995	0.00	1959	2.17	05/1995	7	5	1	0	4.6	19.5	1955
February	1.77	6.09	1962	0.10	1967	3.22	10/1978	6	4	1	0	2.3	12.0	1962
March	1.96	11.59	1983	0.00	1955	3.40	01/1983	7	5	1	0	5.1	28.1	1991
April	0.92	3.55	1967	0.00	1966	1.77	28/1951	5	3	0	0	2.1	33.0	1967
May	0.40	2.35	1977	0.00	1952	1.95	08/1977	2	1	0	0	0.2	3.0	1953
June	0.09	0.82	1993	0.00	1949	0.66	12/1963	1	0	0	0	0.0	0.0	1949
July	0.08	1.10	1984	0.00	1948	0.78	16/1984	1	0	0	0	0.0	0.0	1948
August	0.27	2.65	1983	0.00	1948	1.36	08/1963	1	1	0	0	0.0	0.0	1948
September	0.24	2.13	1967	0.00	1948	1.15	11/1976	1	1	0	0	0.0	0.0	1948
October	0.38	2.23	1974	0.00	1952	1.10	02/1981	2	1	0	0	0.0	0.5	1949
November	1.23	6.22	1970	0.00	1956	3.29	29/1970	4	3	1	0	1.4	13.0	1985
December	1.62	5.26	1951	0.00	1962	2.19	29/1964	6	4	1	0	2.9	25.5	1984
Annual	10.97	27.77	1983	4.30	1989	3.40	19830301	43	27	6	2	18.6	62.0	1967
Winter	5.40	14.74	1993	1.05	1961	3.22	19780210	19	13	3	1	9.8	35.5	1949
Spring	3.28	13.19	1983	0.18	1997	3.40	19830301	14	9	2	0	7.4	35.0	1967
Summer	0.44	2.65	1983	0.00	1949	1.36	19630808	2	1	0	0	0.0	0.0	1949
Fall	1.85	6.22	1970	0.02	1977	3.29	19701129	7	4	1	0	1.4	13.0	1985

Table updated on Apr 5, 2006

For monthly and annual means, thresholds, and sums:

Months with 5 or more missing days are not considered

Years with 1 or more missing months are not considered

Seasons are climatological not calendar seasons

Winter = Dec., Jan., and Feb. Spring = Mar., Apr., and May

# TEHACHAPI, CALIFORNIA

## Period of Record General Climate Summary - Temperature

Station:(048826) TEHACHAPI															
From Year=1948 To Year=1997															
	Monthly Averages			Daily Extremes				Monthly Extremes				Max. Temp.		Min. Temp.	
	Max.	Min.	Mean	High	Date	Low	Date	Highest Mean	Year	Lowest Mean	Year	>= 90 F	<= 32 F	<= 32 F	<= 0 F
	F	F	F	F	dd/yyyy or yyyymmdd	F	dd/yyyy or yyyymmdd	F	-	F	-	# Days	# Days	# Days	# Days
January	51.4	30.1	40.8	74	30/1971	0	16/1949	48.4	1986	27.7	1949	0.0	0.5	19.1	0.0
February	54.6	31.8	43.2	78	10/1951	6	13/1949	48.8	1995	36.3	1949	0.0	0.1	15.7	0.0
March	56.2	33.8	44.9	81	24/1956	9	02/1953	51.3	1972	39.3	1952	0.0	0.0	13.3	0.0
April	62.6	37.3	50.0	89	19/1950	17	12/1965	56.7	1989	40.2	1967	0.0	0.0	7.0	0.0
May	70.6	44.0	57.4	95	13/1976	26	06/1988	62.9	1997	50.7	1953	0.5	0.0	1.4	0.0
June	79.2	51.5	65.3	102	29/1950	29	03/1967	71.7	1981	58.8	1965	3.9	0.0	0.1	0.0
July	86.6	57.6	72.1	103	25/1980	36	05/1948	75.7	1970	67.2	1983	10.1	0.0	0.0	0.0
August	85.9	55.4	70.7	104	18/1950	38	20/1948	75.5	1967	65.6	1976	9.5	0.0	0.0	0.0
September	80.6	49.2	64.9	102	03/1950	22	26/1948	69.4	1974	58.6	1986	4.3	0.0	0.1	0.0
October	71.1	41.3	56.2	96	03/1980	19	29/1971	62.0	1988	50.6	1969	0.2	0.0	2.9	0.0
November	59.4	34.8	47.1	83	01/1965	6	17/1958	54.0	1949	40.0	1994	0.0	0.0	11.6	0.0
December	52.4	30.7	41.5	81	03/1958	-4	21/1967	49.1	1958	34.3	1971	0.0	0.5	18.9	0.0
Annual	67.5	41.5	54.5	104	19500818	-4	19671221	56.1	1980	52.6	1964	28.7	1.2	90.1	0.0
Winter	52.8	30.9	41.8	81	19581203	-4	19671221	46.5	1981	33.5	1949	0.0	1.2	53.7	0.0
Spring	63.1	38.4	50.7	95	19760513	9	19530302	54.4	1992	47.2	1991	0.5	0.0	21.7	0.0
Summer	83.9	54.9	69.4	104	19500818	29	19670603	73.7	1981	65.6	1963	23.6	0.0	0.1	0.0
Fall	70.4	41.8	56.1	102	19500903	6	19581117	59.6	1995	52.8	1994	4.6	0.0	14.6	0.0

Table updated on Apr 5, 2006

For monthly and annual means, thresholds, and sums:

Months with 5 or more missing days are not considered

Years with 1 or more missing months are not considered

Seasons are climatological not calendar seasons

Winter = Dec., Jan., and Feb. Spring = Mar., Apr., and May

Summer = Jun., Jul., and Aug. Fall = Sep., Oct., and Nov.

Appendix B

CARB Data



## Top 4 Summary: Highest 4 Daily Maximum 8-Hour Ozone Averages

at Mojave-923 Poole Street

iADAM

	2011		2012		2013	
	Date	8-Hr Average	Date	8-Hr Average	Date	8-Hr Average
National:						
First High:	Jul 2	0.092	Jun 20	0.086	Jun 7	0.086
Second High:	Jul 3	0.084	Aug 10	0.084	Jun 6	0.084
Third High:	May 5	0.083	Jul 30	0.082	Jul 19	0.082
Fourth High:	Jun 21	0.082	Aug 3	0.082	Jul 18	0.081
California:						
First High:	Jul 2	0.092	Jun 20	0.087	Jun 7	0.086
Second High:	Jul 3	0.084	Aug 10	0.084	Jun 6	0.084
Third High:	May 5	0.083	Jul 30	0.082	Jul 19	0.083
Fourth High:	Jun 21	0.083	Aug 3	0.082	Jul 18	0.081
National:						
# Days Above the Standard:		20		29		8
Nat'l Standard Design Value:		0.080		0.079		0.081
National Year Coverage:		99		98		88
California:						
# Days Above the Standard:		43		55		22
California Designation Value:		0.084		0.087		0.087
Expected Peak Day Concentration:		0.089		0.088		0.089
California Year Coverage:		100		98		87

### Notes:

Eight-hour ozone averages and related statistics are available at Mojave-923 Poole Street between 1993 and 2013. Some years in this range may not be represented. All averages expressed in parts per million.

An exceedance of a standard is not necessarily related to a violation of the standard.

Year Coverage indicates the extent to which available monitoring data represent the time of the year when concentrations are expected to be highest. 0 means that data represent none of the high period; 100 means that data represent the entire high period. A high Year Coverage does not mean that there was sufficient data for annual statistics to be considered valid.

\* means there was insufficient data available to determine the value.

### Available Pollutants:

8-Hour Ozone | **Hourly Ozone** | **PM2.5** | **PM10** | Carbon Monoxide | Nitrogen Dioxide | State Sulfur Dioxide | Hydrogen Sulfide



## Top 4 Summary: Highest 4 Daily Maximum Hourly Ozone Measurements

### at Mojave-923 Poole Street

	2011		2012		2013	
	Date	Measurement	Date	Measurement	Date	Measurement
First High:	Jul 2	0.101	Jun 20	0.096	Jun 7	0.094
Second High:	Sep 20	0.095	Aug 9	0.092	Jun 6	0.090
Third High:	Aug 12	0.091	Aug 10	0.092	Jul 19	0.090
Fourth High:	Jun 21	0.090	Jul 31	0.091	Jul 20	0.088
California:						
# Days Above the Standard:		2		1		0
California Designation Value:		0.10		0.10		0.10
Expected Peak Day Concentration:		0.095		0.095		0.096
National:						
# Days Above the Standard:		0		0		0
Nat'l Standard Design Value:		0.096		0.092		0.094
Year Coverage:		100		99		91

#### Notes:

Hourly ozone measurements and related statistics are available at Mojave-923 Poole Street between 1993 and 2013. Some years in this range may not be represented. All concentrations expressed in parts per million.

The national 1-hour ozone standard was revoked in June 2005 and is no longer in effect. Statistics related to the revoked standard are shown in *italics* or *italics*.

An exceedance of a standard is not necessarily related to a violation of the standard.

Year Coverage indicates the extent to which available monitoring data represent the time of the year when concentrations are expected to be highest. 0 means that data represent none of the high period; 100 means that data represent the entire high period. A high Year Coverage does not mean that there was sufficient data for annual statistics to be considered valid.

\* means there was insufficient data available to determine the value.

#### Available Pollutants:

**8-Hour Ozone** | Hourly Ozone | **PM2.5** | **PM10** | Carbon Monoxide | Nitrogen Dioxide | State Sulfur Dioxide | Hydrogen Sulfide



## Top 4 Summary: Highest 4 Daily 24-Hour PM2.5 Averages

at Mojave-923 Poole Street

iADAM

	2011		2012		2013	
	Date	24-Hr Average	Date	24-Hr Average	Date	24-Hr Average
National:						
First High:	Aug 22	28.0	May 23	67.7	Mar 21	76.2
Second High:	Oct 25	23.0	Apr 1	49.5	Apr 8	67.9
Third High:	May 26	22.8	Feb 25	34.1	Jun 2	53.6
Fourth High:	Aug 21	20.3	May 1	27.2	Mar 22	47.9
California:						
First High:	May 27	34.0	Apr 1	49.5	Mar 21	76.2
Second High:	Aug 22	28.0	Feb 25	34.1	Apr 8	67.9
Third High:	Oct 25	23.0	May 3	28.4	Jun 2	53.6
Fourth High:	May 26	22.8	May 1	27.2	Mar 22	47.9
National:						
Estimated # Days > 24-Hour Std:	0.0		2.1		6.6	
Measured # Days > 24-Hour Std:	0		2		5	
24-Hour Standard Design Value:	*		*		24	
24-Hour Standard 98th Percentile:	17.6		21.8		33.7	
Annual Standard Design Value:	*		*		7.2	
Annual Average:	6.2		6.5		8.6	
California:						
Annual Std Designation Value:	5		7		7	
Annual Average:	*		6.6		*	
Year Coverage:	100		100		81	

### Notes:

Daily PM2.5 averages and related statistics are available at Mojave-923 Poole Street between 1999 and 2013. Some years in this range may not be represented.

All averages expressed in micrograms per cubic meter.

An exceedance of a standard is not necessarily related to a violation of the standard.

State statistics are based on California approved samplers, whereas national statistics are based on samplers using federal reference or equivalent methods. State and national statistics may therefore be based on different samplers.

Year Coverage indicates the extent to which available monitoring data represent the time of the year when concentrations are expected to be highest. 0 means that data represent none of the high period; 100 means that data represent the entire high period. A high Year Coverage does not mean that there was sufficient data for annual statistics to be considered valid.

\* means there was insufficient data available to determine the value.



## Top 4 Summary: Highest 4 Daily 24-Hour PM10 Averages

at Mojave-923 Poole Street

	2011		2012		2013	
	Date	24-Hr Average	Date	24-Hr Average	Date	24-Hr Average
National:						
First High:	Jun 28	35.7		*	Jun 19	120.2
Second High:	Jun 18	35.5		*	Sep 25	112.6
Third High:	Jun 21	29.0		*	Oct 3	97.8
Fourth High:	Jun 26	23.8		*	Oct 2	90.7
California:						
First High:	Dec 1	79.4	May 22	96.6	Jun 2	113.4
Second High:	Oct 25	75.2	Mar 6	78.0	Jun 19	111.9
Third High:	Sep 25	63.6	Jun 8	77.6	Apr 8	93.3
Fourth High:	Sep 8	62.4	May 17	73.0	Oct 3	91.2
National:						
Estimated # Days > 24-Hour Std:		*		*		*
Measured # Days > 24-Hour Std:		0		*		0
3-Yr Avg Est # Days > 24-Hr Std:		*		*		*
<i>Annual Average:</i>		13.7		*		37.7
<i>3-Year Average:</i>		15		*		*
California:						
Estimated # Days > 24-Hour Std:		*		19.1		*
Measured # Days > 24-Hour Std:		18		18		22
Annual Average:		*		27.5		*
3-Year Maximum Annual Average:		*		28		28
Year Coverage:		27		*		0

### Notes:

Daily PM10 averages and related statistics are available at Mojave-923 Poole Street between 1994 and 2013. Some years in this range may not be represented.

All values listed above represent midnight-to-midnight 24-hour averages and may be related to an [exceptional event](#).

The national annual average PM10 standard was revoked in December 2006 and is no longer in effect. Statistics related to the revoked standard are shown in *italics* or *italics*.

An exceedance of a standard is not necessarily related to a violation of the standard.

All values listed above represent midnight-to-midnight 24-hour averages and may be related to an [exceptional event](#).

State and national statistics may differ for the following reasons:

State statistics are based on California approved samplers, whereas national statistics are based on samplers using federal reference or equivalent methods. State and



## Appendix C

# Construction Regional Emission Calculations

Banducci Project - Summary of Construction Emissions

EQUIPMENT [1]		Equipment Emissions (tons per year)									
		ROG	NOX	SOX	PM10 Exhaust	PM10 Fugitive Dust	PM10 Total	PM25 Exhaust	PM25 Fugitive Dust	PM25 Total	CO2
<b>Construction Equipment Emissions</b>											
	Construction Equipment	0.24	2.62	0.00	0.10	5.90	6.00	0.09	0.88	0.98	256.74

WORKER VEHICLES			Worker Vehicle Emissions (tons per year)												
		# of Workers	VMT/Day	ROG_RUNEX	NOX_RUNEX	SO2_RUNEX	PM25_RUNEX	PM25_PMBW	PM25_PMTW	PM2.5 Total	PM10_RUNEX	PM10_PMBW	PM10_PMTW	PM10 Total	CO2_NBIO_R UNEX
<b>Worker Vehicles Emissions</b>															
	Cars	25.0	665.00	0.015	0.065	0.001	0.000	0.003	0.000	0.003	0.000	0.006	0.001	0.008	73.281
	Trucks		26.60	0.006	0.069	0.000	0.017	0.001	0.000	0.018	0.068	0.002	0.001	0.071	27.94
Tons per Year				0.020	0.133	0.001	0.018	0.004	0.001	0.022	0.069	0.008	0.002	0.079	101.22

Asphalt Paving [4]					
	Total Acres to	Paving Days (Schedule)	Acres Paved Per	ROG/Acre	ROG (ppd)
Paving	0.457	18.00	0.025	2.62	0.07
Tons per Year					0.01

TOTAL EMISSIONS	Emissions (Tons per Year)					
	ROG	NOX	SOX	PM10 Total	PM25 Total	CO2
<b>Regional Annual Construction Emissions</b>	<b>0.27</b>	<b>2.75</b>	<b>0.004</b>	<b>6.08</b>	<b>1.00</b>	<b>358</b>

[1] Construction equipments emissions are taken from Estimated Equipment Construction Spreadsheet.

[2] Used CalEEmod's asphalt paving calculations for ROG off-gasing emissions. Emissions = (Emission Factor, pound/acre) \* (Area of the parking lot, acre). SMAQMD default emission factor is 2.62 lb/acre.

Emission Calculation Assumption

Equipment Type	CalEEMod Category	HP	Qty	Operating Hrs/WD/each	Operating Hours per Day/ No of Round Trips for On-road	# of miles for Onroad	Material loading throuput (tons/day)	Construction On-site Emissions (lbs/hr)							
								CO Rate (lbs/hr)	ROG Rate (lbs/hr)	NOX rate (lbs/hr)	SOX rate (lbs/hr)	PM2.5 rate (lbs/hr)	PM10 rate (lbs/hr)	CO2 rate (lbs/hr)	CH4 rate (lbs/hr)
Banducci Substation Construction															
<i>Survey - 5 Work Days</i>															
Survey Trucks			2		2.00	107.6									
<i>Survey Emissions Total (lbs)</i>															
<i>Grading - 30 Work Days</i>															
Dozer	Rubber Tired Dozers Composite	380	1	8.00	8.00			2.07	0.24	2.70	0.00	0.13	0.12	175.82	0.05
Loader	Rubber Tired Loaders Composite	380	2	8.00	16.00		100.00	0.73	0.13	1.57	0.00	0.06	0.05	154.57	0.05
Scraper	Scrapers Composite	400	1	8.00	8.00			1.65	0.20	2.64	0.00	0.11	0.10	218.99	0.06
Grader	Graders Composite	400	1	8.00	8.00			0.65	0.11	1.34	0.00	0.05	0.05	187.06	0.06
Water Truck	Other Construction Equipment Composite	250	1	4.00	4.00			0.40	0.05	0.74	0.00	0.03	0.03	84.42	0.02
4 X 4 Tamper	Other Construction Equipment Composite	175	1	4.00	4.00			0.40	0.05	0.74	0.00	0.03	0.03	84.42	0.02
Tool Truck	Other Construction Equipment Composite	175	1	4.00	4.00			0.40	0.05	0.74	0.00	0.03	0.03	84.42	0.02
Pick-up Truck			4		4.00	107.6									
<i>Grading Emissions Total (lbs)</i>															
<i>Fencing (Chain Link) - 10 Work Days</i>															
Bobcat	Tractors/Loaders/B ackhoes Composite	250	1	8.00	8.00			0.28	0.07	1.00	0.00	0.03	0.03	105.06	0.03
Flatbed Truck	Other Construction Equipment Composite	175	1	4.00	4.00			0.40	0.05	0.74	0.00	0.03	0.03	84.42	0.02
Crew Cab Truck			1		1.00	107.6									
<i>Fencing Emissions Total (lbs)</i>															
<i>Civil - 76 Work Days</i>															

Emission Calculation Assumption

Equipment Type	CalEEMod Category	HP	Qty	Operating Hrs/WD/each	Operating Hours per Day/ No of Round Trips for On-road	# of miles for Onroad	Material loading throuput (tons/day)	Construction On-site Emissions (lbs/hr)							
								CO Rate (lbs/hr)	ROG Rate (lbs/hr)	NOX rate (lbs/hr)	SOX rate (lbs/hr)	PM2.5 rate (lbs/hr)	PM10 rate (lbs/hr)	CO2 rate (lbs/hr)	CH4 rate (lbs/hr)
Excavator	Excavators Composite	350	1	8.00	8.00			0.40	0.07	1.04	0.00	0.03	0.03	150.11	0.04
Foundation Auger	Bore/Drill Rigs Composite	175	1	4.00	4.00			0.59	0.06	0.78	0.00	0.04	0.03	101.09	0.03
Backhoe	Tractors/Loaders/Backhoes Composite	250	2	8.00	16.00		100.00	0.28	0.07	1.00	0.00	0.03	0.03	105.06	0.03
Dump Truck			1		1.00	26.6									
Skip Loader	Tractors/Loaders/Backhoes Composite	250	1	8.00	8.00		100.00	0.28	0.07	1.00	0.00	0.03	0.03	105.06	0.03
Water Truck	Other Construction Equipment Composite	250	1	8.00	8.00			0.40	0.05	0.74	0.00	0.03	0.03	84.42	0.02
Bobcat Skid Steer	Skid Steer Loaders Composite	75	2	8.00	16.00		10.00	0.20	0.02	0.25	0.00	0.01	0.01	31.63	0.01
Forklift	Forklifts Composite	100	1	4.00	4.00			0.18	0.04	0.30	0.00	0.03	0.02	22.75	0.01
17 Ton Crane	Cranes Composite	250	1	4.00	4.00			0.66	0.08	0.99	0.00	0.04	0.04	82.03	0.02
Tool Truck	Other Construction Equipment Composite	175	1	4.00	4.00			0.40	0.05	0.74	0.00	0.03	0.03	84.42	0.02
Pick-up Truck			4		4.00	107.6									
<i>Civil Emissions Total (lbs)</i>															
<i>MEER (Not Pre-Built) - 5 Work Days</i>															
Pick-up Truck			2		2.00	107.6									
Stake Truck	Other Construction Equipment Composite	175	1	2.00	2.00			0.40	0.05	0.74	0.00	0.03	0.03	84.42	0.02
17 Ton Crane	Cranes Composite	250	1	4.00	4.00			0.66	0.08	0.99	0.00	0.04	0.04	82.03	0.02
<i>MEER Emissions Total (lbs)</i>															
<i>Electrical - 66 Work Days</i>															
Scissor Lifts	Aerial Lifts Composite	120	1	4.00	4.00			0.26	0.02	0.28	0.00	0.01	0.01	42.13	0.01

Emission Calculation Assumption

Equipment Type	CalEEMod Category	HP	Qty	Operating Hrs/WD/each	Operating Hours per Day/ No of Round Trips for On-road	# of miles for Onroad	Material loading throuput (tons/day)	Construction On-site Emissions (lbs/hr)							
								CO Rate (lbs/hr)	ROG Rate (lbs/hr)	NOX rate (lbs/hr)	SOX rate (lbs/hr)	PM2.5 rate (lbs/hr)	PM10 rate (lbs/hr)	CO2 rate (lbs/hr)	CH4 rate (lbs/hr)
Manlift	Aerial Lifts Composite	120	2	4.00	8.00			0.26	0.02	0.28	0.00	0.01	0.01	42.13	0.01
Reach Forklift	Forklifts Composite	100	1	2.00	2.00			0.18	0.04	0.30	0.00	0.03	0.02	22.75	0.01
15 Ton Crane (Line Truck)	Cranes Composite	250	1	4.00	4.00			0.66	0.08	0.99	0.00	0.04	0.04	82.03	0.02
Tool Trailer	Other Construction Equipment Composite	175	1	8.00	8.00			0.40	0.05	0.74	0.00	0.03	0.03	84.42	0.02
Crew Truck			2		2.00	107.6									
70 Ton Crane	Cranes Composite	250	1	4.00	4.00			0.66	0.08	0.99	0.00	0.04	0.04	82.03	0.02
<i>Electrical Emissions Total (lbs)</i>															
<i>Wiring - 44 Work Days</i>															
Manlift	Aerial Lifts Composite	120	1	2.00	2.00			0.26	0.02	0.28	0.00	0.01	0.01	42.13	0.01
Tool Trailer	Other Construction Equipment Composite	175	1	8.00	8.00			0.40	0.05	0.74	0.00	0.03	0.03	84.42	0.02
<i>Wiring Emissions Total (lbs)</i>															

Emission Calculation Assumption

Equipment Type	CalEEMod Category	HP	Qty	Operating Hrs/WD/each	Operating Hours per Day/ No of Round Trips for On-road	# of miles for Onroad	Material loading thruout (tons/day)	Construction On-site Emissions (lbs/hr)							
								CO Rate (lbs/hr)	ROG Rate (lbs/hr)	NOX rate (lbs/hr)	SOX rate (lbs/hr)	PM2.5 rate (lbs/hr)	PM10 rate (lbs/hr)	CO2 rate (lbs/hr)	CH4 rate (lbs/hr)
<i>Transformers - 5 Work Days</i>															
Crew Truck			2		2.00	107.6									
Low Bed Truck	Other Construction Equipment Composite	175	1	2.00	2.00			0.40	0.05	0.74	0.00	0.03	0.03	84.42	0.02
<i>Transformers Emissions Total (lbs)</i>															
<i>Maintenance Crew Equipment Check - 22 Work Days</i>															
Maintenance Truck	Other Construction Equipment Composite	175	2	2.00	4.00			0.40	0.05	0.74	0.00	0.03	0.03	84.42	0.02
<i>Maintenance Crew Equipment Check Emissions Total (lbs)</i>															
<i>Testing - 88 Work Days</i>															
Crew Truck/Van			1		1.00	107.6									
<i>Testing Emissions Total (lbs)</i>															
<i>Asphalting - 10 Work Days</i>															
Paving Roller	Pavers Composite	100	1	4.00	4.00			0.35	0.06	0.57	0.00	0.04	0.04	47.11	0.01
Asphalt Paver	Paving Equipment Composite	100	1	4.00	4.00			0.30	0.05	0.51	0.00	0.04	0.04	41.12	0.01
Stake Truck	Other Construction Equipment Composite	175	1	2.00	2.00			0.40	0.05	0.74	0.00	0.03	0.03	84.42	0.02
Tractor	Tractors/Loaders/B ackhoes Composite	250	1	8.00	8.00			0.28	0.07	1.00	0.00	0.03	0.03	105.06	0.03
Dump Truck			1		1.00	26.6									
Crew Trucks	Other Construction Equipment Composite	175	2	2.00	4.00			0.40	0.05	0.74	0.00	0.03	0.03	84.42	0.02
Asphalt Curb Machine	Paving Equipment Composite	100	1	2.00	2.00			0.30	0.05	0.51	0.00	0.04	0.04	41.12	0.01
<i>Asphalting Emissions Total (lbs)</i>															

Emission Calculation Assumption

Equipment Type	CalEEMod Category	HP	Qty	Operating Hrs/WD/each	Operating Hours per Day/ No of Round Trips for On-road	# of miles for Onroad	Material loading throuput (tons/day)	Construction On-site Emissions (lbs/hr)							
								CO Rate (lbs/hr)	ROG Rate (lbs/hr)	NOX rate (lbs/hr)	SOX rate (lbs/hr)	PM2.5 rate (lbs/hr)	PM10 rate (lbs/hr)	CO2 rate (lbs/hr)	CH4 rate (lbs/hr)
<i>Landscaping - 5 Work Days</i>															
Tractor	Tractors/Loaders/Backhoes Composite	250	1	8.00	8.00			0.28	0.07	1.00	0.00	0.03	0.03	105.06	0.03
Dump Truck			1		1.00	26.6									
Pick-up Truck															
<i>Landscaping Emissions Total (lbs)</i>															
<i>Banducci Substation Construction Total Emissions (Tons per Year)</i>															
<i>Distribution Getaway Construction</i>															
<i>Civil - 8 Work Days</i>															
Backhoe / Front Loader	Tractors/Loaders/Backhoes Composite	250	1	8.00	8.00		100.00	0.28	0.07	1.00	0.00	0.03	0.03	105.06	0.03
Dump Truck			1		1.00	26.6									
1 Ton Crew Truck	Other Construction Equipment Composite	175	1	2.00	2.00			0.40	0.05	0.74	0.00	0.03	0.03	84.42	0.02
Cement Truck	Cement and Mortar Mixers Composite	25	1	4.00	4.00			0.08	0.03	0.15	0.00	0.01	0.01	17.54	0.00
Paving Roller	Pavers Composite	100	1	4.00	4.00			0.35	0.06	0.57	0.00	0.04	0.04	47.11	0.01
Asphalt Paver	Paving Equipment Composite	100	1	4.00	4.00			0.30	0.05	0.51	0.00	0.04	0.04	41.12	0.01
Grinder	Crushing/Proc. Equipment Composite	400	1	4.00	4.00			0.85	0.26	2.55	0.00	0.08	0.08	390.90	0.02
<i>Civil Emissions Total (lbs)</i>															
<i>Vault Delivery - 2 Work Days</i>															
4 Ton Truck with Crane	Cranes Composite	250	1	4.00	4.00			0.66	0.08	0.99	0.00	0.04	0.04	82.03	0.02
<i>Vault Delivery Emissions Total (lbs)</i>															
<i>Cable Pulling - 2 Work Days</i>															
Rodder Truck	Other Construction Equipment Composite	175	1	8.00	8.00			0.40	0.05	0.74	0.00	0.03	0.03	84.42	0.02





Emission Calculation Assumption

Equipment Type	CalEEMod Category	HP	Qty	Operating Hrs/WD/each	Operating Hours per Day/ No of Round Trips for On-road	# of miles for Onroad	Material loading thruout (tons/day)	Construction On-site Emissions (lbs/hr)							
								CO Rate (lbs/hr)	ROG Rate (lbs/hr)	NOX rate (lbs/hr)	SOX rate (lbs/hr)	PM2.5 rate (lbs/hr)	PM10 rate (lbs/hr)	CO2 rate (lbs/hr)	CH4 rate (lbs/hr)
Subtransmission Construction															
<i>Survey - 2 Work Days</i>															
1 Ton Truck	Other Construction Equipment Composite	175	1	8.00	8.00			0.40	0.05	0.74	0.00	0.03	0.03	84.42	0.02
<i>Survey Emissions Total (lbs)</i>															
<i>Marshalling Yard - Duration of Project</i>															
1 Ton Truck	Other Construction Equipment Composite	175	1	4.00	4.00			0.40	0.05	0.74	0.00	0.03	0.03	84.42	0.02
R/T Fork Lift	Forklifts Composite	100	1	6.00	6.00			0.18	0.04	0.30	0.00	0.03	0.02	22.75	0.01
Boom Crane Truck	Cranes Composite	250	1	2.00	2.00			0.66	0.08	0.99	0.00	0.04	0.04	82.03	0.02
Water Truck	Other Construction Equipment Composite	250	1	8.00	8.00			0.40	0.05	0.74	0.00	0.03	0.03	84.42	0.02
Semi Tractor Truck	Tractors/Loaders/Backhoes Composite	250	1	2.00	2.00			0.28	0.07	1.00	0.00	0.03	0.03	105.06	0.03
<i>Marshalling Yard Emissions Total (lbs)</i>															
<i>Right of Way Clearing - 1 Work Day</i>															
1 Ton Truck	Other Construction Equipment Composite	175	1	8.00	8.00			0.40	0.05	0.74	0.00	0.03	0.03	84.42	0.02
Backhoe / Front Loader	Tractors/Loaders/Backhoes Composite	250	1	6.00	6.00		100.00	0.28	0.07	1.00	0.00	0.03	0.03	105.06	0.03
Track Type Dozer	Rubber Tired Dozers Composite	380	1	6.00	6.00			2.07	0.24	2.70	0.00	0.13	0.12	175.82	0.05
Motor Grader	Graders Composite	400	1	6.00	6.00			0.65	0.11	1.34	0.00	0.05	0.05	187.06	0.06

Emission Calculation Assumption

Equipment Type	CalEEMod Category	HP	Qty	Operating Hrs/WD/each	Operating Hours per Day/ No of Round Trips for On-road	# of miles for Onroad	Material loading throuput (tons/day)	Construction On-site Emissions (lbs/hr)							
								CO Rate (lbs/hr)	ROG Rate (lbs/hr)	NOX rate (lbs/hr)	SOX rate (lbs/hr)	PM2.5 rate (lbs/hr)	PM10 rate (lbs/hr)	CO2 rate (lbs/hr)	CH4 rate (lbs/hr)
Water Truck	Other Construction Equipment Composite	250	1	8.00	8.00			0.40	0.05	0.74	0.00	0.03	0.03	84.42	0.02
Lowboy Truck / Trailer	Other Construction Equipment Composite	175	1	4.00	4.00			0.40	0.05	0.74	0.00	0.03	0.03	84.42	0.02
<i>Right of Way Clearing Emissions Total (lbs)</i>															
<i>Roads &amp; Landing Work - 1 Work Day</i>															
1 Ton Truck	Other Construction Equipment Composite	175	1	8.00	8.00			0.40	0.05	0.74	0.00	0.03	0.03	84.42	0.02
Backhoe/Front Loader	Tractors/Loaders/Backhoes Composite	250	1	4.00	4.00		100.00	0.28	0.07	1.00	0.00	0.03	0.03	105.06	0.03
Track Type Dozer	Rubber Tired Dozers Composite	380	1	4.00	4.00			2.07	0.24	2.70	0.00	0.13	0.12	175.82	0.05
Motor Grader	Graders Composite	400	1	6.00	6.00			0.65	0.11	1.34	0.00	0.05	0.05	187.06	0.06
Water Truck	Other Construction Equipment Composite	250	1	8.00	8.00			0.40	0.05	0.74	0.00	0.03	0.03	84.42	0.02
Drum Type Compactor	Plate Compactors Composite	15	1	6.00	6.00			0.05	0.01	0.06	0.00	0.00	0.00	8.08	0.00
Excavator	Excavators Composite	350	1	4.00	4.00			0.40	0.07	1.04	0.00	0.03	0.03	150.11	0.04
Lowboy Truck / Trailer	Other Construction Equipment Composite	175	1	4.00	4.00			0.40	0.05	0.74	0.00	0.03	0.03	84.42	0.02
<i>Roads &amp; Landing Work Emissions Total (lbs)</i>															
<i>Removal of Existing Conductor - 1 Work Day</i>															

Emission Calculation Assumption

Equipment Type	CalEEMod Category	HP	Qty	Operating Hrs/WD/each	Operating Hours per Day/ No of Round Trips for On-road	# of miles for Onroad	Material loading thruoutput (tons/day)	Construction On-site Emissions (lbs/hr)							
								CO Rate (lbs/hr)	ROG Rate (lbs/hr)	NOX rate (lbs/hr)	SOX rate (lbs/hr)	PM2.5 rate (lbs/hr)	PM10 rate (lbs/hr)	CO2 rate (lbs/hr)	CH4 rate (lbs/hr)
1 Ton Truck	Other Construction Equipment Composite	175	2	4.00	8.00			0.40	0.05	0.74	0.00	0.03	0.03	84.42	0.02
Manlift / Bucket Truck	Aerial Lifts Composite	120	2	8.00	16.00			0.26	0.02	0.28	0.00	0.01	0.01	42.13	0.01
Boom Crane Truck	Cranes Composite	250	2	8.00	16.00			0.66	0.08	0.99	0.00	0.04	0.04	82.03	0.02
Bull Wheel Puller	Other Construction Equipment Composite	175	1	6.00	6.00			0.40	0.05	0.74	0.00	0.03	0.03	84.42	0.02
Sock Line Puller	Other Construction Equipment Composite	175	1	6.00	6.00			0.40	0.05	0.74	0.00	0.03	0.03	84.42	0.02
Static Truck / Tensioner	Other Construction Equipment Composite	175	1	6.00	6.00			0.40	0.05	0.74	0.00	0.03	0.03	84.42	0.02
Lowboy Truck / Trailer	Other Construction Equipment Composite	175	2	4.00	8.00			0.40	0.05	0.74	0.00	0.03	0.03	84.42	0.02
<i>Removal of Existing Conductor Emissions Total (lbs)</i>															
<i>Wood Pole Removal - 1 Work Day</i>															
1 Ton Truck	Other Construction Equipment Composite	175	2	8.00	16.00			0.40	0.05	0.74	0.00	0.03	0.03	84.42	0.02
Compressor Trailer	Air Compressors Composite	400	1	4.00	4.00			0.51	0.15	1.46	0.00	0.05	0.05	240.55	0.01
Manlift / Bucket Truck	Aerial Lifts Composite	120	1	6.00	6.00			0.26	0.02	0.28	0.00	0.01	0.01	42.13	0.01
Boom Crane Truck	Cranes Composite	250	1	6.00	6.00			0.66	0.08	0.99	0.00	0.04	0.04	82.03	0.02

Emission Calculation Assumption

Equipment Type	CalEEMod Category	HP	Qty	Operating Hrs/WD/each	Operating Hours per Day/ No of Round Trips for On-road	# of miles for Onroad	Material loading throuput (tons/day)	Construction On-site Emissions (lbs/hr)							
								CO Rate (lbs/hr)	ROG Rate (lbs/hr)	NOX rate (lbs/hr)	SOX rate (lbs/hr)	PM2.5 rate (lbs/hr)	PM10 rate (lbs/hr)	CO2 rate (lbs/hr)	CH4 rate (lbs/hr)
Flat Bed Pole Truck	Other Construction Equipment Composite	175	1	8.00	8.00			0.40	0.05	0.74	0.00	0.03	0.03	84.42	0.02
<i>Wood Pole Removal Emissions Total (lbs)</i>															

Emission Calculation Assumption

Equipment Type	CalEEMod Category	HP	Qty	Operating Hrs/WD/each	Operating Hours per Day/ No of Round Trips for On-road	# of miles for Onroad	Material loading throuput (tons/day)	Construction On-site Emissions (lbs/hr)							
								CO Rate (lbs/hr)	ROG Rate (lbs/hr)	NOX rate (lbs/hr)	SOX rate (lbs/hr)	PM2.5 rate (lbs/hr)	PM10 rate (lbs/hr)	CO2 rate (lbs/hr)	CH4 rate (lbs/hr)
<i>Install TSP Foundations - 16 Work Days</i>															
3/4 Ton Truck	Other Construction Equipment Composite	175	1	4.00	4.00			0.40	0.05	0.74	0.00	0.03	0.03	84.42	0.02
Boom Crane Truck	Cranes Composite	250	1	4.00	4.00		100.00	0.66	0.08	0.99	0.00	0.04	0.04	82.03	0.02
Backhoe / Front Loader	Tractors/Loaders/Backhoes Composite	250	1	6.00	6.00			0.28	0.07	1.00	0.00	0.03	0.03	105.06	0.03
Auger Truck	Bore/Drill Rigs Composite	175	1	6.00	6.00			0.59	0.06	0.78	0.00	0.04	0.03	101.09	0.03
Water Truck	Other Construction Equipment Composite	250	1	8.00	8.00			0.40	0.05	0.74	0.00	0.03	0.03	84.42	0.02
Dump Truck			1		1.00	26.6									
Concrete Mixer Truck	Cement and Mortar Mixers Composite	25	3	4.00	12.00			0.08	0.03	0.15	0.00	0.01	0.01	17.54	0.00
<i>Install TSP Foundations Emissions Total (lbs)</i>															
<i>TSP Haul - 8 Work Days</i>															
3/4 Ton Truck	Other Construction Equipment Composite	175	1	8.00	8.00			0.40	0.05	0.74	0.00	0.03	0.03	84.42	0.02
Boom Crane Truck	Cranes Composite	250	1	6.00	6.00			0.66	0.08	0.99	0.00	0.04	0.04	82.03	0.02
Flat Bed Pole Truck	Other Construction Equipment Composite	175	1	8.00	8.00			0.40	0.05	0.74	0.00	0.03	0.03	84.42	0.02
<i>TSP Haul Emissions Total (lbs)</i>															
<i>TSP Assembly - 8 Work Days</i>															
3/4 Ton Truck	Other Construction Equipment Composite	175	2	4.00	8.00			0.40	0.05	0.74	0.00	0.03	0.03	84.42	0.02

Emission Calculation Assumption

Equipment Type	CalEEMod Category	HP	Qty	Operating Hrs/WD/each	Operating Hours per Day/ No of Round Trips for On-road	# of miles for Onroad	Material loading throuput (tons/day)	Construction On-site Emissions (lbs/hr)							
								CO Rate (lbs/hr)	ROG Rate (lbs/hr)	NOX rate (lbs/hr)	SOX rate (lbs/hr)	PM2.5 rate (lbs/hr)	PM10 rate (lbs/hr)	CO2 rate (lbs/hr)	CH4 rate (lbs/hr)
1 Ton Truck	Other Construction Equipment Composite	175	2	4.00	8.00			0.40	0.05	0.74	0.00	0.03	0.03	84.42	0.02
Compressor Trailer	Air Compressors Composite	400	1	6.00	6.00			0.51	0.15	1.46	0.00	0.05	0.05	240.55	0.01
Boom Crane Truck	Cranes Composite	250	1	8.00	8.00			0.66	0.08	0.99	0.00	0.04	0.04	82.03	0.02
<i>TSP Assembly Emissions Total (lbs)</i>															
<i>TSP Erection - 8 Work Days</i>															
3/4 Ton Truck	Other Construction Equipment Composite	175	2	4.00	8.00			0.40	0.05	0.74	0.00	0.03	0.03	84.42	0.02
1 Ton Truck	Other Construction Equipment Composite	175	2	4.00	8.00			0.40	0.05	0.74	0.00	0.03	0.03	84.42	0.02
Compressor Trailer	Air Compressors Composite	400	1	4.00	4.00			0.51	0.15	1.46	0.00	0.05	0.05	240.55	0.01
Boom Crane Truck	Cranes Composite	250	1	8.00	8.00			0.66	0.08	0.99	0.00	0.04	0.04	82.03	0.02
<i>TSK Erection Emissions Total (lbs)</i>															
<i>Wood / LWS Haul - 2 Work Day</i>															
3/4 Ton Truck	Other Construction Equipment Composite	175	1	8.00	8.00			0.40	0.05	0.74	0.00	0.03	0.03	84.42	0.02
Boom Crane Truck	Cranes Composite	250	1	6.00	6.00			0.66	0.08	0.99	0.00	0.04	0.04	82.03	0.02
Flat Bed Pole Truck	Other Construction Equipment Composite	175	1	8.00	8.00			0.40	0.05	0.74	0.00	0.03	0.03	84.42	0.02
<i>Wood / LSW Pole Assembly Emissions Total (lbs)</i>															
<i>Wood / LSW Pole Assembly- 3 Work Day</i>															

Emission Calculation Assumption

Equipment Type	CalEEMod Category	HP	Qty	Operating Hrs/WD/each	Operating Hours per Day/ No of Round Trips for On-road	# of miles for Onroad	Material loading throuput (tons/day)	Construction On-site Emissions (lbs/hr)							
								CO Rate (lbs/hr)	ROG Rate (lbs/hr)	NOX rate (lbs/hr)	SOX rate (lbs/hr)	PM2.5 rate (lbs/hr)	PM10 rate (lbs/hr)	CO2 rate (lbs/hr)	CH4 rate (lbs/hr)
3/4 Ton Truck	Other Construction Equipment Composite	175	2	4.00	8.00			0.40	0.05	0.74	0.00	0.03	0.03	84.42	0.02
1 Tone Truck	Other Construction Equipment Composite	175	2	4.00	8.00			0.40	0.05	0.74	0.00	0.03	0.03	84.42	0.02
Compressor Trailer	Air Compressors Composite	400	1	6.00	6.00			0.51	0.15	1.46	0.00	0.05	0.05	240.55	0.01
Boom Crane Truck	Cranes Composite	250	1	8.00	8.00			0.66	0.08	0.99	0.00	0.04	0.04	82.03	0.02
<i>Wood / LSW Pole Assembly Emissions Total (lbs)</i>															
<i>Install Wood / LSW Pole - 3 Work Days</i>															
1 Ton Truck	Other Construction Equipment Composite	175	1	8.00	8.00			0.40	0.05	0.74	0.00	0.03	0.03	84.42	0.02
Manlift / Bucket Truck	Aerial Lifts Composite	120	1	6.00	6.00			0.26	0.02	0.28	0.00	0.01	0.01	42.13	0.01
Boom Crane Truck	Cranes Composite	250	1	6.00	6.00			0.66	0.08	0.99	0.00	0.04	0.04	82.03	0.02
Auger Truck	Bore/Drill Rigs Composite	175	1	4.00	4.00			0.59	0.06	0.78	0.00	0.04	0.03	101.09	0.03
Backhoe / Front Loader	Tractors/Loaders/Backhoes Composite	250	1	8.00	8.00		100.00	0.28	0.07	1.00	0.00	0.03	0.03	105.06	0.03
Extendable Flat Bed Pole Truck	Other Construction Equipment Composite	175	1	8.00	8.00			0.40	0.05	0.74	0.00	0.03	0.03	84.42	0.02
<i>Install Wood / LSW Pole Emissions Total (lbs)</i>															





Emission Calculation Assumption

Equipment Type	CalEEMod Category	HP	Qty	Operating Hrs/WD/each	Operating Hours per Day/ No of Round Trips for On-road	# of miles for Onroad	Material loading thruout (tons/day)	Construction On-site Emissions (lbs/hr)							
								CO Rate (lbs/hr)	ROG Rate (lbs/hr)	NOX rate (lbs/hr)	SOX rate (lbs/hr)	PM2.5 rate (lbs/hr)	PM10 rate (lbs/hr)	CO2 rate (lbs/hr)	CH4 rate (lbs/hr)
1 Ton Truck	Other Construction Equipment Composite	175	2	4.00	8.00			0.40	0.05	0.74	0.00	0.03	0.03	84.42	0.02
Backhoe / Front Loader	Tractors/Loaders/Backhoes Composite	250	1	4.00	4.00		100.00	0.28	0.07	1.00	0.00	0.03	0.03	105.06	0.03
Motor Grader	Graders Composite	400	1	6.00	6.00			0.65	0.11	1.34	0.00	0.05	0.05	187.06	0.06
Water Truck	Other Construction Equipment Composite	250	1	8.00	8.00			0.40	0.05	0.74	0.00	0.03	0.03	84.42	0.02
Drum Type Compactor	Plate Compactors Composite	15	1	8.00	8.00			0.05	0.01	0.06	0.00	0.00	0.00	8.08	0.00
Lowboy Truck / Trailer	Other Construction Equipment Composite	175	1	4.00	4.00			0.40	0.05	0.74	0.00	0.03	0.03	84.42	0.02
<i>Restoration Emissions Total (lbs)</i>															
<i>Subtransmission Construction Total Emissions (Tons per Year)</i>															
Telecommunications Construction			1	4.00	4.00										
<i>Telecom Construction Inside MEER - 30 Work Days</i>															
Pick-up Truck			3		3.00	107									
<i>Telecom Construction Inside MEER Emissions Total (lbs)</i>															
<i>Substructure Installation - 34 Work Days</i>															
Backhoe	Tractors/Loaders/Backhoes Composite	250	1	8.00	8.00			0.28	0.07	1.00	0.00	0.03	0.03	105.06	0.03
Dump Truck		175	1		1.00	26.6									
Cement Truck	Cement and Mortar Mixers Composite	175	1	8.00	8.00			0.08	0.03	0.15	0.00	0.01	0.01	17.54	0.00
<i>Substructure Installation Emissions Total (lbs)</i>															

Emission Calculation Assumption

Equipment Type	CalEEMod Category	HP	Qty	Operating Hrs/WD/each	Operating Hours per Day/ No of Round Trips for On-road	# of miles for Onroad	Material loading throuput (tons/day)	Construction On-site Emissions (lbs/hr)							
								CO Rate (lbs/hr)	ROG Rate (lbs/hr)	NOX rate (lbs/hr)	SOX rate (lbs/hr)	PM2.5 rate (lbs/hr)	PM10 rate (lbs/hr)	CO2 rate (lbs/hr)	CH4 rate (lbs/hr)
<i>Wood Pole Replacement and Transfer Facilities - 40 Work Days</i>															
1 Ton Truck	Other Construction Equipment Composite	175	2	2.00	4.00			0.40	0.05	0.74	0.00	0.03	0.03	84.42	0.02
Double Bucket Truck	Other Construction Equipment Composite	175	1	8.00	8.00			0.40	0.05	0.74	0.00	0.03	0.03	84.42	0.02
Auger Truck	Bore/Drill Rigs Composite	175	1	4.00	4.00			0.59	0.06	0.78	0.00	0.04	0.03	101.09	0.03
Boom Truck	Other Construction Equipment Composite	175	1	8.00	8.00			0.40	0.05	0.74	0.00	0.03	0.03	84.42	0.02
<i>Wood Pole Replacement and Transfer Facilities Emissions Total (lbs)</i>															
<i>Fiber Optic Cable Installation - 62 Work Days</i>															
Pick-up Truck			2		2.00	107									
Manlift / Bucket Truck	Aerial Lifts Composite	120	1	8.00	8.00			0.26	0.02	0.28	0.00	0.01	0.01	42.13	0.01
<i>Fiber Optic Cable Installation Emissions Total (lbs)</i>															
<b>Telecommunications Construction Total Emissions (Tons per Year)</b>															
<b>Proposed Project Construction Emissions (Tons per Year)</b>															

Construction Emissions (On-Site Emissions lb/day)

Equipment Type	CalEEMod Category	HP	Qty	Operating Hrs/WD/each	Operating Hours per Day/ No of Round Trips for On-road	# of miles for Onroad	Material loading throughput (tons/day)	Construction Onsite Emission (lbs/day)										
								ROG (lbs/day)	NOX (lbs/day)	SOX (lbs/day)	PM10 (lbs/day) TOTAL	PM10 (lbs/day) Exhaust	PM10 (lbs/day) Fugitive Dust	PM2.5 (lbs/day) TOTAL	PM2.5 (lbs/day) Exhaust	PM2.5 (lbs/day) Fugitive	CO2 (lbs/day)	CH4 (lbs/day)
Banducci Substation Construction																		
<i>Survey - 5 Work Days</i>																		
Survey Trucks			2		2	107.6												
<b>Survey Emissions Total (lbs)</b>																	0	
<i>Grading - 30 Work Days</i>																		
Dozer	Rubber Tired Dozers Composite	380	1	8	8			1.90	21.60	0.01	2.49	1.01	1.48	2.97	0.93	2.05	1407	0.42
Loader	Rubber Tired Loaders Composite	380	2	8	16		100	2.03	25.07	0.02	3.67	0.94	2.73	1.28	0.87	0.41	2473	0.73
Scraper	Scrapers Composite	400	1	8	8			1.62	21.11	0.02	35.02	0.85	34.17	4.47	0.78	3.69	1752	0.52
Grader	Graders Composite	400	1	8	8			0.91	10.74	0.01	34.58	0.41	34.17	4.07	0.38	3.69	1496	0.44
Water Truck	Other Construction Equipment Composite	250	1	4	4			0.21	2.96	0.00	0.11	0.11		0.10	0.10		338	0.10
4 X 4 Tamper	Other Construction Equipment Composite	175	1	4	4			0.21	2.96	0.00	0.11	0.11		0.10	0.10		338	0.10
Tool Truck	Other Construction Equipment Composite	175	1	4	4			0.21	2.96	0.00	0.11	0.11		0.10	0.10		338	0.10
Pick-up Truck			4		4	107.6												
<b>Grading Emissions Total (lbs)</b>								212.96	2621.55	2.30	2282.86	106.27	2176.60	392.95	97.78	295.16	244233	72.18
<i>Fencing (Chain Link) - 10 Work Days</i>																		
Bobcat	Tractors/Loaders/Backhoes Composite	250	1	8	8			0.53	8.03	0.01	0.26	0.26		0.24	0.24		840	0.25
Flatbed Truck	Other Construction Equipment Composite	175	1	4	4			0.21	2.96	0.00	0.11	0.11		0.10	0.10		338	0.10
Crew Cab Truck			1		1	107.6												
<b>Fencing Emissions Total (lbs)</b>								7.47	109.86	0.11	3.68	3.68		3.38	3.38		11781	3.48
<i>Civil - 76 Work Days</i>																		

Construction Emissions (On-Site Emissions lb/day)

Equipment Type	CalEEMod Category	HP	Qty	Operating Hrs/WD/each	Operating Hours per Day/ No of Round Trips for On-road	# of miles for Onroad	Material loading throughput (tons/day)	Construction Onsite Emission (lbs/day)											
								ROG (lbs/day)	NOX (lbs/day)	SOX (lbs/day)	PM10 (lbs/day) TOTAL	PM10 (lbs/day) Exhaust	PM10 (lbs/day) Fugitive Dust	PM2.5 (lbs/day) TOTAL	PM2.5 (lbs/day) Exhaust	PM2.5 (lbs/day) Fugitive	CO2 (lbs/day)	CH4 (lbs/day)	
Excavator	Excavators Composite	350	1	8	8			0.56	8.31	0.01	0.27	0.27		0.25	0.25		1201	0.35	
Foundation Auger	Bore/Drill Rigs Composite	175	1	4	4			0.24	3.14	0.00	0.14	0.14		0.13	0.13		404	0.12	
Backhoe	Tractors/Loaders/Backhoes Composite	250	2	8	16		100	1.07	16.06	0.02	3.25	0.52	2.73	0.89	0.48	0.41	1681	0.50	
Dump Truck		175	1		1	26.6													
Skip Loader	Tractors/Loaders/Backhoes Composite	250	1	8	8		100	0.53	8.03	0.01	2.99	0.26	2.73	0.65	0.24	0.41	840	0.25	
Water Truck	Other Construction Equipment Composite	250	1	8	8			0.43	5.91	0.01	0.22	0.22		0.20	0.20		675	0.20	
Bobcat Skid Steer	Skid Steer Loaders Composite	75	2	8	16		10	0.30	3.93	0.00	0.50	0.23	0.27	0.25	0.21	0.04	506	0.15	
Forklift	Forklifts Composite	100	1	4	4			0.14	1.21	0.00	0.10	0.10		0.09	0.09		91	0.03	
17 Ton Crane	Cranes Composite	250	1	4	4			0.31	3.98	0.00	0.16	0.16		0.15	0.15		328	0.10	
Tool Truck	Other Construction Equipment Composite	175	1	4	4			0.21	2.96	0.00	0.11	0.11		0.10	0.10		338	0.10	
Pick-up Truck			4		4	107.6													
<b>Civil Emissions Total (lbs)</b>								<b>287.50</b>	<b>4067.13</b>	<b>4.36</b>	<b>588.58</b>	<b>152.81</b>	<b>435.77</b>	<b>206.59</b>	<b>140.60</b>	<b>65.99</b>	<b>460933</b>	<b>136.20</b>	
<b>MEER (Not Pre-Built) - 5 Work Days</b>																			
Pick-up Truck			2		2	107.6													
Stake Truck	Other Construction Equipment Composite	175	1	2	2			0.11	1.48	0.00	0.05	0.05		0.05	0.05		169	0.05	
17 Ton Crane	Cranes Composite	250	1	4	4			0.31	3.98	0.00	0.16	0.16		0.15	0.15		328	0.10	
<b>MEER Emissions Total (lbs)</b>								<b>2.07</b>	<b>27.28</b>	<b>0.02</b>	<b>1.10</b>	<b>1.10</b>		<b>1.01</b>	<b>1.01</b>		<b>2485</b>	<b>0.73</b>	
<b>Electrical - 66 Work Days</b>																			
Scissor Lifts	Aerial Lifts Composite	120	1	4	4			0.07	1.10	0.00	0.05	0.05		0.05	0.05		169	0.05	

Construction Emissions (On-Site Emissions lb/day)

Equipment Type	CalEEMod Category	HP	Qty	Operating Hrs/WD/each	Operating Hours per Day/ No of Round Trips for On-road	# of miles for Onroad	Material loading thruput (tons/day)	Construction Onsite Emission (lbs/day)											
								ROG (lbs/day)	NOX (lbs/day)	SOX (lbs/day)	PM10 (lbs/day) TOTAL	PM10 (lbs/day) Exhaust	PM10 (lbs/day) Fugitive Dust	PM2.5 (lbs/day) TOTAL	PM2.5 (lbs/day) Exhaust	PM2.5 (lbs/day) Fugitive	CO2 (lbs/day)	CH4 (lbs/day)	
Manlift	Aerial Lifts Composite	120	2	4	8			0.13	2.20	0.00	0.10	0.10		0.10	0.10		337	0.10	
Reach Forklift	Forklifts Composite	100	1	2	2			0.07	0.60	0.00	0.05	0.05		0.05	0.05		46	0.01	
15 Ton Crane (Line Truck)	Cranes Composite	250	1	4	4			0.31	3.98	0.00	0.16	0.16		0.15	0.15		328	0.10	
Tool Trailer	Other Construction Equipment Composite	175	1	8	8			0.43	5.91	0.01	0.22	0.22		0.20	0.20		675	0.20	
Crew Truck	Other Construction Equipment Composite	175	2		2	107.6													
70 Ton Crane	Cranes Composite	250	1	4	4			0.31	3.98	0.00	0.16	0.16		0.15	0.15		328	0.10	
<b>Electrical Emissions Total (lbs)</b>								<b>86.37</b>	<b>1173.06</b>	<b>1.17</b>	<b>49.86</b>	<b>49.86</b>		<b>45.87</b>	<b>45.87</b>		<b>124253</b>	<b>36.72</b>	
<i>Wiring - 44 Work Days</i>																			
Manlift	Aerial Lifts Composite	120	1	2	2			0.03	0.55	0.00	0.03	0.03		0.02	0.02		84	0.02	
Tool Trailer	Other Construction Equipment Composite	175	1	8	8			0.43	5.91	0.01	0.22	0.22		0.20	0.20		675	0.20	
<b>Wiring Emissions Total (lbs)</b>								<b>20.25</b>	<b>284.34</b>	<b>0.31</b>	<b>10.74</b>	<b>10.74</b>		<b>9.88</b>	<b>9.88</b>		<b>33422</b>	<b>9.87</b>	

Construction Emissions (On-Site Emissions lb/day)

Equipment Type	CalEEMod Category	HP	Qty	Operating Hrs/WD/each	Operating Hours per Day/ No of Round Trips for On-road	# of miles for Onroad	Material loading throughput (tons/day)	Construction Onsite Emission (lbs/day)										
								ROG (lbs/day)	NOX (lbs/day)	SOX (lbs/day)	PM10 (lbs/day) TOTAL	PM10 (lbs/day) Exhaust	PM10 (lbs/day) Fugitive Dust	PM2.5 (lbs/day) TOTAL	PM2.5 (lbs/day) Exhaust	PM2.5 (lbs/day) Fugitive	CO2 (lbs/day)	CH4 (lbs/day)
<i>Transformers - 5 Work Days</i>																		
Crew Truck			2		2	107.6												
Low Bed Truck	Other Construction Equipment Composite	175	1	2	2			0.11	1.48	0.00	0.05	0.05		0.05	0.05		169	0.05
<b>Transformers Emissions Total (lbs)</b>								0.53	7.39	0.01	0.27	0.27		0.25	0.25		844	0.25
<i>Maintenance Crew Equipment Check - 22 Work Days</i>																		
Maintenance Truck	Other Construction Equipment Composite	175	2	2	4			0.21	2.96	0.00	0.11	0.11		0.10	0.10		338	0.10
<b>Maintenance Crew Equipment Check Emissions Total (lbs)</b>								4.70	65.03	0.07	2.40	2.40		2.20	2.20		7429	2.19
<i>Testing - 88 Work Days</i>																		
Crew Truck/Van			1		1	107.6												
<b>Testing Emissions Total (lbs)</b>																		
<i>Asphalting - 10 Work Days</i>																		
Paving Roller	Pavers Composite	100	1	4	4			0.25	2.27	0.00	0.18	0.18		0.16	0.16		188	0.06
Asphalt Paver	Paving Equipment Composite	100	1	4	4			0.21	2.02	0.00	0.15	0.15		0.14	0.14		164	0.05
Stake Truck	Other Construction Equipment Composite	175	1	2	2			0.11	1.48	0.00	0.05	0.05		0.05	0.05		169	0.05
Tractor	Tractors/Loaders/B ackhoes Composite	250	1	8	8			0.53	8.03	0.01	0.26	0.26		0.24	0.24		840	0.25
Dump Truck			1		1	26.6												
Crew Trucks	Other Construction Equipment Composite	175	2	2	4			0.21	2.96	0.00	0.11	0.11		0.10	0.10		338	0.10
Asphalt Curb Machine	Paving Equipment Composite	100	1	2	2			0.11	1.01	0.00	0.08	0.08		0.07	0.07		82	0.02
<b>Asphalting Emissions Total (lbs)</b>								14.26	177.68	0.17	8.30	8.30		7.64	7.64		17821	5.27

Construction Emissions (On-Site Emissions lb/day)

Equipment Type	CalEEMod Category	HP	Qty	Operating Hrs/WD/each	Operating Hours per Day/ No of Round Trips for On-road	# of miles for Onroad	Material loading throughput (tons/day)	Construction Onsite Emission (lbs/day)										
								ROG (lbs/day)	NOX (lbs/day)	SOX (lbs/day)	PM10 (lbs/day) TOTAL	PM10 (lbs/day) Exhaust	PM10 (lbs/day) Fugitive Dust	PM2.5 (lbs/day) TOTAL	PM2.5 (lbs/day) Exhaust	PM2.5 (lbs/day) Fugitive	CO2 (lbs/day)	CH4 (lbs/day)
<i>Landscaping - 5 Work Days</i>																		
Tractor	Tractors/Loaders/Backhoes Composite	250	1	8	8			0.53	8.03	0.01	0.26	0.26		0.24	0.24		840	0.25
Dump Truck			1		1	26.6												
Pick-up Truck																		
<b>Landscaping Emissions Total (lbs)</b>								2.67	40.15	0.04	1.29	1.29		1.19	1.19		4202	1.24
<b>Banducci Substation Construction Total Emissions (Tons per Year)</b>								0.32	4.29	0.00	8.09	0.17	7.92	1.33	0.15	1.17	411.59	0.12
<i>Distribution Getaway Construction</i>																		
<i>Civil - 8 Work Days</i>																		
Backhoe / Front Loader	Tractors/Loaders/Backhoes Composite	250	1	8	8		100	0.53	8.03	0.01	2.99	0.26	2.73	0.65	0.24	0.41	840	0.25
Dump Truck	Dumpers/Tenders	175	1		1	26.6												
1 Ton Crew Truck	Other Construction Equipment Composite	175	1	2	2			0.11	1.48	0.00	0.05	0.05		0.05	0.05		169	0.05
Cement Truck	Cement and Mortar Mixers Composite	25	1	4	4			0.10	0.59	0.00	0.03	0.03		0.03	0.03		70	0.01
Paving Roller	Pavers Composite	100	1	4	4			0.25	2.27	0.00	0.18	0.18		0.16	0.16		188	0.06
Asphalt Paver	Paving Equipment Composite	100	1	4	4			0.21	2.02	0.00	0.15	0.15		0.14	0.14		164	0.05
Grinder	Crushing/Proc. Equipment Composite	400	1	4	4			1.04	10.19	0.01	0.33	0.33		0.33	0.33		1564	0.09
<b>Civil Emissions Total (lbs)</b>								17.97	196.62	0.22	29.91	8.07	21.84	10.96	7.66	3.31	23968	4.04
<i>Vault Delivery - 2 Work Days</i>																		
4 Ton Truck with Crane	Cranes Composite	250	1	4	4			0.31	3.98	0.00	0.16	0.16		0.15	0.15		328	0.10
<b>Vault Delivery Emissions Total (lbs)</b>								0.61	7.96	0.01	0.33	0.33		27.06	0.30	26.76	656	0.19
<i>Cable Pulling - 2 Work Days</i>																		

Construction Emissions (On-Site Emissions lb/day)

Equipment Type	CalEEMod Category	HP	Qty	Operating Hrs/WD/each	Operating Hours per Day/ No of Round Trips for On-road	# of miles for Onroad	Material loading thruput (tons/day)	Construction Onsite Emission (lbs/day)											
								ROG (lbs/day)	NOX (lbs/day)	SOX (lbs/day)	PM10 (lbs/day) TOTAL	PM10 (lbs/day) Exhaust	PM10 (lbs/day) Fugitive Dust	PM2.5 (lbs/day) TOTAL	PM2.5 (lbs/day) Exhaust	PM2.5 (lbs/day) Fugitive	CO2 (lbs/day)	CH4 (lbs/day)	
Rodder Truck	Other Construction Equipment Composite	175	1	8	8			0.43	5.91	0.01	0.22	0.22		0.20	0.20		675	0.20	
Cable Carousel	Other Construction Equipment Composite	175	1	8	8			0.43	5.91	0.01	0.22	0.22		0.20	0.20		675	0.20	
1 Ton Crew Truck			1		1	107.6													
<b>Cable Pulling Emissions Total (lbs)</b>								<b>1.71</b>	<b>23.65</b>	<b>0.03</b>	<b>0.87</b>	<b>0.87</b>		<b>0.80</b>	<b>0.80</b>		<b>2701</b>	<b>0.80</b>	
<b>Cable Splicing - 8 Work Days</b>																			
Line Truck	Other Construction Equipment Composite	175	1	8	8			0.43	5.91	0.01	0.22	0.22		0.20	0.20		675	0.20	
Crew Truck			1		1	107.6													
<b>Cable Splicing Emissions Total (lbs)</b>								<b>3.42</b>	<b>47.30</b>	<b>0.05</b>	<b>1.74</b>	<b>1.74</b>		<b>1.60</b>	<b>1.60</b>		<b>5403</b>	<b>1.60</b>	
<b>Distribution Getaway Construction Total Emissions (Tons per Year)</b>								<b>0.01</b>	<b>0.14</b>	<b>0.00</b>	<b>0.19</b>	<b>0.01</b>	<b>0.19</b>	<b>0.05</b>	<b>0.01</b>	<b>0.04</b>	<b>15</b>	<b>0.00</b>	



Construction Emissions (On-Site Emissions lb/day)

Equipment Type	CalEEMod Category	HP	Qty	Operating Hrs/WD/each	Operating Hours per Day/ No of Round Trips for On-road	# of miles for Onroad	Material loading throughput (tons/day)	Construction Onsite Emission (lbs/day)										
								ROG (lbs/day)	NOX (lbs/day)	SOX (lbs/day)	PM10 (lbs/day) TOTAL	PM10 (lbs/day) Exhaust	PM10 (lbs/day) Fugitive Dust	PM2.5 (lbs/day) TOTAL	PM2.5 (lbs/day) Exhaust	PM2.5 (lbs/day) Fugitive	CO2 (lbs/day)	CH4 (lbs/day)
Subtransmission Construction																		
<i>Survey - 2 Work Days</i>																		
1 Ton Truck	Other Construction Equipment Composite	175	1	8	8			0.43	5.91	0.01	0.22	0.22		0.20	0.20		675	0.20
<b>Survey Emissions Total (lbs)</b>								<b>0.85</b>	<b>11.82</b>	<b>0.01</b>	<b>0.44</b>	<b>0.44</b>		<b>0.40</b>	<b>0.40</b>		<b>1351</b>	<b>0.40</b>
<i>Marshalling Yard - Duration of Project</i>																		
1 Ton Truck	Other Construction Equipment Composite	175	1	4	4			0.21	2.96	0.00	0.11	0.11		0.10	0.10		338	0.10
R/T Fork Lift	Forklifts Composite	100	1	6	6			0.21	1.81	0.00	0.15	0.15		0.14	0.14		137	0.04
Boom Crane Truck	Cranes Composite	250	1	2	2			0.15	1.99	0.00	0.08	0.08		0.08	0.08		164	0.05
Water Truck	Other Construction Equipment Composite	250	1	8	8			0.43	5.91	0.01	0.22	0.22		0.20	0.20		675	0.20
Semi Tractor Truck	Tractors/Loaders/Backhoes Composite	250	1	2	2			0.13	2.01	0.00	0.06	0.06		0.06	0.06		210	0.06
<b>Marshalling Yard Emissions Total (lbs)</b>								<b>273.07</b>	<b>865.93</b>	<b>0.85</b>	<b>36.91</b>	<b>36.91</b>		<b>33.96</b>	<b>33.96</b>		<b>89898</b>	<b>26.56</b>
<i>Right of Way Clearing - 1 Work Day</i>																		
1 Ton Truck	Other Construction Equipment Composite	175	1	8	8			0.43	5.91	0.01	0.22	0.22		0.20	0.20		675	0.20
Backhoe / Front Loader	Tractors/Loaders/Backhoes Composite	250	1	6	6		100	0.40	6.02	0.01	2.92	0.19	2.73	0.59	0.18	0.41	630	0.19
Track Type Dozer	Rubber Tired Dozers Composite	380	1	6	6			1.42	16.20	0.01	1.87	0.76	1.11	2.23	0.70	1.53	1055	0.31
Motor Grader	Graders Composite	400	1	6	6			0.68	8.06	0.01	25.94	0.31	25.63	3.05	0.28	2.77	1122	0.33

Construction Emissions (On-Site Emissions lb/day)

Equipment Type	CalEEMod Category	HP	Qty	Operating Hrs/WD/each	Operating Hours per Day/ No of Round Trips for On-road	# of miles for Onroad	Material loading throughput (tons/day)	Construction Onsite Emission (lbs/day)										
								ROG (lbs/day)	NOX (lbs/day)	SOX (lbs/day)	PM10 (lbs/day) TOTAL	PM10 (lbs/day) Exhaust	PM10 (lbs/day) Fugitive Dust	PM2.5 (lbs/day) TOTAL	PM2.5 (lbs/day) Exhaust	PM2.5 (lbs/day) Fugitive	CO2 (lbs/day)	CH4 (lbs/day)
Water Truck	Other Construction Equipment Composite	250	1	8	8			0.43	5.91	0.01	0.22	0.22		0.20	0.20		675	0.20
Lowboy Truck / Trailer	Other Construction Equipment Composite	175	1	4	4			0.21	2.96	0.00	0.11	0.11		0.10	0.10		338	0.10
<b>Right of Way Clearing Emissions Total (lbs)</b>								3.57	45.06	0.04	31.27	1.80	29.47	6.37	1.66	4.72	4496	1.33
<i>Roads &amp; Landing Work - 1 Work Day</i>																		
1 Ton Truck	Other Construction Equipment Composite	175	1	8	8			0.43	5.91	0.01	0.22	0.22		0.20	0.20		675	0.20
Backhoe/Front Loader	Tractors/Loaders/Backhoes Composite	250	1	4	4		100	0.27	4.01	0.00	2.86	0.13	2.73	0.53	0.12	0.41	420	0.12
Track Type Dozer	Rubber Tired Dozers Composite	380	1	4	4			0.95	10.80	0.01	1.24	0.50	0.74	1.49	0.46	1.02	703	0.21
Motor Grader	Graders Composite	400	1	6	6			0.68	8.06	0.01	25.94	0.31	25.63	3.05	0.28	2.77	1122	0.33
Water Truck	Other Construction Equipment Composite	250	1	8	8			0.43	5.91	0.01	0.22	0.22		0.20	0.20		675	0.20
Drum Type Compactor	Plate Compactors Composite	15	1	6	6			0.06	0.35	0.00	0.01	0.01		0.01	0.01		48	0.01
Excavator	Excavators Composite	350	1	4	4			0.28	4.15	0.01	0.13	0.13		0.12	0.12		600	0.18
Lowboy Truck / Trailer	Other Construction Equipment Composite	175	1	4	4			0.21	2.96	0.00	0.11	0.11		0.10	0.10		338	0.10
<b>Roads &amp; Landing Work Emissions Total (lbs)</b>								3.30	42.16	0.04	30.73	1.63	29.10	5.71	1.51	4.20	4583	1.34

Construction Emissions (On-Site Emissions lb/day)

Equipment Type	CalEEMod Category	HP	Qty	Operating Hrs/WD/each	Operating Hours per Day/ No of Round Trips for On-road	# of miles for Onroad	Material loading thruput (tons/day)	Construction Onsite Emission (lbs/day)										
								ROG (lbs/day)	NOX (lbs/day)	SOX (lbs/day)	PM10 (lbs/day) TOTAL	PM10 (lbs/day) Exhaust	PM10 (lbs/day) Fugitive Dust	PM2.5 (lbs/day) TOTAL	PM2.5 (lbs/day) Exhaust	PM2.5 (lbs/day) Fugitive	CO2 (lbs/day)	CH4 (lbs/day)
<i>Removal of Existing Conductor - 1 Work Day</i>																		
1 Ton Truck	Other Construction Equipment Composite	175	2	4	8			0.43	5.91	0.01	0.22	0.22		0.20	0.20		675	0.20
Manlift / Bucket Truck	Aerial Lifts Composite	120	2	8	16			0.26	4.40	0.01	0.21	0.21		0.19	0.19		674	0.20
Boom Crane Truck	Cranes Composite	250	2	8	16			1.23	15.91	0.01	0.66	0.66		0.61	0.61		1312	0.39
Bull Wheel Puller	Other Construction Equipment Composite	175	1	6	6			0.32	4.43	0.00	0.16	0.16		0.15	0.15		507	0.15
Sock Line Puller	Other Construction Equipment Composite	175	1	6	6			0.32	4.43	0.00	0.16	0.16		0.15	0.15		507	0.15
Static Truck / Tensioner	Other Construction Equipment Composite	175	1	6	6			0.32	4.43	0.00	0.16	0.16		0.15	0.15		507	0.15
Lowboy Truck / Trailer	Other Construction Equipment Composite	175	2	4	8			0.43	5.91	0.01	0.22	0.22		0.20	0.20		675	0.20
<b>Removal of Existing Conductor Emissions Total (lbs)</b>								<b>3.31</b>	<b>45.44</b>	<b>0.05</b>	<b>1.79</b>	<b>1.79</b>		<b>1.65</b>	<b>1.65</b>		<b>4857</b>	<b>1.44</b>
<i>Wood Pole Removal - 1 Work Day</i>																		
1 Ton Truck	Other Construction Equipment Composite	175	2	8	16			0.85	11.82	0.01	0.44	0.44		0.40	0.40		1351	0.40
Compressor Trailer	Air Compressors Composite	400	1	4	4			0.60	5.85	0.01	0.19	0.19		0.19	0.19		962	0.05
Manlift / Bucket Truck	Aerial Lifts Composite	120	1	6	6			0.10	1.65	0.00	0.08	0.08		0.07	0.07		253	0.07
Boom Crane Truck	Cranes Composite	250	1	6	6			0.46	5.97	0.00	0.25	0.25		0.23	0.23		492	0.15

Construction Emissions (On-Site Emissions lb/day)

Equipment Type	CalEEMod Category	HP	Qty	Operating Hrs/WD/each	Operating Hours per Day/ No of Round Trips for On-road	# of miles for Onroad	Material loading throughput (tons/day)	Construction Onsite Emission (lbs/day)										
								ROG (lbs/day)	NOX (lbs/day)	SOX (lbs/day)	PM10 (lbs/day) TOTAL	PM10 (lbs/day) Exhaust	PM10 (lbs/day) Fugitive Dust	PM2.5 (lbs/day) TOTAL	PM2.5 (lbs/day) Exhaust	PM2.5 (lbs/day) Fugitive	CO2 (lbs/day)	CH4 (lbs/day)
Flat Bed Pole Truck	Other Construction Equipment Composite	175	1	8	8			0.43	5.91	0.01	0.22	0.22		0.20	0.20		675	0.20
<i>Wood Pole Removal Emissions Total (lbs)</i>								2.44	31.20	0.03	1.17	1.17		1.09	1.09		3733	0.87

Construction Emissions (On-Site Emissions lb/day)

Equipment Type	CalEEMod Category	HP	Qty	Operating Hrs/WD/each	Operating Hours per Day/ No of Round Trips for On-road	# of miles for Onroad	Material loading thruput (tons/day)	Construction Onsite Emission (lbs/day)													
								ROG (lbs/day)	NOX (lbs/day)	SOX (lbs/day)	PM10 (lbs/day) TOTAL	PM10 (lbs/day) Exhaust	PM10 (lbs/day) Fugitive Dust	PM2.5 (lbs/day) TOTAL	PM2.5 (lbs/day) Exhaust	PM2.5 (lbs/day) Fugitive	CO2 (lbs/day)	CH4 (lbs/day)			
<i>Install TSP Foundations - 16 Work Days</i>																					
3/4 Ton Truck	Other Construction Equipment Composite	175	1	4	4			0.21	2.96	0.00	0.11	0.11		0.10	0.10		338	0.10			
Boom Crane Truck	Cranes Composite	250	1	4	4		100	0.31	3.98	0.00	2.90	0.16	2.73	0.57	0.15	0.41	328	0.10			
Backhoe / Front Loader	Tractors/Loaders/Backhoes Composite	250	1	6	6			0.40	6.02	0.01	0.19	0.19		0.18	0.18		630	0.19			
Auger Truck	Bore/Drill Rigs Composite	175	1	6	6			0.36	4.71	0.01	0.22	0.22		0.20	0.20		607	0.18			
Water Truck	Other Construction Equipment Composite	250	1	8	8			0.43	5.91	0.01	0.22	0.22		0.20	0.20		675	0.20			
Dump Truck			1		1	26.6															
Concrete Mixer Truck	Cement and Mortar Mixers Composite	25	3	4	12			0.31	1.78	0.00	0.09	0.09		0.09	0.09		210	0.03			
<b>Install TSP Foundations Emissions Total (lbs)</b>								<b>16.11</b>	<b>202.80</b>	<b>0.22</b>	<b>29.80</b>	<b>7.96</b>	<b>21.84</b>	<b>10.69</b>	<b>7.38</b>	<b>3.31</b>	<b>22308</b>	<b>6.32</b>			
<i>TSP Haul - 8 Work Days</i>																					
3/4 Ton Truck	Other Construction Equipment Composite	175	1	8	8			0.43	5.91	0.01	0.22	0.22		0.20	0.20		675	0.20			
Boom Crane Truck	Cranes Composite	250	1	6	6			0.46	5.97	0.00	0.25	0.25		0.23	0.23		492	0.15			
Flat Bed Pole Truck	Other Construction Equipment Composite	175	1	8	8			0.43	5.91	0.01	0.22	0.22		0.20	0.20		675	0.20			
<b>TSP Haul Emissions Total (lbs)</b>								<b>10.52</b>	<b>142.34</b>	<b>0.14</b>	<b>5.46</b>	<b>5.46</b>		<b>5.03</b>	<b>5.03</b>		<b>14743</b>	<b>4.36</b>			
<i>TSP Assembly - 8 Work Days</i>																					
3/4 Ton Truck	Other Construction Equipment Composite	175	2	4	8			0.43	5.91	0.01	0.22	0.22		0.20	0.20		675	0.20			



Construction Emissions (On-Site Emissions lb/day)

Equipment Type	CalEEMod Category	HP	Qty	Operating Hrs/WD/each	Operating Hours per Day/ No of Round Trips for On-road	# of miles for Onroad	Material loading throughput (tons/day)	Construction Onsite Emission (lbs/day)										
								ROG (lbs/day)	NOX (lbs/day)	SOX (lbs/day)	PM10 (lbs/day) TOTAL	PM10 (lbs/day) Exhaust	PM10 (lbs/day) Fugitive Dust	PM2.5 (lbs/day) TOTAL	PM2.5 (lbs/day) Exhaust	PM2.5 (lbs/day) Fugitive	CO2 (lbs/day)	CH4 (lbs/day)
3/4 Ton Truck	Other Construction Equipment Composite	175	2	4	8			0.43	5.91	0.01	0.22	0.22		0.20	0.20		675	0.20
1 Tone Truck	Other Construction Equipment Composite	175	2	4	8			0.43	5.91	0.01	0.22	0.22		0.20	0.20		675	0.20
Compressor Trailer	Air Compressors Composite	400	1	6	6			0.90	8.77	0.01	0.29	0.29		0.29	0.29		1443	0.08
Boom Crane Truck	Cranes Composite	250	1	8	8			0.61	7.96	0.01	0.33	0.33		0.30	0.30		656	0.19
<b>Wood / LSW Pole Assembly Emissions Total (lbs)</b>								<b>7.10</b>	<b>85.67</b>	<b>0.09</b>	<b>3.16</b>	<b>3.16</b>		<b>2.97</b>	<b>2.97</b>		<b>10351</b>	<b>2.02</b>
<i>Install Wood / LSW Pole - 3 Work Days</i>																		
1 Ton Truck	Other Construction Equipment Composite	175	1	8	8			0.43	5.91	0.01	0.22	0.22		0.20	0.20		675	0.20
Manlift / Bucket Truck	Aerial Lifts Composite	120	1	6	6			0.10	1.65	0.00	0.08	0.08		0.07	0.07		253	0.07
Boom Crane Truck	Cranes Composite	250	1	6	6			0.46	5.97	0.00	0.25	0.25		0.23	0.23		492	0.15
Auger Truck	Bore/Drill Rigs Composite	175	1	4	4			0.24	3.14	0.00	0.14	0.14		0.13	0.13		404	0.12
Backhoe / Front Loader	Tractors/Loaders/Backhoes Composite	250	1	8	8		100	0.53	8.03	0.01	2.99	0.26	2.73	0.65	0.24	0.41	840	0.25
Extendable Flat Bed Pole Truck	Other Construction Equipment Composite	175	1	8	8			0.43	5.91	0.01	0.22	0.22		0.20	0.20		675	0.20
<b>Install Wood / LSW Pole Emissions Total (lbs)</b>								<b>6.55</b>	<b>91.83</b>	<b>0.09</b>	<b>11.68</b>	<b>3.49</b>	<b>8.19</b>	<b>4.45</b>	<b>3.21</b>	<b>1.24</b>	<b>10021</b>	<b>2.96</b>





Construction Emissions (On-Site Emissions lb/day)

Equipment Type	CalEEMod Category	HP	Qty	Operating Hrs/WD/each	Operating Hours per Day/ No of Round Trips for On-road	# of miles for Onroad	Material loading throughput (tons/day)	Construction Onsite Emission (lbs/day)										
								ROG (lbs/day)	NOX (lbs/day)	SOX (lbs/day)	PM10 (lbs/day) TOTAL	PM10 (lbs/day) Exhaust	PM10 (lbs/day) Fugitive Dust	PM2.5 (lbs/day) TOTAL	PM2.5 (lbs/day) Exhaust	PM2.5 (lbs/day) Fugitive	CO2 (lbs/day)	CH4 (lbs/day)
1 Ton Truck	Other Construction Equipment Composite	175	2	4	8			0.43	5.91	0.01	0.22	0.22		0.20	0.20		675	0.20
Backhoe / Front Loader	Tractors/Loaders/Backhoes Composite	250	1	4	4		100	0.27	4.01	0.00	2.86	0.13	2.73	0.53	0.12	0.41	420	0.12
Motor Grader	Graders Composite	400	1	6	6			0.68	8.06	0.01	25.94	0.31	25.63	3.05	0.28	2.77	1122	0.33
Water Truck	Other Construction Equipment Composite	250	1	8	8			0.43	5.91	0.01	0.22	0.22		0.20	0.20		675	0.20
Drum Type Compactor	Plate Compactors Composite	15	1	8	8			0.08	0.47	0.00	0.02	0.02		0.02	0.02		65	0.01
Lowboy Truck / Trailer	Other Construction Equipment Composite	175	1	4	4			0.21	2.96	0.00	0.11	0.11		0.10	0.10		338	0.10
<b>Restoration Emissions Total (lbs)</b>								2.09	27.32	0.03	29.36	1.00	28.36	4.10	0.92	3.18	3296	0.96
<b>Subtransmission Construction Emissions (Tons per Year)</b>								0.19	1.13	0.00	2.91	0.05	2.87	0.47	0.04	0.43	112.67	0.03
Telecommunications Construction			1	4	4													
<i>Telecom Construction Inside MEER - 30 Work Days</i>																		
Pick-up Truck			3		3	107.0												
<i>Telecom Construction Inside MEER Emissions Total (lbs)</i>																		
<b>Substructure Installation - 34 Work Days</b>																		
Backhoe	Tractors/Loaders/Backhoes Composite	250	1	8	8			0.53	8.03	0.01	0.26	0.26		0.24	0.24		840	0.25
Dump Truck		175	1		1	26.6												
Cement Truck	Cement and Mortar Mixers Composite	175	1	8	8			0.21	1.18	0.00	0.06	0.06		0.06	0.06		140	0.02
<b>Substructure Installation Emissions Total (lbs)</b>								25.16	313.24	0.33	10.93	10.93		10.22	10.22		33347	9.07

Construction Emissions (On-Site Emissions lb/day)

Equipment Type	CalEEMod Category	HP	Qty	Operating Hrs/WD/each	Operating Hours per Day/ No of Round Trips for On-road	# of miles for Onroad	Material loading throughput (tons/day)	Construction Onsite Emission (lbs/day)													
								ROG (lbs/day)	NOX (lbs/day)	SOX (lbs/day)	PM10 (lbs/day) TOTAL	PM10 (lbs/day) Exhaust	PM10 (lbs/day) Fugitive Dust	PM2.5 (lbs/day) TOTAL	PM2.5 (lbs/day) Exhaust	PM2.5 (lbs/day) Fugitive	CO2 (lbs/day)	CH4 (lbs/day)			
<i>Wood Pole Replacement and Transfer Facilities - 40 Work Days</i>																					
1 Ton Truck	Other Construction Equipment Composite	175	2	2	4			0.21	2.96	0.00	0.11	0.11		0.10	0.10		338	0.10			
Double Bucket Truck	Other Construction Equipment Composite	175	1	8	8			0.43	5.91	0.01	0.22	0.22		0.20	0.20		675	0.20			
Auger Truck	Bore/Drill Rigs Composite	175	1	4	4			0.24	3.14	0.00	0.14	0.14		0.13	0.13		404	0.12			
Boom Truck	Other Construction Equipment Composite	175	1	8	8			0.43	5.91	0.01	0.22	0.22		0.20	0.20		675	0.20			
<i>Wood Pole Replacement and Transfer Facilities Emissions Total (lbs)</i>								52.23	716.71	0.79	27.52	27.52		25.32	25.32		83708	24.73			
<i>Fiber Optic Cable Installation - 62 Work Days</i>																					
Pick-up Truck			2		2	107.0															
Manlift / Bucket Truck	Aerial Lifts Composite	120	1	8	8			0.13	2.20	0.00	0.10	0.10		0.10	0.10		337	0.10			
<i>Fiber Optic Cable Installation Emissions Total (lbs)</i>								8.18	136.40	0.20	6.50	6.50		5.98	5.98		20896	6.18			
<i>Telecommunications Construction Total Emissions (Tons per Year)</i>								0.04	0.6	0.0	2.9	0.0	2.8	0.4	0.0	0.4	62.6	0.0			
<i>Proposed Project Construction Emissions (Tons per Year)</i>								0.24	2.62	0.00	6.0	0.10	5.90	0.98	0.09	0.88	257	0.07			

Construction Emissions (Off-Site Emissions lb/day)

Equipment Type	Qty	Operating Hours per Day/ No of Round Trips for On-road	# of miles for Onroad	Is vehicle?	Trip length (miles)	Vehicle Category	EMFAC column #	On-Road Vehicle Emissions (lb/day)														CO2 rate (lbs/day)	CH4 rate (lbs/day)	
								CO Rate (lbs/day)	ROG Rate (lbs/day)	NOX rate (lbs/day)	SOX rate (lbs/day)	PM2.5 rate (lbs/day)	PM2.5 Break wear rate (lbs/day)	PM2.5 Tire wear rate (lbs/day)	PM2.5 road dust rate (lbs/day)	PM2.5 rate (lbs/day) TOTAL	PM10 rate (lbs/day)	PM10 Break wear rate (lbs/day)	PM10 Tire wear rate (lbs/day)	PM10 road dust rate (lbs/day)	PM10 rate (lbs/day) TOTAL			
Survey Trucks	2	2.00	107.6	TRUE	107.60	HHD	9.00	0.76	0.14	3.03	0.01	0.05	0.01	0.00	0.16	0.23	0.06	0.03	0.02	0.66	0.77	806	0.01	
<i>Survey Emissions Total (lbs)</i>					538.00		45.00	3.78	0.68	15.14	0.04	0.26	0.06	0.02	0.82	1.16	0.29	0.15	0.08	3.32	3.84	4028	0.03	
Pick-up Truck	4	4.00	107.6	TRUE	107.60	HHD	9.00	1.51	0.27	6.06	0.02	0.10	0.02	0.01	0.33	0.46	0.11	0.06	0.03	1.33	1.54	1611	0.01	
<i>Grading Emissions Total (lbs)</i>								45.40	8.10	181.67	0.47	3.15	0.75	0.25	9.79	13.94	3.42	1.75	1.02	39.88	46.07	48340	0.36	
Crew Cab Truck	1	1.00	107.6	TRUE	107.60	LDT2	4.00	0.59	0.02	0.09	0.00	0.00	0.00	0.00	0.08	0.09	0.00	0.01	0.00	0.33	0.34	99	0.01	
<i>Fencing Emissions Total (lbs)</i>								5.86	0.20	0.87	0.01	0.01	0.04	0.00	0.82	0.86	0.01	0.09	0.02	3.32	3.44	988	0.05	
Dump Truck	1	1.00	26.6	TRUE	26.60	HHD	9.00	0.09	0.02	0.37	0.00	0.01	0.00	0.00	0.02	0.03	0.01	0.00	0.00	0.08	0.09	100	0.00	
Pick-up Truck	4	4.00	107.6	TRUE	107.60	LDT2	4.00	2.34	0.08	0.35	0.00	0.00	0.01	0.00	0.33	0.35	0.00	0.03	0.01	1.33	1.37	395	0.02	
<i>Civil Emissions Total (lbs)</i>								185.18	7.27	54.98	0.41	0.65	1.25	0.18	26.33	28.42	0.70	2.92	0.74	107.29	111.65	37607	1.70	
Pick-up Truck	2	2.00	107.6	TRUE	107.60	LDT2	4.00	1.17	0.04	0.17	0.00	0.00	0.01	0.00	0.16	0.17	0.00	0.02	0.00	0.66	0.69	198	0.01	
<i>MEER Emissions Total (lbs)</i>								5.86	0.20	0.87	0.01	0.01	0.04	0.00	0.82	0.86	0.01	0.09	0.02	3.32	3.44	988	0.05	
Crew Truck	2	2.00	107.6	TRUE	107.60	LDT2	4.00	1.17	0.04	0.17	0.00	0.00	0.01	0.00	0.16	0.17	0.00	0.02	0.00	0.66	0.69	198	0.01	
<i>Electrical Emissions Total (lbs)</i>								77.32	2.60	11.52	0.15	0.07	0.49	0.06	10.77	11.39	0.07	1.15	0.25	43.87	45.35	13043	0.71	
<i>Wiring Emissions Total (lbs)</i>																								
Crew Truck	2	2.00	107.6	TRUE	107.60	LDT2	4.00	1.17	0.04	0.17	0.00	0.00	0.01	0.00	0.16	0.17	0.00	0.02	0.00	0.66	0.69	198	0.01	
<i>Transformers Emissions Total (lbs)</i>								5.86	0.20	0.87	0.01	0.01	0.04	0.00	0.82	0.86	0.01	0.09	0.02	3.32	3.44	988	0.05	
<i>Maintenance Crew Equipment Check Emissions Total (lbs)</i>																								
Crew Truck/Van	1	1.00	107.6	TRUE	107.60	LDT2	4.00	0.59	0.02	0.09	0.00	0.00	0.00	0.00	0.08	0.09	0.00	0.01	0.00	0.33	0.34	99	0.01	
<i>Testing Emissions Total (lbs)</i>								51.55	1.74	7.68	0.10	0.04	0.33	0.04	7.18	7.59	0.05	0.77	0.17	29.25	30.23	8695	0.48	
Dump Truck	1	1.00	26.6	TRUE	26.60	HHD	9.00	0.09	0.02	0.37	0.00	0.01	0.00	0.00	0.02	0.03	0.01	0.00	0.00	0.08	0.09	100	0.00	
<i>Asphalting Emissions Total (lbs)</i>								0.94	0.17	3.74	0.01	0.06	0.02	0.01	0.20	0.29	0.07	0.04	0.02	0.82	0.95	996	0.01	
<i>Landscaping - 5 Work Days</i>																								
Dump Truck	1	1.00	26.6	TRUE	26.60	HHD	9.00	0.09	0.02	0.37	0.00	0.01	0.00	0.00	0.02	0.03	0.01	0.00	0.00	0.08	0.09	100	0.00	
Pick-up Truck				TRUE	107.60	LDT2	4.00																	
<i>Landscaping Emissions Total (lbs)</i>								0.47	0.08	1.87	0.00	0.03	0.01	0.00	0.10	0.14	0.04	0.02	0.01	0.41	0.47	498	0.00	
<i>Banducci Substation Construction Total Emissions (Tons per Year)</i>								0.19	0.01	0.14	0.00	0.00	0.00	0.00	0.03	0.03	0.00	0.00	0.00	0.12	0.12	53	0.00	
Dump Truck	1	1.00	26.6	TRUE	26.60	HHD	9.00	0.09	0.02	0.37	0.00	0.01	0.00	0.00	0.02	0.03	0.01	0.00	0.00	0.08	0.09	100	0.00	
<i>Civil Emissions Total (lbs)</i>								0.75	0.13	2.99	0.01	0.05	0.01	0.00	0.16	0.23	0.06	0.03	0.02	0.66	0.76	797	0.01	
<i>Vault Delivery Emissions Total (lbs)</i>																							0	
1 Ton Crew Truck	1	1.00	107.6	TRUE	107.60	LDT2	4.00	0.59	0.02	0.09	0.00	0.00	0.00	0.00	0.08	0.09	0.00	0.01	0.00	0.33	0.34	99	0.01	
<i>Cable Pulling Emissions Total (lbs)</i>								1.17	0.04	0.17	0.00	0.00	0.01	0.00	0.16	0.17	0.00	0.02	0.00	0.66	0.69	198	0.01	
Crew Truck	1	1.00	107.6	TRUE	107.60	LDT2	4.00	0.59	0.02	0.09	0.00	0.00	0.00	0.00	0.08	0.09	0.00	0.01	0.00	0.33	0.34	99	0.01	
<i>Cable Splicing Emissions Total (lbs)</i>								4.69	0.16	0.70	0.01	0.00	0.03	0.00	0.65	0.69	0.00	0.07	0.02	2.66	2.75	790	0.04	
<i>Distribution Getaway Construction Total Emissions (Tons per Year)</i>								0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1	0.00
<i>Survey Emissions Total (lbs)</i>																							0	
<i>Marshalling Yard Emissions Total (lbs)</i>																								
<i>Right of Way Clearing Emissions Total (lbs)</i>																								
<i>Roads &amp; Landing Work Emissions Total (lbs)</i>																								
<i>Removal of Existing Conductor Emissions Total (lbs)</i>																								
<i>Wood Pole Removal Emissions Total (lbs)</i>																								
Dump Truck	1	1.00	26.6	TRUE	26.60	HHD	9.00	0.09	0.02	0.37	0.00	0.01	0.00	0.00	0.02	0.03	0.01	0.00	0.00	0.08	0.09	100	0.00	

Construction Emissions (Off-Site Emissions lb/day)

Equipment Type	Qty	Operating Hours per Day/ No of Round Trips for On- road	# of miles for Onroad	Is vehicle?	Trip length (miles)	Vehicle Category	EMFAC column #	On-Road Vehicle Emissions (lb/day)															CO2 rate (lbs/day)	CH4 rate (lbs/day)
								CO Rate (lbs/day)	ROG Rate (lbs/day)	NOX rate (lbs/day)	SOX rate (lbs/day)	PM2.5 rate (lbs/day)	PM2.5 Break wear rate (lbs/day)	PM2.5 Tire wear rate (lbs/day)	PM2.5 road dust rate (lbs/day)	PM2.5 rate (lbs/day) TOTAL	PM10 rate (lbs/day)	PM10 Break wear rate (lbs/day)	PM10 Tire wear rate (lbs/day)	PM10 road dust rate (lbs/day)	PM10 rate (lbs/day) TOTAL			
<i>Install TSP Foundations Emissions Total (lbs)</i>								1.50	0.27	5.99	0.02	0.10	0.02	0.01	0.32	0.46	0.11	0.06	0.03	1.31	1.52	1593	0.01	
<i>TSP Haul Emissions Total (lbs)</i>																								
<i>TSP Assembly Emissions Total (lbs)</i>																								
<i>TSK Erection Emissions Total (lbs)</i>																								
<i>Wood / LSW Pole Assembly Emissions Total (lbs)</i>																								
<i>Wood / LSW Pole Assembly Emissions Total (lbs)</i>																								
<i>Install Wood / LSW Pole Emissions Total (lbs)</i>																								
Dump Truck	1	1.00	26.6	TRUE	26.60	HHD	9.00	0.09	0.02	0.37	0.00	0.01	0.00	0.00	0.02	0.03	0.01	0.00	0.00	0.08	0.09	100	0.00	
<i>Install / Transfer Conductor Emissions Total (lbs)</i>								0.37	0.07	1.50	0.00	0.03	0.01	0.00	0.08	0.11	0.03	0.01	0.01	0.33	0.38	398	0.00	
<i>Restoration Emissions Total (lbs)</i>																								
<b><i>Subtransmission Construction Total Emissions (Tons per Year)</i></b>								0.001	0.000	0.004	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.001	0.90	0.00
Pick-up Truck	3	3.00	107	TRUE	107.00	LDT2	4.00	1.75	0.06	0.26	0.00	0.00	0.01	0.00	0.24	0.26	0.00	0.03	0.01	0.99	1.02	295	0.02	
<i>Telecom Construction Inside MEER Emissions Total (lbs)</i>								52.42	1.77	7.81	0.10	0.05	0.33	0.04	7.30	7.72	0.05	0.78	0.17	29.75	30.75	8843	0.48	
<i>Substructure Installation - 34 Work Days</i>																								
Dump Truck	1	1.00	26.6	TRUE	26.60	HHD	9.00	0.09	0.02	0.37	0.00	0.01	0.00	0.00	0.02	0.03	0.01	0.00	0.00	0.08	0.09	100	0.00	
<i>Substructure Installation Emissions Total (lbs)</i>								3.18	0.57	12.72	0.03	0.22	0.05	0.02	0.69	0.98	0.24	0.12	0.07	2.79	3.23	3386	0.03	
<i>Wood Pole Replacement and Transfer Facilities Emissions Total (lbs)</i>																								
Pick-up Truck	2	2.00	107	TRUE	107.00	LDT2	4.00	1.16	0.04	0.17	0.00	0.00	0.01	0.00	0.16	0.17	0.00	0.02	0.00	0.66	0.68	197	0.01	
<i>Fiber Optic Cable Installation Emissions Total (lbs)</i>								72.23	2.43	10.76	0.14	0.06	0.46	0.06	10.06	10.64	0.07	1.07	0.23	40.98	42.36	12184	0.67	
<b><i>Telecommunications Construction Total Emissions (Tons per Year)</i></b>								0.06	0.00	0.02	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.04	0.04	11	0.00	
<b><i>Proposed Project Construction Emissions (Tons per Year)</i></b>								0.11	0.01	0.07	0.00	0.00	0.00	0.00	0.02	0.02	0.00	0.00	0.00	0.07	0.07	28	0.00	

Fugitive Dust Calculations

Equipment Type	CAIEEMod Category	HP	Qty	Operating Hrs/WD/each	Operating Hours per Day/ No of Round Trips for On-road	Material loading throughput (tons/day)	Grading Equipment					Bulldozing Equipment				Truck Loading				Windblown Dust Emissions									
							S (mph) vehicle mean speed traveled	Acreeage of grading site As (acre)	Blade width of the grading equipment Wb (ft)	PM2.5 Fugitive Emissions (lb/day)	PM10 Fugitive Emissions (lb/day)	Material Moisture Content M(%)	Material Silt Content S(%)	PM2.5 Fugitive Emissions (lb/day)	PM10 Fugitive Emissions (lb/day)	U (mph) Wind mean speed	Material Moisture Content M(%)	PM2.5 Fugitive Emissions (lb/day)	PM10 Fugitive Emissions (lb/day)	Area (acre)	Area(m <sup>2</sup> )	Worst case Windspeed (mph)	Worst case Windspeed (m/s)	u* (m/s)	ut* (m/s)	P_PM25 (g/m <sup>2</sup> /day)	PM 2.5 Emission factor (lb/event)	P_PM10 (g/m <sup>2</sup> /day)	PM 10 Emission factor (lb/event)
Banducci Substation Construction																			6.30	25,495	38.00	16.99	0.90	0.54	1.24	27.19	8.27	181.28	
Dozer	Rubber Tired Dozers Composite	380	1	8.00	8.00						0.08	0.07	2.05	1.48															
Loader	Rubber Tired Loaders Composite	380	2	8.00	16.00	100.00									5.82	0.12	0.41	2.73											
Scraper	Scrapers Composite	400	1	8.00	8.00		7.10	3.51	12.00	3.69	34.17																		
Grader	Graders Composite	400	1	8.00	8.00		7.10	3.51	12.00	3.69	34.17																		
<i>Grading Emissions Total (lbs)</i>																													
<i>Fencing (Chain Link) - 10 Work Days</i>																													
<i>Fencing Emissions Total (lbs)</i>																													
<i>Civil - 76 Work Days</i>																													
Backhoe	Tractors/Loaders/B ackhoes Composite	250	2	8.00	16.00	100.00									5.82	0.12	0.41	2.73											
Skip Loader	Tractors/Loaders/B ackhoes Composite	250	1	8.00	8.00	100.00									5.82	0.12	0.41	2.73											
Bobcat Skid Steer	Skid Steer Loaders Composite	75	2	8.00	16.00	10.00									5.82	0.12	0.04	0.27											
<i>Civil Emissions Total (lbs)</i>																													
<i>MEER (Not Pre-Built) - 5 Work Days</i>																													
<i>MEER Emissions Total (lbs)</i>																													
<i>Electrical - 66 Work Days</i>																													
<i>Electrical Emissions Total (lbs)</i>																													
<i>Wiring - 44 Work Days</i>																													
<i>Wiring Emissions Total (lbs)</i>																													
<i>Transformers - 5 Work Days</i>																													
<i>Transformers Emissions Total (lbs)</i>																													
<i>Maintenance Crew Equipment Check - 22 Work Days</i>																													
<i>Maintenance Crew Equipment Check Emissions Total (lbs)</i>																													
<i>Testing - 88 Work Days</i>																													
<i>Testing Emissions Total (lbs)</i>																													
<i>Asphalting - 10 Work Days</i>																													
<i>Asphalting Emissions Total (lbs)</i>																													
<i>Landscaping - 5 Work Days</i>																													
<i>Landscaping Emissions Total (lbs)</i>																													
<b>Banducci Substation Construction Total Emissions (Tons per Year)</b>																													
																										0.99	8.27	6.62	
Distribution Getaway Construction																			3.10	12545.27	38.00	16.99	0.90	0.54	1.24	13.38	8.27	89.20	
Backhoe / Front Loader	Tractors/Loaders/B ackhoes Composite	250	1	8.00	8.00	100.00									5.82	0.12	0.41	2.73											
<i>Civil Emissions Total (lbs)</i>																													
<i>Vault Delivery - 2 Work Days</i>																													
<i>Vault Delivery Emissions Total (lbs)</i>																													
<i>Cable Pulling - 2 Work Days</i>																													
<i>Cable Pulling Emissions Total (lbs)</i>																													
<i>Cable Splicing - 8 Work Days</i>																													
<i>Cable Splicing Emissions Total (lbs)</i>																													
<b>Distribution Getaway Construction Total Emissions (Tons per Year)</b>																													
																										0.03	8.27	0.18	
Subtransmission Construction																			16.24	65721.01	38.00	16.99	0.90	0.54	1.24	70.09	8.27	467.30	

Fugitive Dust Calculations

Equipment Type	CAIEEMod Category	HP	Qty	Operating Hrs/WD/each	Operating Hours per Day/ No of Round Trips for On- road	Material loading thruout (tons/day)	Grading Equipment					Bulldozing Equipment				Truck Loading				Windblown Dust Emissions									
							S (mph) vehicle mean speed traveled	Acreege of grading site As (acre)	Blade width of the grading equipment Wb (ft)	PM2.5 Fugitive Emissions (lb/day)	PM10 Fugitive Emissions (lb/day)	Material Moisture Content M(%)	Material Silt Content S(%)	PM2.5 Fugitive Emissions (lb/day)	PM10 Fugitive Emissions (lb/day)	U (mph) Wind mean speed	Material Moisture Content M(%)	PM2.5 Fugitive Emissions (lb/day)	PM10 Fugitive Emissions (lb/day)	Area (acre)	Area(m <sup>2</sup> )	Worst case Windspeed (mph)	Worst case Windspeed (m/s)	u* (m/s)	ut* (m/s)	P_PM25 (g/m <sup>2</sup> /day)	PM 2.5 Emission factor (lb/event)	P_PM10 (g/m <sup>2</sup> /day)	PM 10 Emission factor (lb/event)
<i>Survey - 2 Work Days</i>																													
<i>Survey Emissions Total (lbs)</i>																													
<i>Marshalling Yard - Duration of Project</i>																													
<i>Marshalling Yard Emissions Total (lbs)</i>																													
<i>Right of Way Clearing - 1 Work Day</i>																													
Backhoe / Front Loader	Tractors/Loaders/B ackhoes Composite	250	1	6.00	6.00	100.00									5.82	0.12	0.41	2.73											
Track Type Dozer	Rubber Tired Dozers Composite	380	1	6.00	6.00						0.08	0.07	1.53	1.11															
Motor Grader	Graders Composite	400	1	6.00	6.00		7.10	3.51	12.00	2.77	25.63																		
<i>Right of Way Clearing Emissions Total (lbs)</i>																													
<i>Roads &amp; Landing Work - 1 Work Day</i>																													
Backhoe/Front Loader	Tractors/Loaders/B ackhoes Composite	250	1	4.00	4.00	100.00									5.82	0.12	0.41	2.73											
Track Type Dozer	Rubber Tired Dozers Composite	380	1	4.00	4.00							0.08	0.07	1.02	0.74														
Motor Grader	Graders Composite	400	1	6.00	6.00		7.10	3.51	12.00	2.77	25.63																		
<i>Roads &amp; Landing Work Emissions Total (lbs)</i>																													
<i>Removal of Existing Conductor - 1 Work Day</i>																													
<i>Removal of Existing Conductor Emissions Total (lbs)</i>																													
<i>Wood Pole Removal - 1 Work Day</i>																													
1 Ton Truck	Other Construction Equipment Composite	175	2	8.00	16.00																								
Compressor Trailer	Air Compressors Composite	400	1	4.00	4.00																								
Manlift / Bucket Truck	Aerial Lifts Composite	120	1	6.00	6.00																								
Boom Crane Truck	Cranes Composite	250	1	6.00	6.00																								
Flat Bed Pole Truck	Other Construction Equipment Composite	175	1	8.00	8.00																								
<i>Wood Pole Removal Emissions Total (lbs)</i>																													
<i>Install TSP Foundations - 16 Work Days</i>																													
Boom Crane Truck	Cranes Composite	250	1	4.00	4.00	100.00									5.82	0.12	0.41	2.73											
<i>Install TSP Foundations Emissions Total (lbs)</i>																													
<i>TSP Haul - 8 Work Days</i>																													
<i>TSP Haul Emissions Total (lbs)</i>																													
<i>TSP Assembly - 8 Work Days</i>																													

Fugitive Dust Calculations

Equipment Type	CaleEMod Category	HP	Qty	Operating Hrs/WD/each	Operating Hours per Day/ No of Round Trips for On- road	Material loading thruout (tons/day)	Grading Equipment					Bulldozing Equipment				Truck Loading				Windblown Dust Emissions										
							S (mph) vehicle mean speed traveled	Acreege of grading site As (acre)	Blade width of the grading equipment Wb (ft)	PM2.5 Fugitive Emissions (lb/day)	PM10 Fugitive Emissions (lb/day)	Material Moisture Content M(%)	Material Silt Content S(%)	PM2.5 Fugitive Emissions (lb/day)	PM10 Fugitive Emissions (lb/day)	U (mph) Wind mean speed	Material Moisture Content M(%)	PM2.5 Fugitive Emissions (lb/day)	PM10 Fugitive Emissions (lb/day)	Area (acre)	Area(m <sup>2</sup> )	Worst case Windspeed (mph)	Worst case Windspeed (m/s)	u* (m/s)	ut* (m/s)	P_PM25 (g/m <sup>2</sup> /day)	PM 2.5 Emission factor (lb/event)	P_PM10 (g/m <sup>2</sup> /day)	PM 10 Emission factor (lb/event)	
<i>TSP Assembly Emissions Total (lbs)</i>																														
<i>TSP Erection - 8 Work Days</i>																														
<i>TSK Erection Emissions Total (lbs)</i>																														
<i>Wood / LWS Haul - 2 Work Day</i>																														
<i>Wood / LSW Pole Assembly Emissions Total (lbs)</i>																														
<i>Wood / LSW Pole Assembly- 3 Work Day</i>																														
<i>Wood / LSW Pole Assembly Emissions Total (lbs)</i>																														
<i>Install Wood / LSW Pole - 3 Work Days</i>																														
Backhoe / Front Loader	Tractors/Loaders/B ackhoes Composite	250	1	8.00	8.00	100.00									5.82	0.12	0.41	2.73												
<i>Install Wood / LSW Pole Emissions Total (lbs)</i>																														
<i>Install / Transfer Conductor - 4 Work Days</i>																														
Backhoe / Front Loader	Tractors/Loaders/B ackhoes Composite	250	1	2.00	2.00	100.00									5.82	0.12	0.41	2.73												
<i>Install / Transfer Conductor Emissions Total (lbs)</i>																														
<i>Restoration - 1 Work Day</i>																														
Backhoe / Front Loader	Tractors/Loaders/B ackhoes Composite	250	1	4.00	4.00	100.00									5.82	0.12	0.41	2.73												
Motor Grader	Graders Composite	400	1	6.00	6.00		7.10	3.51	12.00	2.77	25.63																			
<i>Restoration Emissions Total (lbs)</i>																														
<i>Subtransmission Construction Total Emissions (Tons per Year)</i>																														
Telecommunications Construction			1	4.00	4.00										8.97	36300.33	38.00	16.99	0.90	0.54	1.24	38.72	8.27	258.11						
<i>Telecom Construction Inside MEER - 30 Work Days</i>																														
<i>Telecom Construction Inside MEER Emissions Total (lbs)</i>																														
<i>Substructure Installation - 34 Work Days</i>																														
<i>Substructure Installation Emissions Total (lbs)</i>																														
<i>Wood Pole Replacement and Transfer Facilities - 40 Work Days</i>																														
<i>Wood Pole Replacement and Transfer Facilities Emissions Total (lbs)</i>																														
<i>Fiber Optic Cable Installation - 62 Work Days</i>																														
<i>Fiber Optic Cable Installation Emissions Total (lbs)</i>																														
<i>Telecommunications Construction Total Emissions (Tons per Year)</i>																														
<i>Proposed Project Construction Emissions (Tons per Year)</i>																														

**OFFROAD2011 Emission Factors**

Source: CalEEMod2013

Category	g/bhp-hr							
	HP	LF	ROG	CO	NOX	SOX	PM10	PM2.5
Aerial Lifts Composite	120	0.308	0.202	3.220	3.373	0.005	0.161	0.148
Air Compressors Composite	400	0.480	0.354	1.198	3.455	0.005	0.113	0.113
Bore/Drill Rigs Composite	175	0.500	0.308	3.040	4.066	0.005	0.186	0.171
Cement and Mortar Mixers Composite	25	0.560	0.837	2.570	4.793	0.007	0.253	0.253
Cranes Composite	250	0.288	0.483	4.177	6.264	0.005	0.260	0.239
Crushing/Proc. Equipment Composite	400	0.780	0.377	1.230	3.702	0.005	0.121	0.121
Excavators Composite	350	0.380	0.239	1.347	3.541	0.005	0.114	0.105
Forklifts Composite	100	0.200	0.795	4.079	6.848	0.005	0.574	0.528
Graders Composite	400	0.410	0.314	1.791	3.714	0.005	0.143	0.131
Other Construction Equipment Composite	175	0.420	0.330	2.476	4.561	0.005	0.168	0.155
Pavers Composite	100	0.415	0.683	3.773	6.199	0.005	0.483	0.444
Paving Equipment Composite	100	0.360	0.677	3.837	6.370	0.005	0.486	0.447
Plate Compactors Composite	15	0.430	0.661	3.469	4.142	0.008	0.161	0.161
Rubber Tired Dozers Composite	380	0.400	0.707	6.165	8.058	0.005	0.376	0.346
Rubber Tired Loaders Composite	380	0.360	0.421	2.407	5.194	0.005	0.196	0.180
Scrapers Composite	400	0.480	0.479	3.898	6.233	0.005	0.251	0.231
Skid Steer Loaders Composite	75	0.370	0.304	3.338	4.013	0.005	0.235	0.216
Tractors/Loaders/Backhoes Composite	250	0.370	0.327	1.376	4.922	0.005	0.159	0.146
Dumpers/Tenders	25	0.380	0.705	2.364	4.433	0.007	0.200	0.200



<b>CO2</b>	<b>CH4</b>
516.703	0.153
568.300	0.032
524.052	0.155
568.299	0.075
516.578	0.153
568.299	0.034
511.945	0.151
516.062	0.153
517.377	0.153
520.964	0.154
514.377	0.152
518.076	0.153
568.299	0.059
524.676	0.155
512.510	0.152
517.361	0.153
517.062	0.153
515.175	0.152
568.300	0.063

**EMFAC2011 emission factors**

Source: CalEEMod2013

Year: 2014, Kern County

<b>(g/mile)</b>	<b>LDA</b>	<b>LDT1</b>	<b>LDT2</b>	<b>MDV</b>	<b>LHD1</b>	<b>LHD2</b>	<b>MHD</b>
FleetMix	0.361	0.044	0.191	0.134	0.069	0.010	0.015
CH4_IDLEX	0.000	0.000	0.000	0.000	0.001	0.001	0.010
CH4_RUNEX	0.015	0.028	0.023	0.034	0.026	0.014	0.011
CH4_STREX	0.018	0.038	0.029	0.041	0.025	0.010	0.000
CO_IDLEX	0.000	0.000	0.000	0.000	0.155	0.105	2.033
CO_RUNEX	1.642	4.314	2.469	3.664	2.893	1.685	2.856
CO_STREX	3.542	7.127	6.061	8.107	5.629	1.834	37.842
CO2_NBIO_IDLEX	0.000	0.000	0.000	0.000	9.245	10.364	603.153
CO2_NBIO_RUNEX	296.819	347.930	416.536	544.569	737.901	597.576	1073.084
CO2_NBIO_STREX	66.776	80.658	93.205	120.016	30.783	13.009	72.092
NOX_IDLEX	0.000	0.000	0.000	0.000	0.095	0.162	7.445
NOX_RUNEX	0.168	0.419	0.368	0.562	2.496	3.394	5.299
NOX_STREX	0.242	0.378	0.540	0.757	1.044	0.381	2.998
PM10_IDLEX	0.000	0.000	0.000	0.000	0.001	0.002	0.050
PM10_PMBW	0.037	0.037	0.037	0.037	0.057	0.079	0.111
PM10_PMTW	0.008	0.008	0.008	0.008	0.010	0.011	0.011
PM10_RUNEX	0.002	0.004	0.002	0.003	0.029	0.039	0.145
PM10_STREX	0.003	0.006	0.004	0.004	0.001	0.001	0.008
PM25_IDLEX	0.000	0.000	0.000	0.000	0.001	0.002	0.046
PM25_PMBW	0.016	0.016	0.016	0.016	0.024	0.034	0.048
PM25_PMTW	0.002	0.002	0.002	0.002	0.003	0.003	0.003
PM25_RUNEX	0.002	0.003	0.002	0.002	0.026	0.036	0.133
PM25_STREX	0.003	0.005	0.004	0.004	0.001	0.001	0.007
ROG_DIURN	0.085	0.188	0.124	0.119	0.003	0.001	0.005
ROG_HTSK	0.171	0.320	0.220	0.220	0.070	0.029	0.272
ROG_IDLEX	0.000	0.000	0.000	0.000	0.024	0.015	0.207
ROG_RESTL	0.059	0.124	0.084	0.086	0.001	0.000	0.003
ROG_RUNEX	0.058	0.193	0.083	0.123	0.287	0.221	0.365
ROG_RUNLS	0.437	0.973	0.760	0.758	0.504	0.162	1.107
ROG_STREX	0.307	0.631	0.509	0.720	0.434	0.165	2.903
SO2_IDLEX	0.000	0.000	0.000	0.000	0.000	0.000	0.006
SO2_RUNEX	0.003	0.004	0.005	0.006	0.007	0.006	0.010
SO2_STREX	0.001	0.001	0.001	0.001	0.000	0.000	0.001
TOG_DIURN	0.085	0.188	0.124	0.119	0.003	0.001	0.005
TOG_HTSK	0.171	0.320	0.220	0.220	0.070	0.029	0.272
TOG_IDLEX	0.000	0.000	0.000	0.000	0.026	0.016	0.235
TOG_RESTL	0.059	0.124	0.084	0.086	0.001	0.000	0.003
TOG_RUNEX	0.074	0.224	0.107	0.159	0.326	0.252	0.412
TOG_RUNLS	0.437	0.973	0.760	0.758	0.504	0.162	1.107
TOG_STREX	0.328	0.676	0.544	0.769	0.464	0.176	3.116

\* Emissions are in units of grams per mile

**EMFAC2011 emission factors**

Source: CalEEMod2013

Year: 2014, Kern County

<b>(g/mile)</b>	<b>HHD</b>	<b>OBUS</b>	<b>UBUS</b>	<b>MCY</b>	<b>SBUS</b>	<b>MH</b>
FleetMix	0.149	0.003	0.000	0.016	0.001	0.006
CH4_IDLEX	0.023	0.023	0.000	0.000	0.005	0.000
CH4_RUNEX	0.013	0.003	0.000	0.000	0.007	0.000
CH4_STREX	0.000	0.000	0.000	0.000	0.000	0.000
CO_IDLEX	2.751	2.301	0.000	0.000	1.043	0.000
CO_RUNEX	1.595	3.914	1.798	41.880	3.364	7.440
CO_STREX	141.563	21.274	10.220	10.836	28.375	13.094
CO2_NBIO_IDLEX	578.843	573.897	0.000	0.000	581.720	0.000
CO2_NBIO_RUNEX	1698.150	1116.461	1493.874	159.358	1134.728	756.112
CO2_NBIO_STREX	76.859	41.020	88.079	46.076	126.191	33.622
NOX_IDLEX	5.482	7.279	0.000	0.000	8.193	0.000
NOX_RUNEX	6.382	6.092	5.861	1.364	8.036	2.112
NOX_STREX	5.537	2.782	3.213	0.318	2.347	1.043
PM10_IDLEX	0.019	0.059	0.000	0.000	0.028	0.000
PM10_PMBW	0.061	0.090	0.359	0.037	0.557	0.051
PM10_PMTW	0.036	0.010	0.008	0.008	0.011	0.009
PM10_RUNEX	0.120	0.095	0.082	0.001	0.084	0.035
PM10_STREX	0.008	0.002	0.000	0.003	0.005	0.002
PM25_IDLEX	0.017	0.054	0.000	0.000	0.025	0.000
PM25_PMBW	0.026	0.038	0.154	0.016	0.239	0.022
PM25_PMTW	0.009	0.003	0.002	0.002	0.003	0.002
PM25_RUNEX	0.111	0.087	0.075	0.001	0.078	0.032
PM25_STREX	0.007	0.002	0.000	0.002	0.005	0.002
ROG_DIURN	0.005	0.001	0.005	1.049	0.028	1.581
ROG_HTSK	0.304	0.038	0.092	0.544	0.177	0.101
ROG_IDLEX	0.499	0.490	0.000	0.000	0.116	0.000
ROG_RESTL	0.002	0.000	0.003	0.598	0.011	0.507
ROG_RUNEX	0.285	0.358	0.181	3.467	0.482	0.281
ROG_RUNLS	1.481	0.315	0.453	2.077	1.682	2.263
ROG_STREX	6.542	1.419	1.940	2.415	2.090	0.800
SO2_IDLEX	0.006	0.006	0.000	0.000	0.006	0.000
SO2_RUNEX	0.016	0.011	0.015	0.002	0.011	0.008
SO2_STREX	0.003	0.001	0.001	0.001	0.002	0.001
TOG_DIURN	0.005	0.001	0.005	1.049	0.028	1.581
TOG_HTSK	0.304	0.038	0.092	0.544	0.177	0.101
TOG_IDLEX	0.568	0.558	0.000	0.000	0.132	0.000
TOG_RESTL	0.002	0.000	0.003	0.598	0.011	0.507
TOG_RUNEX	0.324	0.407	0.217	3.762	0.531	0.328
TOG_RUNLS	1.481	0.315	0.453	2.077	1.682	2.263
TOG_STREX	7.027	1.520	2.071	2.598	2.232	0.857

\* Emissions are in units of grams |

## Appendix D

# Operational Emission Calculations

Operational Emissions-Summary

**Operational Emissions**

**Motor Vehicle Usage**

	Number	Days Used per Year	Travelled per Day(miles)
<b>Subtransmission Line Inspection</b>			
Subtransmission Line Inspection	1	1	72
Substation Site Visit	1	156	60

**Motor Vehicle Exhaust Emission Factors for Operational Year 2016 (lb/mile)**

		ROG_RUNEX	CO_RUNEX	NOX_RUNEX	SO2_RUNEX	PM10	PM2.5	CO2_NBIO_RUN	CH4_RUNEX
<b>Locations</b>	<b>Vehicle type</b>	<b>VOC</b>	<b>CO</b>	<b>NOx</b>	<b>SOx</b>	<b>PM10</b>	<b>PM2.5</b>	<b>CO2</b>	<b>CH4</b>
Subtransmission Line Inspection	LDA	0.000081	0.002643	0.000281	0.000007	0.000102	0.000043	0.601321	0.000027
Substation Site Visit	LDA	0.000081	0.002643	0.000281	0.000007	0.000102	0.000043	0.601321	0.000027

/a/ Emission Factors obtained from EMFAC2011

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions for Operational Year 2016 (lb/day)**

		VOC	CO	NOx	SOx	PM10	PM2.5	CO2	CH4
Subtransmission Line Inspection		0.006	0.190	0.020	0.001	0.007	0.003	43.295	0.002
Substation Site Visit		0.005	0.159	0.017	0.0004	0.006	0.003	36.079	0.002
Sum		0.011	0.349	0.037	0.001	0.014	0.006	79.374	0.004

/a/ Emissions [lb/day] = Number x Miles Travelled Per Day x Emission Factor [lb/mi]

## Greenhouse Gas Emissions

Conversion of SF6 to CO2e:

$$E = L/100 * M_{SF6} * 23200 * 4.536 * 10^{-4}$$

E (metric tons CO2e per year) = GHG emissions from SF6 leakage

L (percent per year) = SF6 leakage rate . SCE estimated that gas leakage rate of the circuit l exceed 0.5 percent per year.

M, SF6 (pounds) = Total weight of SF6 in new circuit breakers. For 5 circuit breakers, it is e total weight of SF6 would be 155 pounds.

23,200 = SF6 global warming potential

$4.536 * 10^{-4}$  = Metric tons per pound conversion factor.

<b>SF6 emissions (pounds)=</b>	<b>0.775</b>
<b>CO2e Emissions (metric tons per year)=</b>	<b>8.1557</b>

**EMFAC2011 emission factors**

Source: CalEEMod2013

Year: 2014, Kern County

<b>(g/mile)</b>	<b>LDA</b>	<b>LDT1</b>	<b>LDT2</b>	<b>MDV</b>	<b>LHD1</b>	<b>LHD2</b>	<b>MHD</b>
FleetMix	0.361	0.044	0.191	0.134	0.069	0.010	0.015
CH4_IDLEX	0.000	0.000	0.000	0.000	0.001	0.001	0.010
CH4_RUNEX	0.015	0.028	0.023	0.034	0.026	0.014	0.011
CH4_STREX	0.018	0.038	0.029	0.041	0.025	0.010	0.000
CO_IDLEX	0.000	0.000	0.000	0.000	0.155	0.105	2.033
CO_RUNEX	1.642	4.314	2.469	3.664	2.893	1.685	2.856
CO_STREX	3.542	7.127	6.061	8.107	5.629	1.834	37.842
CO2_NBIO_IDLEX	0.000	0.000	0.000	0.000	9.245	10.364	603.153
CO2_NBIO_RUNEX	296.819	347.930	416.536	544.569	737.901	597.576	1073.084
CO2_NBIO_STREX	66.776	80.658	93.205	120.016	30.783	13.009	72.092
NOX_IDLEX	0.000	0.000	0.000	0.000	0.095	0.162	7.445
NOX_RUNEX	0.168	0.419	0.368	0.562	2.496	3.394	5.299
NOX_STREX	0.242	0.378	0.540	0.757	1.044	0.381	2.998
PM10_IDLEX	0.000	0.000	0.000	0.000	0.001	0.002	0.050
PM10_PMBW	0.037	0.037	0.037	0.037	0.057	0.079	0.111
PM10_PMTW	0.008	0.008	0.008	0.008	0.010	0.011	0.011
PM10_RUNEX	0.002	0.004	0.002	0.003	0.029	0.039	0.145
PM10_STREX	0.003	0.006	0.004	0.004	0.001	0.001	0.008
PM25_IDLEX	0.000	0.000	0.000	0.000	0.001	0.002	0.046
PM25_PMBW	0.016	0.016	0.016	0.016	0.024	0.034	0.048
PM25_PMTW	0.002	0.002	0.002	0.002	0.003	0.003	0.003
PM25_RUNEX	0.002	0.003	0.002	0.002	0.026	0.036	0.133
PM25_STREX	0.003	0.005	0.004	0.004	0.001	0.001	0.007
ROG_DIURN	0.085	0.188	0.124	0.119	0.003	0.001	0.005
ROG_HTSK	0.171	0.320	0.220	0.220	0.070	0.029	0.272
ROG_IDLEX	0.000	0.000	0.000	0.000	0.024	0.015	0.207
ROG_RESTL	0.059	0.124	0.084	0.086	0.001	0.000	0.003
ROG_RUNEX	0.058	0.193	0.083	0.123	0.287	0.221	0.365
ROG_RUNLS	0.437	0.973	0.760	0.758	0.504	0.162	1.107
ROG_STREX	0.307	0.631	0.509	0.720	0.434	0.165	2.903
SO2_IDLEX	0.000	0.000	0.000	0.000	0.000	0.000	0.006
SO2_RUNEX	0.003	0.004	0.005	0.006	0.007	0.006	0.010
SO2_STREX	0.001	0.001	0.001	0.001	0.000	0.000	0.001
TOG_DIURN	0.085	0.188	0.124	0.119	0.003	0.001	0.005
TOG_HTSK	0.171	0.320	0.220	0.220	0.070	0.029	0.272
TOG_IDLEX	0.000	0.000	0.000	0.000	0.026	0.016	0.235
TOG_RESTL	0.059	0.124	0.084	0.086	0.001	0.000	0.003
TOG_RUNEX	0.074	0.224	0.107	0.159	0.326	0.252	0.412
TOG_RUNLS	0.437	0.973	0.760	0.758	0.504	0.162	1.107
TOG_STREX	0.328	0.676	0.544	0.769	0.464	0.176	3.116

\* Emissions are in units of grams per mile

**EMFAC2011 emission factors**

Source: CalEEMod2013

Year: 2014, Kern County

<b>(g/mile)</b>	<b>HHD</b>	<b>OBUS</b>	<b>UBUS</b>	<b>MCY</b>	<b>SBUS</b>	<b>MH</b>
FleetMix	0.149	0.003	0.000	0.016	0.001	0.006
CH4_IDLEX	0.023	0.023	0.000	0.000	0.005	0.000
CH4_RUNEX	0.013	0.003	0.000	0.000	0.007	0.000
CH4_STREX	0.000	0.000	0.000	0.000	0.000	0.000
CO_IDLEX	2.751	2.301	0.000	0.000	1.043	0.000
CO_RUNEX	1.595	3.914	1.798	41.880	3.364	7.440
CO_STREX	141.563	21.274	10.220	10.836	28.375	13.094
CO2_NBIO_IDLEX	578.843	573.897	0.000	0.000	581.720	0.000
CO2_NBIO_RUNEX	1698.150	1116.461	1493.874	159.358	1134.728	756.112
CO2_NBIO_STREX	76.859	41.020	88.079	46.076	126.191	33.622
NOX_IDLEX	5.482	7.279	0.000	0.000	8.193	0.000
NOX_RUNEX	6.382	6.092	5.861	1.364	8.036	2.112
NOX_STREX	5.537	2.782	3.213	0.318	2.347	1.043
PM10_IDLEX	0.019	0.059	0.000	0.000	0.028	0.000
PM10_PMBW	0.061	0.090	0.359	0.037	0.557	0.051
PM10_PMTW	0.036	0.010	0.008	0.008	0.011	0.009
PM10_RUNEX	0.120	0.095	0.082	0.001	0.084	0.035
PM10_STREX	0.008	0.002	0.000	0.003	0.005	0.002
PM25_IDLEX	0.017	0.054	0.000	0.000	0.025	0.000
PM25_PMBW	0.026	0.038	0.154	0.016	0.239	0.022
PM25_PMTW	0.009	0.003	0.002	0.002	0.003	0.002
PM25_RUNEX	0.111	0.087	0.075	0.001	0.078	0.032
PM25_STREX	0.007	0.002	0.000	0.002	0.005	0.002
ROG_DIURN	0.005	0.001	0.005	1.049	0.028	1.581
ROG_HTSK	0.304	0.038	0.092	0.544	0.177	0.101
ROG_IDLEX	0.499	0.490	0.000	0.000	0.116	0.000
ROG_RESTL	0.002	0.000	0.003	0.598	0.011	0.507
ROG_RUNEX	0.285	0.358	0.181	3.467	0.482	0.281
ROG_RUNLS	1.481	0.315	0.453	2.077	1.682	2.263
ROG_STREX	6.542	1.419	1.940	2.415	2.090	0.800
SO2_IDLEX	0.006	0.006	0.000	0.000	0.006	0.000
SO2_RUNEX	0.016	0.011	0.015	0.002	0.011	0.008
SO2_STREX	0.003	0.001	0.001	0.001	0.002	0.001
TOG_DIURN	0.005	0.001	0.005	1.049	0.028	1.581
TOG_HTSK	0.304	0.038	0.092	0.544	0.177	0.101
TOG_IDLEX	0.568	0.558	0.000	0.000	0.132	0.000
TOG_RESTL	0.002	0.000	0.003	0.598	0.011	0.507
TOG_RUNEX	0.324	0.407	0.217	3.762	0.531	0.328
TOG_RUNLS	1.481	0.315	0.453	2.077	1.682	2.263
TOG_STREX	7.027	1.520	2.071	2.598	2.232	0.857

\* Emissions are in units of grams |



**EMFAC 2011 Emission Factors**

Source: CalEEMod2013

Year: 2016, Kern County

	g/mile							
	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD
Column number:	2.000	3.000	4.000	5.000	6.000	7.000	8.000	9.000
FleetMix	0.358	0.044	0.190	0.132	0.068	0.010	0.016	0.155
PM2.5	0.019	0.020	0.020	0.020	0.050	0.070	0.133	0.113
PM10	0.046	0.048	0.047	0.047	0.092	0.126	0.212	0.182
CH4_IDLEX	0.000	0.000	0.000	0.000	0.001	0.001	0.008	0.025
CH4_RUNEX	0.012	0.022	0.018	0.030	0.023	0.012	0.008	0.011
CH4_STREX	0.012	0.027	0.022	0.035	0.022	0.008	0.000	0.000
CO_IDLEX	0.000	0.000	0.000	0.000	0.153	0.105	1.843	3.001
CO_RUNEX	1.199	2.982	1.875	3.031	2.391	1.383	1.925	1.379
CO_STREX	2.698	5.644	4.669	6.991	4.943	1.524	31.000	119.670
CO2_NBIO_IDLEX	0.000	0.000	0.000	0.000	9.057	10.153	604.141	566.973
CO2_NBIO_RUNEX	272.755	322.972	390.483	516.960	722.967	586.061	1047.438	1653.981
CO2_NBIO_STREX	61.761	74.304	87.920	114.794	30.361	12.514	63.848	66.487
NOX_IDLEX	0.000	0.000	0.000	0.000	0.095	0.162	6.463	4.458
NOX_RUNEX	0.127	0.313	0.274	0.468	2.127	2.928	3.781	4.378
NOX_STREX	0.181	0.308	0.412	0.659	0.990	0.363	2.584	5.201
PM10_IDLEX	0.000	0.000	0.000	0.000	0.001	0.002	0.027	0.011
PM10_PMBW	0.037	0.037	0.037	0.037	0.057	0.079	0.111	0.061
PM10_PMTW	0.008	0.008	0.008	0.008	0.010	0.011	0.011	0.036
PM10_RUNEX	0.002	0.003	0.002	0.002	0.026	0.036	0.090	0.084
PM10_STREX	0.003	0.005	0.004	0.004	0.001	0.000	0.006	0.005
PM25_IDLEX	0.000	0.000	0.000	0.000	0.001	0.002	0.024	0.011
PM25_PMBW	0.016	0.016	0.016	0.016	0.024	0.034	0.048	0.026
PM25_PMTW	0.002	0.002	0.002	0.002	0.003	0.003	0.003	0.009
PM25_RUNEX	0.002	0.003	0.002	0.002	0.024	0.033	0.083	0.078
PM25_STREX	0.003	0.004	0.003	0.004	0.001	0.000	0.005	0.004
ROG_DIURN	0.065	0.150	0.104	0.115	0.003	0.001	0.004	0.004
ROG_HTSK	0.136	0.252	0.189	0.221	0.067	0.025	0.193	0.204
ROG_IDLEX	0.000	0.000	0.000	0.000	0.024	0.015	0.165	0.534
ROG_RESTL	0.047	0.101	0.074	0.086	0.001	0.000	0.002	0.002
ROG_RUNEX	0.037	0.118	0.059	0.098	0.241	0.191	0.247	0.244
ROG_RUNLS	0.331	0.792	0.625	0.735	0.483	0.141	0.831	0.998
ROG_STREX	0.215	0.463	0.377	0.607	0.383	0.133	2.223	4.944
SO2_IDLEX	0.000	0.000	0.000	0.000	0.000	0.000	0.006	0.006
SO2_RUNEX	0.003	0.004	0.005	0.006	0.007	0.006	0.010	0.016
SO2_STREX	0.001	0.001	0.001	0.001	0.000	0.000	0.001	0.003
TOG_DIURN	0.065	0.150	0.104	0.115	0.003	0.001	0.004	0.004
TOG_HTSK	0.136	0.252	0.189	0.221	0.067	0.025	0.193	0.204
TOG_IDLEX	0.000	0.000	0.000	0.000	0.025	0.016	0.188	0.607
TOG_RESTL	0.047	0.101	0.074	0.086	0.001	0.000	0.002	0.002
TOG_RUNEX	0.049	0.142	0.078	0.129	0.276	0.219	0.280	0.278
TOG_RUNLS	0.331	0.792	0.625	0.735	0.483	0.141	0.831	0.998
TOG_STREX	0.230	0.495	0.403	0.649	0.409	0.142	2.383	5.304

\* Emissions are in units of grams per mile

**EMFAC 2011 Emission**  
**Source: CalEEMod201**  
**Year: 2016, Kern Cour**

	<b>OBUS</b>	<b>UBUS</b>	<b>MCY</b>	<b>SBUS</b>	<b>MH</b>
Column number:	10.000	11.000	12.000	13.000	14.000
FleetMix	0.003	0.000	0.016	0.001	0.006
PM2.5	0.088	0.227	0.018	0.320	0.052
PM10	0.152	0.445	0.045	0.653	0.090
CH4_IDLEX	0.019	0.000	0.000	0.005	0.000
CH4_RUNEX	0.003	0.000	0.000	0.008	0.000
CH4_STREX	0.000	0.000	0.000	0.000	0.000
CO_IDLEX	2.364	0.000	0.000	1.062	0.000
CO_RUNEX	3.004	1.744	37.503	3.115	4.949
CO_STREX	18.810	10.220	11.047	26.431	10.685
CO2_NBIO_IDLEX	571.353	0.000	0.000	570.820	0.000
CO2_NBIO_RUNEX	1096.045	1452.560	163.365	1110.494	740.040
CO2_NBIO_STREX	37.814	86.290	43.331	123.629	31.500
NOX_IDLEX	5.938	0.000	0.000	8.092	0.000
NOX_RUNEX	4.438	5.563	1.340	7.952	1.810
NOX_STREX	2.555	3.237	0.318	2.230	0.918
PM10_IDLEX	0.018	0.000	0.000	0.027	0.000
PM10_PMBW	0.091	0.359	0.037	0.557	0.051
PM10_PMTW	0.010	0.008	0.008	0.011	0.009
PM10_RUNEX	0.051	0.078	0.001	0.086	0.031
PM10_STREX	0.002	0.000	0.002	0.004	0.002
PM25_IDLEX	0.016	0.000	0.000	0.025	0.000
PM25_PMBW	0.039	0.154	0.016	0.239	0.022
PM25_PMTW	0.003	0.002	0.002	0.003	0.002
PM25_RUNEX	0.047	0.072	0.001	0.079	0.028
PM25_STREX	0.001	0.000	0.001	0.004	0.001
ROG_DIURN	0.001	0.006	0.999	0.028	1.355
ROG_HTSK	0.031	0.102	0.470	0.170	0.086
ROG_IDLEX	0.414	0.000	0.000	0.117	0.000
ROG_RESTL	0.000	0.004	0.563	0.011	0.438
ROG_RUNEX	0.263	0.171	3.320	0.463	0.197
ROG_RUNLS	0.264	0.550	1.675	1.553	2.120
ROG_STREX	1.196	1.953	2.345	2.004	0.617
SO2_IDLEX	0.006	0.000	0.000	0.006	0.000
SO2_RUNEX	0.011	0.015	0.002	0.011	0.008
SO2_STREX	0.001	0.001	0.001	0.002	0.001
TOG_DIURN	0.001	0.006	0.999	0.028	1.355
TOG_HTSK	0.031	0.102	0.470	0.170	0.086
TOG_IDLEX	0.471	0.000	0.000	0.133	0.000
TOG_RESTL	0.000	0.004	0.563	0.011	0.438
TOG_RUNEX	0.299	0.205	3.607	0.511	0.234
TOG_RUNLS	0.264	0.550	1.675	1.553	2.120
TOG_STREX	1.279	2.085	2.520	2.139	0.661

\* Emissions are in unit

## Appendix E

# Greenhouse Gas Emission Calculations



GHG Emission Calculations

									Construction On-site Emissions (lbs/hr)		Construction Onsite Emission (lbs/day)		On-Road Vehicle Emissions (lb/day)						
Equipment Type		CalEEMod Category	HP	Qty	Operating Hrs/WD/each	Operating Hours per Day/No of Round Trips for On-road	# of miles for Onroad	Material loading thruout (tons/day)	CO2 rate (lbs/hr)	CH4 rate (lbs/hr)	CO2 (lbs/day)	CH4 (lbs/day)	Is vehicle?	Trip length (miles)	Vehicle Category	EMFAC column #	CO2 rate (lbs/day)	CH4 rate (lbs/day)	
Water Truck	Construction	Other Equipment Composite	250	1	8.00	8.00			84.42	0.02	675.34	0.20							
Bobcat Skid Steer	Steer Loaders	Skid Composite	75	2	8.00	16.00		10.00	31.63	0.01	506.13	0.15							
Forklift	Composite	Forklifts	4.00	4.00		22.75			0.01	91.02	0.03								
17 Ton Crane	Composite	Scissors	4.00	4.00			82.03		0.02	328.11	0.10								
Tool Truck	Construction	Other Equipment Composite	175	1	4.00	4.00			84.42	0.02	337.67	0.10							
Pick-up Truck				4		4.00	107.6						TRUE	107.60	LDT2	4.00	395	0.02	
<i>Civil Emissions Total (lbs)</i>											460932.92	136.20					37607	1.70	
<i>MEER (Not Pre-Built) - 5 Work Days</i>																			
Pick-up Truck				2		2.00	107.6						TRUE	107.60	LDT2	4.00	198	0.01	
Stake Truck	Construction	Other Equipment Composite	175	1	2.00	2.00			84.42	0.02	168.83	0.05							
17 Ton Crane	Composite	Scissors	4.00	4.00			82.03		0.02	328.11	0.10								
<i>MEER Emissions Total (lbs)</i>											2484.70	0.73					988	0.05	
<i>Electrical - 66 Work Days</i>																			
Scissor Lifts	Lifts	Aerial Composite	120	1	4.00	4.00			42.13	0.01	168.52	0.05							
Manlift	Lifts	Aerial Composite	120	2	4.00	8.00			42.13	0.01	337.04	0.10							
Reach Forklift	Composite	Forklifts	2.00	2.00		22.75			0.01	45.51	0.01								
15 Ton Crane (Line Truck)	Composite	Scissors	250	1	4.00	4.00		82.03	0.02	328.11	0.10								
Tool Trailer	Construction	Other Equipment Composite	175	1	8.00	8.00			84.42	0.02	675.34	0.20							
Crew Truck				2		2.00	107.6						TRUE	107.60	LDT2	4.00	198	0.01	
70 Ton Crane	Composite	Scissors	4.00	4.00			82.03		0.02	328.11	0.10								
<i>Electrical Emissions Total (lbs)</i>											124252.55	36.72					13043	0.71	
<i>Wiring - 44 Work Days</i>																			
Manlift	Lifts	Aerial Composite	120	1	2.00	2.00			42.13	0.01	84.26	0.02							
Tool Trailer	Construction	Other Equipment Composite	175	1	8.00	8.00			84.42	0.02	675.34	0.20							
<i>Wiring Emissions Total (lbs)</i>											33422.21	9.87							

GHG Emission Calculations

Equipment Type	CalEEMod Category	HP	Qty	Operating Hrs/WD/each	Operating Hours per Day/ No of Round Trips for On-road	# of miles for Onroad	Material loading thruout (tons/day)	Construction On-site Emissions (lbs/hr)		Construction Onsite Emission (lbs/day)		On-Road Vehicle Emissions (lb/day)					
								CO2 rate (lbs/hr)	CH4 rate (lbs/hr)	CO2 (lbs/day)	CH4 (lbs/day)	is vehicle?	Trip length (miles)	Vehicle Category	EMFAC column #	CO2 rate (lbs/day)	CH4 rate (lbs/day)
<i>Transformers - 5 Work Days</i>																	
Crew Truck			2		2.00	107.6						TRUE	107.60	LDT2	4.00	198	0.01
Low Bed Truck	Construction	Other Equipment Composite	175	1	2.00	2.00		84.42	0.02	168.83	0.05						
<i>Transformers Emissions Total (lbs)</i>										844.17	0.25					988	0.05
<i>Maintenance Crew Equipment Check - 22 Work Days</i>																	
Maintenance Truck	Construction	Other Equipment Composite	175	2	2.00	4.00		84.42	0.02	337.67	0.10						
<i>Maintenance Crew Equipment Check Emissions Total (lbs)</i>										7428.70	2.19						
<i>Testing - 88 Work Days</i>																	
Crew Truck/Van			1		1.00	107.6						TRUE	107.60	LDT2	4.00	99	0.01
<i>Testing Emissions Total (lbs)</i>																8695	0.48
<i>Asphalting - 10 Work Days</i>																	
Paving Roller		Pavers Composite	100	1	4.00	4.00		47.11	0.01	188.43	0.06						
Asphalt Paver	Equipment	Paving Composite	100	1	4.00	4.00		41.12	0.01	164.47	0.05						
Stake Truck	Construction	Other Equipment Composite	175	1	2.00	2.00		84.42	0.02	168.83	0.05						
Tractor		Tractors/Loaders/B ackhoes Composite	250	1	8.00	8.00		105.06	0.03	840.47	0.25						
Dump Truck				1	1.00	26.6						TRUE	26.60	HHD	9.00	100	0.00
Crew Trucks	Construction	Other Equipment Composite	175	2	2.00	4.00		84.42	0.02	337.67	0.10						
Asphalt Curb Machine	Equipment	Paving Composite	100	1	2.00	2.00		41.12	0.01	82.24	0.02						
<i>Asphalting Emissions Total (lbs)</i>										17821.03	5.27					996	0.01
<i>Landscaping - 5 Work Days</i>																	
Tractor		Tractors/Loaders/B ackhoes Composite	250	1	8.00	8.00		105.06	0.03	840.47	0.25						
Dump Truck				1	1.00	26.6						TRUE	26.60	HHD	9.00	100	0.00
Pick-up Truck												TRUE	107.60	LDT2	4.00		
<i>Landscaping Emissions Total (lbs)</i>										4202.34	1.24					498	0.00
<b>Banducci Substation Construction Total Emissions (Tons per Year)</b>										411.59	0.12					53	0.00
<i>Distribution Getaway Construction</i>																	
<i>Civil - 8 Work Days</i>																	







GHG Emission Calculations

									Construction On-site Emissions (lbs/hr)		Construction Onsite Emission (lbs/day)		On-Road Vehicle Emissions (lb/day)					
Equipment Type	CAIEMod Category	HP	Qty	Operating Hrs/WD/each	Operating Hours per Day/No of Round Trips for On-road	# of miles for Onroad	Material loading throuput (tons/day)	CO2 rate (lbs/hr)	CH4 rate (lbs/hr)	CO2 (lbs/day)	CH4 (lbs/day)	Is vehicle?	Trip length (miles)	Vehicle Category	EMFAC column #	CO2 rate (lbs/day)	CH4 rate (lbs/day)	
1 Ton Truck Construction	Other Equipment Composite	175	1	8.00	8.00			84.42	0.02	675.34	0.20							
Backhoe/Front Loader	Tractors/Loaders/Backhoes Composite	250	1	4.00	4.00		100.00	105.06	0.03	420.23	0.12							
Track Type Dozer Tired	Rubber Dozers Composite	380	1	4.00	4.00			175.82	0.05	703.28	0.21							
Motor Grader Composite	Loaders Composite	600	1	6.00	6.00	187.06		100.06	1122.37	0.33								
Water Truck Construction	Other Equipment Composite	250	1	8.00	8.00			84.42	0.02	675.34	0.20							
Drum Type Compactor Compactor	Rollers Composite	15	1	6.00	6.00			8.08	0.00	48.49	0.01							
Excavator	Excavators Composite	350	1	4.00	4.00			150.11	0.04	600.44	0.18							
Lowboy Truck / Trailer Construction	Other Equipment Composite	175	1	4.00	4.00			84.42	0.02	337.67	0.10							
<b>Roads &amp; Landing Work Emissions Total (lbs)</b>										4583.15	1.34							
<b>Removal of Existing Conductor - 1 Work Day</b>																		
1 Ton Truck Construction	Other Equipment Composite	175	2	4.00	8.00			84.42	0.02	675.34	0.20							
Manlift / Bucket Truck Lifts	Aerial Composite	120	2	8.00	16.00			42.13	0.01	674.08	0.20							
Boom Crane Truck Composite	Cranes Composite	250	2	8.00	16.00		82.03	100.03	0.02	1312.42	0.39							
Bull Wheel Puller Construction	Other Equipment Composite	175	1	6.00	6.00			84.42	0.02	506.50	0.15							
Sock Line Puller Construction	Other Equipment Composite	175	1	6.00	6.00			84.42	0.02	506.50	0.15							
Static Truck / Tensioner Construction	Other Equipment Composite	175	1	6.00	6.00			84.42	0.02	506.50	0.15							
Lowboy Truck / Trailer Construction	Other Equipment Composite	175	2	4.00	8.00			84.42	0.02	675.34	0.20							

GHG Emission Calculations

Equipment Type	CalEEMod Category	HP	Qty	Operating Hrs/WD/each	Operating Hours per Day/ No of Round Trips for On-road	# of miles for Onroad	Material loading throuput (tons/day)	Construction On-site Emissions (lbs/hr)		Construction Onsite Emission (lbs/day)		On-Road Vehicle Emissions (lb/day)					
								CO2 rate (lbs/hr)	CH4 rate (lbs/hr)	CO2 (lbs/day)	CH4 (lbs/day)	Is vehicle?	Trip length (miles)	Vehicle Category	EMFAC column #	CO2 rate (lbs/day)	CH4 rate (lbs/day)
Removal of Existing Conductor Emissions Total (lbs)										4856.68	1.44						
Wood Pole Removal - 1 Work Day																	
1 Ton Truck Construction	Other Equipment Composite	175	2	8.00	16.00			84.42	0.02	1350.67	0.40						
Compressor Trailer Compressors	Air Composite	400	1	4.00	4.00			240.55	0.01	962.22	0.05						
Manlift / Bucket Truck Lifts	Aerial Composite	120	1	6.00	6.00			42.13	0.01	252.78	0.07						
Boom Crane Truck Composite	Cranes	250	1	6.00	6.00		82.08	0.02	492.16	0.15							
Flat Bed Pole Truck Construction	Other Equipment Composite	175	1	8.00	8.00			84.42	0.02	675.34	0.20						
Wood Pole Removal Emissions Total (lbs)										3733.16	0.87						





GHG Emission Calculations

Equipment Type	CalEEMod Category	HP	Qty	Operating Hrs/WD/each	Operating Hours per Day/ No of Round Trips for On-road	# of miles for Onroad	Material loading thruput (tons/day)	Construction On-site Emissions (lbs/hr)		Construction Onsite Emission (lbs/day)		On-Road Vehicle Emissions (lb/day)						
								CO2 rate (lbs/hr)	CH4 rate (lbs/hr)	CO2 (lbs/day)	CH4 (lbs/day)	Is vehicle?	Trip length (miles)	Vehicle Category	EMFAC column #	CO2 rate (lbs/day)	CH4 rate (lbs/day)	
Auger Truck Rigs	Bore/Drill Composite	175	1	4.00	4.00			101.09	0.03	404.37	0.12							
Backhoe / Front Loader	Tractors/Loaders/Backhoes Composite	250	1	8.00	8.00		100.00	105.06	0.03	840.47	0.25							
Extendable Flat Bed Pole Truck	Construction Equipment Composite	175	1	8.00	8.00			84.42	0.02	675.34	0.20							
<i>Install Wood / LSW Pole Emissions Total (lbs)</i>										10021.34	2.96							

GHG Emission Calculations

Equipment Type	CalEEMod Category	HP	Qty	Operating Hrs/WD/each	Operating Hours per Day/ No of Round Trips for On-road	# of miles for Onroad	Material loading throuput (tons/day)	Construction On-site Emissions (lbs/hr)		Construction Onsite Emission (lbs/day)		On-Road Vehicle Emissions (lb/day)					
								CO2 rate (lbs/hr)	CH4 rate (lbs/hr)	CO2 (lbs/day)	CH4 (lbs/day)	Is vehicle?	Trip length (miles)	Vehicle Category	EMFAC column #	CO2 rate (lbs/day)	CH4 rate (lbs/day)
<i>Install / Transfer Conductor - 4 Work Days</i>																	
1 Ton Truck	Construction	Other Equipment Composite	175	3	4.00	12.00		84.42	0.02	1013.00	0.30						
Manlift / Bucket Truck	Lifts	Aerial Composite	120	4	8.00	32.00		42.13	0.01	1348.15	0.40						
Boom Crane Truck	Composite	Cranes	250	1	8.00	8.00	82.08	0.02	656.21	0.19							
Dump Truck				1		1.00	26.6					TRUE	26.60	HDD	9.00	100	0.00
Wire Truck / Trailer	Construction	Other Equipment Composite	175	1	6.00	6.00		84.42	0.02	506.50	0.15						
Sock Line Puller	Construction	Other Equipment Composite	175	1	6.00	6.00		84.42	0.02	506.50	0.15						
Bull Wheel Puller	Construction	Other Equipment Composite	175	1	6.00	6.00		84.42	0.02	506.50	0.15						
Static Truck / Tensioner		Other Construction Equipment Composite	175	1	6.00	6.00		84.42	0.02	506.50	0.15						
Backhoe / Front Loader		Tractors/Loaders/Backhoes Composite	250	1	2.00	2.00	100.00	105.06	0.03	210.12	0.06						
Lowboy Truck / Trailer	Construction	Other Equipment Composite	175	2	4.00	8.00		84.42	0.02	675.34	0.20						
<i>Install / Transfer Conductor Emissions Total (lbs)</i>										23715.32	7.01					398	0.00
<i>Restoration - 1 Work Day</i>																	
1 Ton Truck	Construction	Other Equipment Composite	175	2	4.00	8.00		84.42	0.02	675.34	0.20						
Backhoe / Front Loader		Tractors/Loaders/Backhoes Composite	250	1	4.00	4.00	100.00	105.06	0.03	420.23	0.12						
Motor Grader	Composite	Loaders	400	1	6.00	6.00	187.06	0.06	1122.37	0.33							
Water Truck	Construction	Other Equipment Composite	250	1	8.00	8.00		84.42	0.02	675.34	0.20						
Drum Type Compactor	Composite	Plate Composite	15	1	8.00	8.00		8.08	0.00	64.65	0.01						

GHG Emission Calculations

Equipment Type	CAIEMod Category	HP	Qty	Operating Hrs/WD/each	Operating Hours per Day/ No of Round Trips for On-road	# of miles for Onroad	Material loading throuput (tons/day)	Construction On-site Emissions (lbs/hr)		Construction Onsite Emission (lbs/day)		On-Road Vehicle Emissions (lb/day)							
								CO2 rate (lbs/hr)	CH4 rate (lbs/hr)	CO2 (lbs/day)	CH4 (lbs/day)	is vehicle?	Trip length (miles)	Vehicle Category	EMFAC column #	CO2 rate (lbs/day)	CH4 rate (lbs/day)		
Lowboy Truck / Trailer	Construction	Other Equipment Composite	175	1	4.00	4.00		84.42	0.02	337.67	0.10								
<i>Restoration Emissions Total (lbs)</i>										3295.59	0.96								
<i>Subtransmission Construction Total Emissions (Tons per Year)</i>										112.67	0.03						0.90	0.00	
<i>Telecommunications Construction</i>				1	4.00	4.00													
<i>Telecom Construction Inside MEER - 30 Work Days</i>																			
<i>Pick-up Truck</i>				3		3.00	107					TRUE	107.00	LDT2	4.00	295	0.02		
<i>Telecom Construction Inside MEER Emissions Total (lbs)</i>																8843	0.48		
<i>Substructure Installation - 34 Work Days</i>																			
Backhoe		Tractors/Loaders/Backhoes Composite	250	1	8.00	8.00		105.06	0.03	840.47	0.25								
Dump Truck			175	1		1.00	26.6					TRUE	26.60	HHD	9.00	100	0.00		
Cement Truck and		Cement Mortar Mixers Composite	175	1	8.00	8.00		17.54	0.00	140.32	0.02								
<i>Substructure Installation Emissions Total (lbs)</i>												33346.88	9.07				3386	0.03	
<i>Wood Pole Replacement and Transfer Facilities - 40 Work Days</i>																			
1 Ton Truck	Construction	Other Equipment Composite	175	2	2.00	4.00		84.42	0.02	337.67	0.10								
Double Bucket Truck	Construction	Other Equipment Composite	175	1	8.00	8.00		84.42	0.02	675.34	0.20								
Auger Truck	Rigs	Bore/Drill Composite	175	1	4.00	4.00		101.09	0.03	404.37	0.12								
Boom Truck	Construction	Other Equipment Composite	175	1	8.00	8.00		84.42	0.02	675.34	0.20								
<i>Wood Pole Replacement and Transfer Facilities Emissions Total (lbs)</i>												83708.35	24.73						
<i>Fiber Optic Cable Installation - 62 Work Days</i>																			
<i>Pick-up Truck</i>				2		2.00	107					TRUE	107.00	LDT2	4.00	197	0.01		
Manlift / Bucket Truck	Lifts	Aerial Composite	120	1	8.00	8.00		42.13	0.01	337.04	0.10								
<i>Fiber Optic Cable Installation Emissions Total (lbs)</i>												20896.38	6.18				12184	0.67	
<i>Telecommunications Construction Total Emissions (Tons per Year)</i>												62.57	0.02				11	0.00	

GHG Emission Calculations

Equipment Type	CalEEMod Category	HP	Qty	Operating Hrs/WD/each	Operating Hours per Day/ No of Round Trips for On-road	# of miles for Onroad	Material loading thruout (tons/day)	Construction On-site Emissions (lbs/hr)		Construction Onsite Emission (lbs/day)		On-Road Vehicle Emissions (lb/day)						
								CO2 rate (lbs/hr)	CH4 rate (lbs/hr)	CO2 (lbs/day)	CH4 (lbs/day)	Is vehicle?	Trip length (miles)	Vehicle Category	EMFAC column #	CO2 rate (lbs/day)	CH4 rate (lbs/day)	
Proposed Project Construction Emissions (Tons per Year)										256.74	0.07						28	0.00



**Operational Emissions**

**Motor Vehicle Usage**

	<b>Number</b>	<b>Days Used per Year</b>	<b>Travelled per Day(miles)</b>
<b>Subtransmission Line Inspection</b>			
Subtransmission Line Inspection	1	1	72
Substation Site Visit	1	156	60

**Motor Vehicle Exhaust Emission Factors for Operational Year 2016 (lb/mile)**

		<b>CO2_NBIO_RUNEX</b>	<b>CH4_RUNEX</b>
<b>Locations</b>	<b>Vehicle type</b>	<b>CO2</b>	<b>CH4</b>
Subtransmission Line Inspection	LDA	0.601321	0.000027
Substation Site Visit	LDA	0.601321	0.000027

/a/ Emission Factors obtained from EMFAC2011

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions for Operational Year 2016 (lb/day)**

		<b>CO2</b>	<b>CH4</b>
Subtransmission Line Inspection		43.295	0.002
Substation Site Visit		36.079	0.002
	Sum	79.374	0.004

/a/ Emissions [lb/day] = Number x Miles Travelled Per Day x Emission Factor [lb/mi]

**EMFAC 2011 Emission Factors**

Source: CalEEMod2013

Year: 2016, Kern County

	g/mile							
	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD
Column number:	2.000	3.000	4.000	5.000	6.000	7.000	8.000	9.000
FleetMix	0.358	0.044	0.190	0.132	0.068	0.010	0.016	0.155
PM2.5	0.019	0.020	0.020	0.020	0.050	0.070	0.133	0.113
PM10	0.046	0.048	0.047	0.047	0.092	0.126	0.212	0.182
CH4_IDLEX	0.000	0.000	0.000	0.000	0.001	0.001	0.008	0.025
CH4_RUNEX	0.012	0.022	0.018	0.030	0.023	0.012	0.008	0.011
CH4_STREX	0.012	0.027	0.022	0.035	0.022	0.008	0.000	0.000
CO_IDLEX	0.000	0.000	0.000	0.000	0.153	0.105	1.843	3.001
CO_RUNEX	1.199	2.982	1.875	3.031	2.391	1.383	1.925	1.379
CO_STREX	2.698	5.644	4.669	6.991	4.943	1.524	31.000	119.670
CO2_NBIO_IDLEX	0.000	0.000	0.000	0.000	9.057	10.153	604.141	566.973
CO2_NBIO_RUNEX	272.755	322.972	390.483	516.960	722.967	586.061	1047.438	1653.981
CO2_NBIO_STREX	61.761	74.304	87.920	114.794	30.361	12.514	63.848	66.487
NOX_IDLEX	0.000	0.000	0.000	0.000	0.095	0.162	6.463	4.458
NOX_RUNEX	0.127	0.313	0.274	0.468	2.127	2.928	3.781	4.378
NOX_STREX	0.181	0.308	0.412	0.659	0.990	0.363	2.584	5.201
PM10_IDLEX	0.000	0.000	0.000	0.000	0.001	0.002	0.027	0.011
PM10_PMBW	0.037	0.037	0.037	0.037	0.057	0.079	0.111	0.061
PM10_PMTW	0.008	0.008	0.008	0.008	0.010	0.011	0.011	0.036
PM10_RUNEX	0.002	0.003	0.002	0.002	0.026	0.036	0.090	0.084
PM10_STREX	0.003	0.005	0.004	0.004	0.001	0.000	0.006	0.005
PM25_IDLEX	0.000	0.000	0.000	0.000	0.001	0.002	0.024	0.011
PM25_PMBW	0.016	0.016	0.016	0.016	0.024	0.034	0.048	0.026
PM25_PMTW	0.002	0.002	0.002	0.002	0.003	0.003	0.003	0.009
PM25_RUNEX	0.002	0.003	0.002	0.002	0.024	0.033	0.083	0.078
PM25_STREX	0.003	0.004	0.003	0.004	0.001	0.000	0.005	0.004
ROG_DIURN	0.065	0.150	0.104	0.115	0.003	0.001	0.004	0.004
ROG_HTSK	0.136	0.252	0.189	0.221	0.067	0.025	0.193	0.204
ROG_IDLEX	0.000	0.000	0.000	0.000	0.024	0.015	0.165	0.534
ROG_RESTL	0.047	0.101	0.074	0.086	0.001	0.000	0.002	0.002
ROG_RUNEX	0.037	0.118	0.059	0.098	0.241	0.191	0.247	0.244
ROG_RUNLS	0.331	0.792	0.625	0.735	0.483	0.141	0.831	0.998
ROG_STREX	0.215	0.463	0.377	0.607	0.383	0.133	2.223	4.944
SO2_IDLEX	0.000	0.000	0.000	0.000	0.000	0.000	0.006	0.006
SO2_RUNEX	0.003	0.004	0.005	0.006	0.007	0.006	0.010	0.016
SO2_STREX	0.001	0.001	0.001	0.001	0.000	0.000	0.001	0.003
TOG_DIURN	0.065	0.150	0.104	0.115	0.003	0.001	0.004	0.004
TOG_HTSK	0.136	0.252	0.189	0.221	0.067	0.025	0.193	0.204
TOG_IDLEX	0.000	0.000	0.000	0.000	0.025	0.016	0.188	0.607
TOG_RESTL	0.047	0.101	0.074	0.086	0.001	0.000	0.002	0.002
TOG_RUNEX	0.049	0.142	0.078	0.129	0.276	0.219	0.280	0.278
TOG_RUNLS	0.331	0.792	0.625	0.735	0.483	0.141	0.831	0.998
TOG_STREX	0.230	0.495	0.403	0.649	0.409	0.142	2.383	5.304

\* Emissions are in units of grams per mile

**EMFAC 2011 Emission**  
**Source: CalEEMod201**  
**Year: 2016, Kern Cour**

	<b>OBUS</b>	<b>UBUS</b>	<b>MCY</b>	<b>SBUS</b>	<b>MH</b>
Column number:	10.000	11.000	12.000	13.000	14.000
FleetMix	0.003	0.000	0.016	0.001	0.006
PM2.5	0.088	0.227	0.018	0.320	0.052
PM10	0.152	0.445	0.045	0.653	0.090
CH4_IDLEX	0.019	0.000	0.000	0.005	0.000
CH4_RUNEX	0.003	0.000	0.000	0.008	0.000
CH4_STREX	0.000	0.000	0.000	0.000	0.000
CO_IDLEX	2.364	0.000	0.000	1.062	0.000
CO_RUNEX	3.004	1.744	37.503	3.115	4.949
CO_STREX	18.810	10.220	11.047	26.431	10.685
CO2_NBIO_IDLEX	571.353	0.000	0.000	570.820	0.000
CO2_NBIO_RUNEX	1096.045	1452.560	163.365	1110.494	740.040
CO2_NBIO_STREX	37.814	86.290	43.331	123.629	31.500
NOX_IDLEX	5.938	0.000	0.000	8.092	0.000
NOX_RUNEX	4.438	5.563	1.340	7.952	1.810
NOX_STREX	2.555	3.237	0.318	2.230	0.918
PM10_IDLEX	0.018	0.000	0.000	0.027	0.000
PM10_PMBW	0.091	0.359	0.037	0.557	0.051
PM10_PMTW	0.010	0.008	0.008	0.011	0.009
PM10_RUNEX	0.051	0.078	0.001	0.086	0.031
PM10_STREX	0.002	0.000	0.002	0.004	0.002
PM25_IDLEX	0.016	0.000	0.000	0.025	0.000
PM25_PMBW	0.039	0.154	0.016	0.239	0.022
PM25_PMTW	0.003	0.002	0.002	0.003	0.002
PM25_RUNEX	0.047	0.072	0.001	0.079	0.028
PM25_STREX	0.001	0.000	0.001	0.004	0.001
ROG_DIURN	0.001	0.006	0.999	0.028	1.355
ROG_HTSK	0.031	0.102	0.470	0.170	0.086
ROG_IDLEX	0.414	0.000	0.000	0.117	0.000
ROG_RESTL	0.000	0.004	0.563	0.011	0.438
ROG_RUNEX	0.263	0.171	3.320	0.463	0.197
ROG_RUNLS	0.264	0.550	1.675	1.553	2.120
ROG_STREX	1.196	1.953	2.345	2.004	0.617
SO2_IDLEX	0.006	0.000	0.000	0.006	0.000
SO2_RUNEX	0.011	0.015	0.002	0.011	0.008
SO2_STREX	0.001	0.001	0.001	0.002	0.001
TOG_DIURN	0.001	0.006	0.999	0.028	1.355
TOG_HTSK	0.031	0.102	0.470	0.170	0.086
TOG_IDLEX	0.471	0.000	0.000	0.133	0.000
TOG_RESTL	0.000	0.004	0.563	0.011	0.438
TOG_RUNEX	0.299	0.205	3.607	0.511	0.234
TOG_RUNLS	0.264	0.550	1.675	1.553	2.120
TOG_STREX	1.279	2.085	2.520	2.139	0.661

\* Emissions are in unit